

Traditional Economic Systems and Resource-Based Livelihoods of the Saura Tribe: A Study of Saura Art in Rayagada District

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ABSTRACT

The aim of this research is to explore the traditional economic systems and resource utilisation strategies of the Saurashtra community. In this context, tribe has concentrated on particular art forms that are unique to them, in the context of the Rayagada District of Odisha, and how they are reflected in them. and are intertwined with these socio-economic structures. It dialectically explores the interconnectedness of their ecological knowledge systems (Dhar, Chawla, & Mulchandani, 2024; Sdharelvn, 2022) between Saura artistic expression and the subsistence strategies, resource management practices, Economic and cultural values and traditions underpinning their economic resilience and adaptation to their traditional ecological knowledge systems are. The research continues to suggest that Saura art is a more than just decorative visual vocabulary for communicating and passing on family traditions about resource distribution, sustainable The issues of cropping and community-based economy are also raised. This interdisciplinary approach intends to shed light on the role of art images as mnemonics and cultural markers. a wealth of ecological knowledge, with deep insights into the complexities of interactions. Economies of Indigenous Peoples and their relationship with nature. The research further argues that the pictorial details and symbolic storylines in Saura art offers insights into The graphic illustrations of their dependence on non-timber forest products and traditional agricultural activities gave them a tangible representation of it. The basic practice of their economy and culture, are in danger.

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KEYWORDS: Saura tribe, traditional economic systems, resource-based livelihoods, Saura art.

1. INTRODUCTION

The Saura indigenous tribe that primarily lives in the Rayagada district of Odisha, Both their traditional economic systems and resource-based economies show great linkage, as is exemplified in the case of Laos. living conditions, uniqueness of artistic expression. This is an intimate interdependency that they experience as: Sustainable use of resources and symbolic representation in their use of Often related to their immediate surroundings and subsistence patterns, Saura art. This intricate Most indigenous groups have a relationship between cultural expression and ecological dependence. In communities where art is often a visual account of their intimate relationship with nature, is in the many

of the Warli paintings in Maharashtra, which prominently feature natural elements such as, the sun, moon, and trees (Varughese & Mukherjee, 2024, p. 4). In the same way, Saura art, and in particular their, cosmocentric worldview, in which art production is seen as an is deeply rooted wall painting. This is extension of nature, and a holistic understanding of their environment. They have traditional economic systems that go hand in hand with the nature of the land. The forests and hilly landscape they live in, rich with natural resources. They are essential for livelihoods and food security (Ghosh-Jerath et al., 2020, p. 2). These systems often relies on a complicated mix of agriculture, food gathering, and

artisanal processing and production, which is supported by Their relationships with the natural environment that is regulated by indigenous knowledge systems. The traditional ecological knowledge is essential for good environmental governance and sustainable development, often in the form of a fine balance between resources The techniques that are handed down from generation to generation by the management. These traditional practices, which are essential to ecosystem resilience and support the socio-economic aspects of the activities, normally include detailed knowledge of the plants' phenology and ecology, which influences Seasonal harvests and agricultural calendars, such as those used by Yadav et al. 2026) Farmers' cultural heritage of agriculture. Various agro-biodiversity conservation strategies can be incorporated in economic models, including the cultivation of multiple landraces. These old methods put importance on: Include the use of sustainable ecosystems and frequently feature village governance structures that manage use It is important to manage economic activities to ensure long-term sustainability of natural resources (Everard, Kataria, Kumar, & Gupta, 2020, p. 7780). Thus, this research is intended to reveal the way Saura art visually codes these, Complex connections, based on their heritage of ecological understanding and resource utilization strategies. This paper explores the semiotic value of motifs and style in Saura art. This research seeks to explore the subtle stories that underscore their traditional economic roles as presented in the data. The objective of this research is to decipher the nuanced stories that underscore their traditional economic roles as presented in the data. However, the focus is on practices and resource based livelihoods (Athayde, Silva-Lugo, Schmink, Kaiabi, & Heckenberger, 2017). p. 7). In addition, the relationship of Saura art with the carrier of Saura culture will be studied in this investigation. transferring TEK from generation to generation, thus strengthening community resilience, Capability to adjust to changing environmental and socio-economic pressures. This passing of the torch is important especially with regard to traditional practices, Modern agriculture changes and the undervaluing of local wisdom and ecological knowledge are causing a loss of those. The innovations (Chapke, Satyavathi, Babu & Laxmiprasanna, 2025, p. 2). Therefore, this study will develop an understanding of how Saura art not only reflects but also plays a role in the perpetuation and conservation of culture. the transmission of traditional ecological knowledge, especially in relation to economic activities. Omar, Mohamad, & Sanusi, 2023). This study will therefore lead to a better

understanding of the Among cultures and expressions, economic systems and ecological sustainability are connected in a way that is not clearly understood. The study was conducted in indigenous contexts (Morales, Molares, & Ladio, 2017; Gómez-Baggethun, Mingorría, Reyes-García, Calvet-Mir, & Montes, 2010, p. 2). It will examine in detail the ways in which certain art form patterns and iconographies act as memory aids in the context of agricultural calendars, resource allocation and ... To the continuity of ecological knowledge that is essential for communal harvesting. Turner, Cuerrier, & Joseph, 2022) suggest that they use these for their subsistence. This will include an discussion of how these artistic depictions feed into the decisions about food. security and resource governance, especially considering the challenges posed by modern agricultural The process of intensification. Moreover, the study aims to find out how these art forms convey small and meaningful messages of reciprocity and exchanges in social networks. In an economic and market environment, creating flexible strategies in the face of changing these environmental conditions (Datta, Singha, & Hurlbert, 2024).

2. Literature Review

Traditional ecological knowledge has been discussed in the academic literature in ways that emphasize its role as a cultural resource. For ecosystem adaptation and resilience, especially the ability to maintain desired ecosystems, memory is a resource. The ecosystem services are (Fernández-Giménez, 2015, p. 8). Its occurrence and spread, however, is Becoming more and more disputed in the era of modernization, urbanisation and a transition from subsistence, The results indicate that the market-based systems result in economic benefits to the farmers and are more environmentally sustainable than the traditional ones. Calvet-Mir, & Montes, 2010, p. 1814). The transfer of intergenerational knowledge is sometimes disrupted by this transition. transfer, as detailed in studies of the effects of parent migration on children's Learning of traditional ecological knowledge. The incorporation of Traditional Ecological Knowledge into model for agricultural practice, especially in dryland farming, underscores the relevance of the farming practice for ecological sustainability and food security, As indicated by the term reflecting long-term ecological adaptation, this is an observation of long-term ecological adaption . Although recognized as valuable, TEK is not being incorporated into current conservation and development efforts. Conceptual and methodological differences among indigenous initiatives continue to be a challenge. The concept of knowledge systems and Western scientific frameworks. This disparity It is often due to the

epistemologies which are different, with western science in the focus on empirical approach. As mentioned, observation and quantification is typical of western knowledge, whereas indigenous knowledge is often comprehensive, practical and Frequently transmitted orally (Chielotam, 2012). Such traditional knowledge often includes deep knowledge of seasonal indicators and environmental clues. It is an invaluable tool for effective NRM and conservation. This comprehensive knowledge that includes complex relationships between species, ecosystems, and culture, offers different views of the environment and adapted response. The strategies (Hatfield, Marino, Whyte, Dello, & Mote, 2018, p. 3). However, incorporating TEK into this is challenging. Because wider environmental management programmes require overcoming barriers such as its often local, context-dependent and difficulties in formalizing its transmission in the modern era. governance regimes. This integration is further complicated by the fact that the conceptualisations of TEK (may be very different) In other academic and policy settings, definition and application across different academic and policy contexts (Garavito-Bermúdez, 2016, p. 644). Western scientific perspectives have emphasized analytical models and quantitative data, for example. TEK is grounded in experiential learning and inductive pattern identification, and is frequently, Based on place-based, longitudinal observations (Young, 2006, p. 9). This difference in The epistemological basis affirms the challenges in translating and validating TEK in the context of Traditional scientific paradigms, often objective and universalistic knowledge. An explicit approach to assessing the effectiveness of textbooks is necessary to enhance their value. To improve the value of textbooks, an explicit method for assessing the effectiveness is required (Proulx, Ross, Macdonald, Fitzsimmons, & Smit, 2021, p. 395). In this context, there have been attempts to close this epistemic gap. Gap requires innovative approaches that see the intrinsic value and validity of both knowledge The systems are not hierarchical, as is the case with other systems (Ijatuyi et al., 2025). One of the common problems is the ontological differences and classification systems. The ecological concepts or entities may not have equivalents, or may have different meanings in these frameworks (Athayde, Stepp, 2016, p. 5), in that certain ecological ideas or entities may be different from those that are used by indigenous or academic knowledge holders. This paper discusses the challenges of engaging indigenous and academic knowledge in the Amazon with respect to bees. People often try to manage the environment by mimicking the behavior of the

animals (sensual relationship) and imitate the animals' research (transdisciplinary research. 15). Plus, the flow rate and sometimes The formalization of indigenous knowledge is made even more complex by its socially constructed nature of ownership. integration in western scientific documentation practices which often require explicit referencing. and a standardized presentation (Steelman, et al., 2018, p. 774). Thus, there are approaches for integrating Each knowledge system needs to recognize these core differences, and work together in a manner that is mutually beneficial. knowledge production that takes into account the intrinsic value of traditional ecological knowledge The scientific method. This requires the creation of common vocabularies and metrics that help to understand and respect cross-cultural differences and do not devalue TEK over. Science Ecoliteracy refers to scientific ecological knowledge.

Objectives

1. To study the traditional economic system of the Saura tribe in Rayagada district of Odisha.
2. To explore their livelihoods based on the resources, such as farming and Saura painting.
3. To discuss how Saura art reflects their economic activities and their sense of identity.

3. Methodology

This study will be designed using a mixed methods approach, which will include ethnographic fieldwork and participant observation. Qualitative data collection involved observation, and semi-structured interviews with Saura tribal elders, artists, and community members. At the same time, visual ethnography will be used to describe and interpret the making and meaning of these. The ability to connect artistic motifs directly to economic activities and resource management of Saura art. This uses for religious worship, have been interpreted and evolved over time. This approach will help to provide a complex picture of the evolution and interpretation of Saura artistic expression, as it has taken on uses beyond religious worship. Given their aesthetic values and role as cultural heritage sites of traditional ecological knowledge and socioeconomic strategies (Studley, 2005; Albuquerque & Alves, 2024), these structures must be preserved to safeguard the region's ecological heritage and the lives of its residents. The analysis will also take into account an aspect of the analysis will also include a Critical analysis of the role of indigenous knowledge, which is contained in the art of Saura, in informing and enriching. the ability to adapt to the modern-day economic development policies, especially in the agricultural field, However, addressing complexities involved in

integration of different knowledge systems (Albuquerque & Alves, 2024.) Such integration can face challenges arising from varying power Local dynamics and epistemological frameworks, that can hinder equitable cocontribution in the co-production of The marginalization of indigenous perspectives and the lack of knowledge about them (Firchow & Ginty, 2017; Matuk, et al., 2020, p. 153). solves these differences requires an interdisciplinary approach that is culturally respectful. explanatory power for indigenous ways of understanding. explanatory power for indigenous ways of understanding, thus allowing for a more extensive understanding of the ecological specificities. The knowledge domains (Athayde, Silva-Lugo, Schmink, Kaiabi, & Heckenberger, 2017, p. 7). Overall, the methodology aims to give a comprehensive picture of the way that Saura art reflects and sustains how the community practices it. Economic and ecological practices of tribe.

4. Hypothesis

The Saura tribe in Rayagada has been relying on traditional economic systems and resource base livelihoods. The artistic expression of the people of the district Odisha is closely connected to their own artistic expressions, especially Saura art. The functions of the artefact are not only cultural but also a reflection of subsistence strategies. This study suggests that Saura art can be considered as a visual narration of the tribe's reliance on forest resources

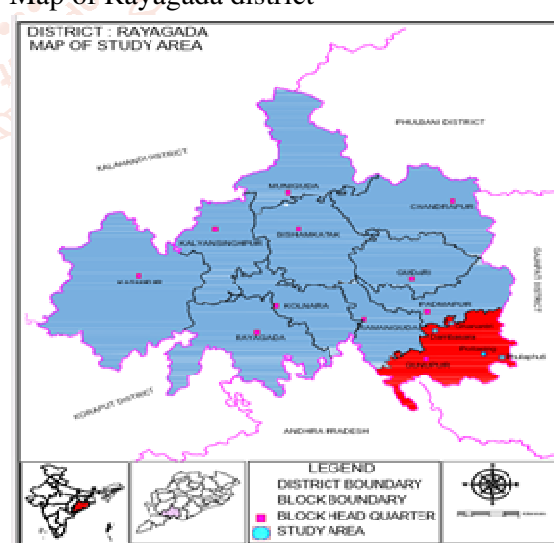
and shifting cultivation, and its collective labor, were encoded. Appropriation of economic values in the framework of ritual and symbolism. The hypothesis states that motifs in Saura The tribe's art depicts agricultural cycles, hunting, gathering and communal rituals. As a medium to convey ecological knowledge and resource management practices, Economic life is maintained, passed on and validated. Moreover, it claims that modernization and These traditional livelihoods have started to change in response to external influences. the importance of themes and functions of Saura art, where economic resilience and adaption are increasingly taking center stage. Expressed via hybrid motifs and commercialised forms. So, the hypothesis stresses that Saura art is an archive and a reaction to the shifting economic context, a step in bridging traditional livelihoods and contemporary modes of living to survival. By examining The study attempts to prove that the tribal economic systems, as an economic text of socio-economic reading, are written by the tribe for the tribe. The study is aimed at proving that Saura art is a socio-economic text written by the tribe for the tribe. are not just material practices, but also symbolic representations that maintain identity, cohesion and continuity in the face of external stresses. Finally, the hypothesis states that Saura art offers a lens through which to explore the economic, ecological and cultural interdependence of tribal.

Brief about Study Area

Political Map of Odisha

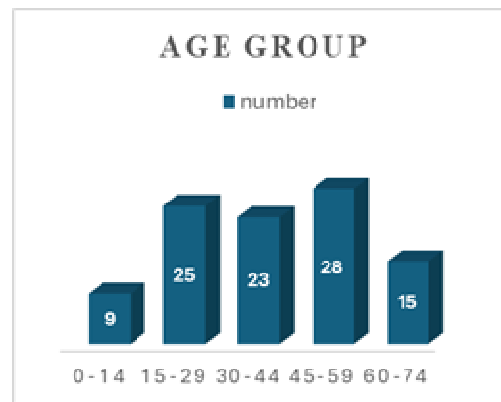


Map of Rayagada district



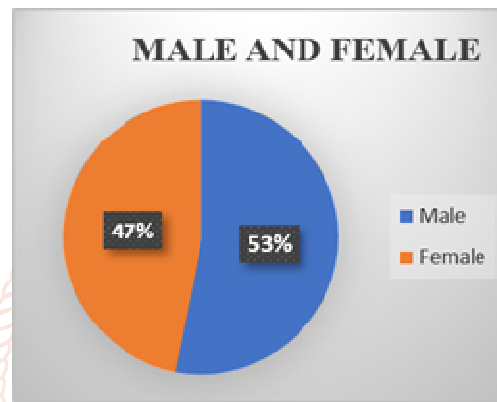
AGE GROUP WISE DISTRIBUTION OF SAURA TRIBE

There is a predominance of adults. The largest age group is 45–59 years, which makes up This group is the highest percentage at 28%. The smallest group (9%) is for children aged 0-14. There is a lower proportion of young people. The majority of people are in the working-age population (15-59 years), The older population (ages 30 to 39 and over) makes up 76% of the population, indicating a strong adult population. who can work. 15% is the older group aged 60-74, which is significant but slightly smaller than In each of the primary age groups of adults.



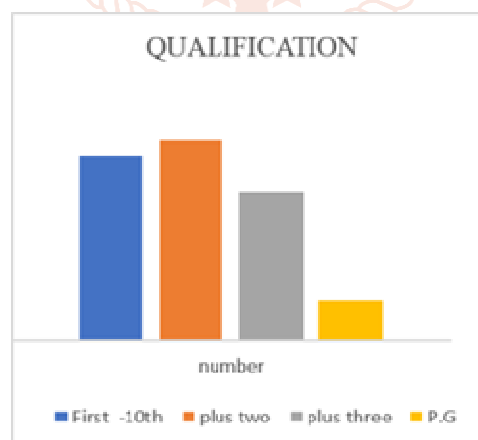
GENDER WISE DISTRIBUTION OF SAURA TRIBE

The population has slightly more males than females. Males make up about 53%, while females are around 47%, so the difference is small. This means there are about 1.13 males for every female. Overall, the gender split is quite balanced, and there is no big gap between males and females. Because the numbers are



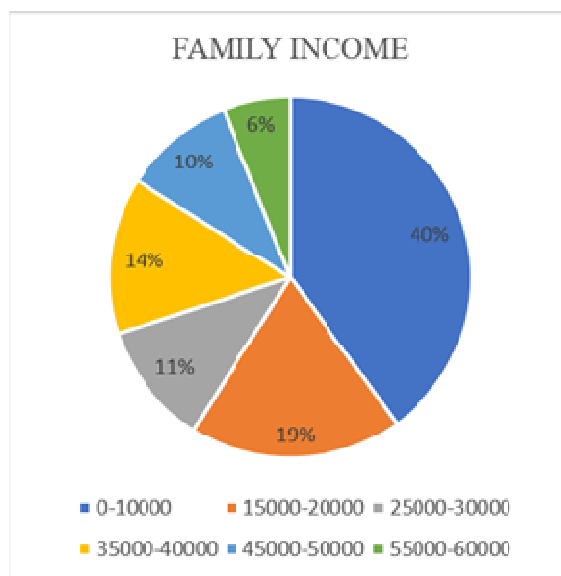
QUALIFICATION WISE DISTRIBUTION OF SAURA TRIBE

Most people in the population have completed Plus Two, which means higher secondary education is the most common level. The next largest group is those educated up to First–10th, showing that many people have basic or secondary schooling. Fewer people go on to complete Plus Three (degree level), which shows a drop in higher education after school. The smallest group is postgraduates, meaning only a small number of people continue their studies to an advanced level.



FAMILY INCOME WISE DISTRIBUTION OF SAURA TRIBE

Most families earn a low income, with the largest group (40%) earning between 0–10,000. Another 19% earn 15,000–20,000, so more than half of the families earn below 20,000. A smaller number of families fall into the middle-income ranges, such as 25,000–30,000 (11%) and 35,000–40,000 (14%). Even fewer families earn higher incomes, with 10% in the 45,000–50,000 range and only 6% earning 55,000–60,000. Overall, the income pattern shows that most families are in the lower income groups, and only a small number earn high incomes, which suggests income inequality in the population.



WORK EXPERIENCE WISE DISTRIBUTION OF SAURA TRIBE

Most respondents have work experience, with very few being new. The smallest group is those with 0-5 months of experience (8 people), showing that only a few are beginners. More people (20 respondents) have 6-10 months of experience, meaning they are still in the early stage of work. The largest group is those with 1-10 years of experience (38 respondents), followed closely by those with 11-20 years (34 respondents). Overall, most people have been working for more than one year, which shows that the workforce is experienced and stable, with fewer new workers joining.



5. Findings

The study shows that the Saura tribe's economy is mainly based on nature. They rely on agriculture for their livelihoods, and Living from the forest resources, hunting, and collecting fruits. Forests are an important source of food, firewood and other products. Most families are farmers, with agriculture being the primary means of livelihood, and daily needs are met. Their traditional knowledge and wisdom were important sources of information. practices are still followed. The economic and cultural life of saura people does clearly show in their art, particularly idital paintings. The paintings show Farming, hunting, ritual and social activities. These artworks not only are decorative, but they're also Express their beliefs, traditions and relationship with nature. This indicates their economy, culture, and their social structure. There is a strong connection between and spirituality. Most families come from low income groups and individuals' educational levels are mostly secondary or higher secondary. There have been some changes in livelihood and art due to modernization however Saura art is still there. helps preserve their cultural identity and traditional knowledge.



A traditional Saura wall art is made up of pictorial and iconic elements, each serving a distinct purpose. Traditional Saura wall art consists of a combination of pictorial and iconic elements, each with a unique purpose.

It is a striking example of a very unique indigenous art form known as Saura (Sora) wall art which is practiced by the Saura tribe of Odisha, mainly in the districts of Rayagada, Gajapati and Ganjam. This mural illustrates the relating of art, ritual, spirituality and everyday life that is common to Saura culture. Saura wall paintings are not art for art's sake but rather a visual message that represents the cosmological ideas, tribal traditions, and ecological perspective of the tribe. The mural is painted on a brown earthen wall using white natural pigments and features intricate depictions of abstract human figures, animals, geometric patterns, ritual symbols, and scenes of community life. The monochromatic composition and the lack of perspective and attention to symbolic representation of the objects reveals the peculiar visual language of the Saura people for the transmission of knowledge from one generation to the next.

Three decorated bottle gourds are seen hanging above the mural, along with floral garlands and peacock feathers. They are not just for decoration, but have some ritual meaning in the indigenous religious life. The traditional motifs and colors used to adorn the bottle gourds may represent auspiciousness, communal gathering, or perhaps a ceremony honoring ancestors. The use of traditional motifs and colors to adorn the bottle gourds may symbolize auspiciousness, communal gathering, or perhaps a ceremony honoring ancestors. The floral decorations may also symbolize auspiciousness and communal celebration. Its peacock feather ornaments, which are considered auspicious in Indian cultural traditions for symbolizing beauty, prosperity, and spiritual



protection, add to the sacred nature of the exhibition. The positioning of the mural above their sculptures indicates that the painted wall is part of a ritual area where art and religion merge.

The mural, in itself, depicts a lot of anthropomorphic and zoomorphic figures organized in horizontal bands in which each band symbolizes one aspect of Saura social and ecological life. The presence of human figures, some of which are dancing or performing ritual acts, suggests that the community was engaged in various collective activities, including dancing, hunting, farming, or religious rituals, underscoring the significance of social interaction and shared purpose. The animals, birds and natural motifs repeated throughout the picture depict the close bond between the Saura people and their forest surroundings. Forests, wildlife and natural elements are sacred and connected to human beings in the Saura worldview, rather than being treated as resources. As a result, the mural serves as a visual symbol of an indigenous ecological way of thinking which grounded in the concepts of co-existence, reciprocity and care for environment.

Anthropologically speaking this art form is also an important means of visual documentation to ensure the preservation of historical memory, social values and religious beliefs without the need for written text in the Saura community. Each motif is part of a symbolic system that conveys information about kinship, agricultural cycles, ritual duties, ancestor veneration, and cosmological order. The use of ceremonial objects in conjunction with pictographic imagery also illustrates the fact that Saura art is intertwined with the actual cultural life of the people and cannot be conceptualized in terms of decorative or folk art.

This image is significant and valuable as primary evidence for researchers to study indigenous knowledge systems, material culture, visual

anthropology and tribal heritage. It is a representation of how traditional art forms, still serve as a means of maintaining cultural identity in the face of shifting socio-economic circumstances. Additionally, the mural is a testament to the endurance of Saura cultural practices in the form of a symbolized representation of collective memory, while simultaneously ensuring a strong bond between human beings, ancestors, nature and the spiritual realm. Thus this visual construction is not only beautiful work of art, it is also a living Cultural Archive, an expression of the worldview and identity of the Saura Tribe that has persisted over the years.

6. Discussion

This integration, however, needs to take a step beyond the simple extraction of Indigenous knowledge as raw data, Rather than acknowledging its place in particular landscapes, cultural practices and self-determination. This requires an epistemologically pluralistic approach. Culture, values Indigenous ontologies and terminologies equally with Western ones and uses them in a common language for sustainable assessment and climate, scientific discourse. resilience (Karmakar & Pal, 2024; Maturano, Serrano, García, Magos, & Hersperger, 2021; Ijatuyi, Lamm, Yessoufou, Suinyuy, & Patrick, 2025, p. 119). This is essential in unlocking the potential to leverage knowledge from the Indigenous perspective to guide global sustainability, including climate change responses. The era of static and direct approaches to change is coming to an end, and promoting food security is becoming more of a challenge. The time of static and direct methods of change is over, and food security is a much more difficult to promote. (2024). Such integration is more than just the incorporation of indigenous practices, it is more of: understanding Indigenous knowledge as a comprehensive knowledge system which can offer innovative solutions to, The same applies to the contemporary environmental challenges, which are examined here by Magni (2017) and Datta, Singha and Hurlbert (2024). Indeed, There are differing opinions from various scholars that support the participation of indigenous people in mitigation projects. There are differing opinions from various scholars who support the participation of indigenous people in mitigation projects. as an ethic of community empowerment, remembering that it is a problem that has not been well solved. epistemologies can unwittingly contribute to the subjugation of indigenous knowledge in Western knowledge systems. The scientific paradigms (Chanza, Musakwa & Kelso, 2024, p. 10) are the paradigms adopted by scientific research. This calls for the development of inclusive

co-production processes that facilitate effective partnership and joint decisions, and moving beyond “tokenistic engagement” to really value and embody Indigenous perspectives into This enables them to be more sensitive to the needs of children and young people. This enables them to be more attuned to the needs of children and youth. Kelso, 2024, p. 8).

7. Results

The results will elaborate how Saura traditional economic systems are interconnected with the resources, Parts of their work that are used and the symbols that have been incorporated into their art forms, emphasising examples Where these art forms reflect sustainable actions and ecology knowledge. Furthermore, the The motifs and patterns of Saura art that directly correlate with agricultural will be identified through research. The art's emphasis on cycles, forest resource management and traditional dietary practices are clear indications. The use of cycles, forest resource management and traditional dietary practices are clear indications of the art's emphasis. It is their role to act as a visual ethnography of their adaptive strategies (Morell, et al., 2025; Ghosh-Jerath, et al., 2019). It will also discuss external stresses on it due to modernization and climate change. the traditional systems and expressions are leading to changes in livelihood strategies, It's also the possibility of losing unique cultural knowledge (Zimmerer, 2014; Ghosh-Jerath, et al., 2021, p. 3). Furthermore, the effectiveness of community owned solutions in solving these issues will be examined. opportunities and the balance between resisting external influences and adapting to them, required students to be aware of this. They need to be able to live in culture for a long time (Vieira et al., 2016, p. 11). This investigation into Saura art and The aim of economic practices is to join the vast arena of discussions on the integration of indigenous knowledge. with sustainable development agendas, especially through reminding people of the possibilities of traditional The ecological knowledge was used to inform resource management in the present day (Magni, 2017). This is in line with the general academic debate on integrating indigenous knowledge, The use of systems in strategic planning and sustainable development, where IKS is identified as an important and key instrument to inform resource management and production procedures (Chapke), Satyavathi, Babu, & Laxmiprasanna, 2025).

8. Conclusion

This study has shed light on the interdependence of Saura tribe's traditional life and society with respect to each other. economies and livelihoods based on resources and their unique expressions of art,

knowledge. showing the ability of Saura art to be an advanced knowledge bank of traditional ecological knowledge. Knowledge and Socio-economic strategies. It highlights the need for inclusive policy measures not Seek to recognize but not necessarily incorporate Indigenous knowledge systems into the current resource Management and sustainability initiatives. This integration requires acknowledging Indigenous knowledge as a not just an adjunct of information but as a A valid but equally parallel knowledge system is one that has a different epistemological base (Lam, et al., 2020, p. 9). This perspective helps to build partnerships and collaborations that include Indigenous perspectives. in decision making for land management and conservation towards a more inclusive The framework for sustainable development. Furthermore, recognizing Indigenous knowledge systems can make important and meaningful contributions to the world in terms of their intrinsic value and use. reveal the current state of sustainability alongside evidence of future decline or recovery. can deliver culturally appropriate indicators and methodologies that highlight the state of sustainability now and indicate future potential for decline or recovery. The rest of the participants will emphasize indigenous self-determination and sovereignty (Turner, Cuerrier, & Joseph, 2022; Maturano, (Serrano, García, Magos, & Hersperger, 2021). This view is shared by the emerging literature. Promoting the amalgamation of traditional and scientific knowledge for better knowledge enhancement The knowledge and skills that have been developed, especially in environmental management, agriculture and healthcare, is well rooted. Regarding knowledge, indigenous communities have a knowledge about their local ecosystems and sustainable practices (Das, Das, Seikh, & Pandey, 2021; Ijatuyi, Lamm, Yessoufou, Suinyuy, & Patrick, 2025, p. 61573). This approach problematizes existing paradigms by emphasizing co-production of knowledge, which is fundamental for Practicing effective and culturally appropriate approaches for DRR and community resilience. This is especially important in the context of the environment's history, particularly as it pertains to the Earth's atmosphere. Marginalization of Indigenous knowledge systems and present demand for social justice in recognizing their significant work in conservation and sustainable development (Molnár, et al., 2023, p. 110207). The Saura case study offers valuable learning, then, there is a greater need for a policy that integrates Indigenous knowledge systems and encourages increased awareness of Indigenous protocols for living in harmony with the environment. A strong, culturally relevant, environmental

responsibility and socio-economic sustainability strategy. This may involve encouraging (or enabling) peer education within formal education. to boost adaptive capacity and create new pathways for science-knowledge creation. Incorporating the Sustainable Development Goals (SDGs) in the policy-making process to enhance results of policy implementation (SDGs). This method would help in developing a more complex understanding of the situation. socio-ecological systems, which help in achieving more effective and equitable solutions to global challenges. Furthermore, there is considerable overlap between these two groups: From Indigenous territories to biodiversity hot-spots, through Indigenous knowledge systems. provides important opportunities to rethink the relationship between humans and nature, and to promote sustainability Different from the traditional western models (Coscieme, et al., 2019, p. 40). This necessitates a paradigm Recognize the need for shift in global sustainability policies towards place-based, bottom-up methods, The complex interdependency between Indigenous and local knowledge systems and the particular The study took place in three different environments. A paradigm change is essential to build strong and adaptive governance models that can be effective in tackling the many facets of The adverse conditions of environmental degradation and climate change (Diansyah, Abas, & Sakawi, 2022) are among the challenges. Younus, Meiyani, & Kosasi, 2026, p. 2). Such models need to actively support Indigenous people. Peoples and local communities in policy making and decision making processes, acknowledging peoples and local communities, baseline information on setting realistic biodiversity targets and their rights to their ancestral territories and resources.

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