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### Empowering tribal livelihoods through agro-tourism: A case study from Kolitmara, Pench tiger reserve

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#### Abstract

Agro-tourism offers a significant opportunity for sustainable development, especially for tribal communities with deep agricultural roots. This study investigates the role of agro-tourism in improving the livelihoods of the Gond community by conducting a case study of an agro-tourism project in the Kolitmara of Pench Tiger Reserve (PTR), Maharashtra. The agro-tourism initiatives launched in 2022 focused on capacity-building programs that empower farmers to adopt sustainable agricultural practices, reduce rural-to-urban migration, and create local employment. The findings are based on in-depth interviews with various stakeholders, including forest department officials, eco-development committees (EDCs), SHG members, local Gond residents, and tourists. A series of FGDs have also been conducted to verify the findings and develop deeper insights. The findings reveal key practices, challenges, and strategies that effectively combine tourism with agriculture in tribal areas. The initiative has mitigated illegal activities such as hunting, assisting wildlife conservation, particularly for tigers, and lessening biotic pressures on forests. The integration of rural development programs through agreements between the Tiger Conservation Foundation, district authorities, and eco-development committees (EDCs) ensures a coordinated development approach. Agro-tourism in the Kolitmara has emerged as a significant driver of economic development and cultural preservation for the local tribal community. This study examines the multifaceted impacts of agro-tourism, highlighting its role in fostering cultural pride, empowering women through self-help groups (SHGs), and generating additional income streams. However, challenges such as poor connectivity, limited infrastructure, and inadequate marketing efforts have constrained its potential. This research underscores the need for improved road access, comprehensive marketing strategies, and targeted investments in infrastructure to enhance the tourist experience and attract a larger audience.

**Keywords:** Agro-tourism, pench tiger reserve, rural development, sustainable livelihood, tribal communities

#### Introduction

Agro-tourism, also known as agritourism, is defined as the practice of attracting visitors and travelers to agricultural areas, typically farms, ranches, or agricultural businesses, for the purpose of entertainment, education, or active involvement in farm operations (Barbieri & Mshenga, 2008; Phillip *et al.*, 2010) <sup>[3, 14]</sup>. Agro/agritourism can be defined as expanding and opening agricultural activities as a tourism spot for visitors from different places. It is also considered a diversification of core agricultural work. "In the agro-tourism sector, diversification is shown through the presence of recreational and cultural services and through the preservation and enhancement of the territory (e.g., direct sales, birdwatching)" (Giaccio *et al.*, 2018) <sup>[5]</sup>. This form of tourism enables tourists to experience agricultural life first, thereby fostering a better understanding of farming and rural living while supporting the local agricultural economy. "Agro-tourism involves any agriculturally based operation or activity that brings visitors to a farm or ranch" (Che, Veeck, & Veeck, 2005) <sup>[4]</sup>. Agro-tourism may involve tourists visiting working farms or agricultural operations to

experience farming, participate in activities, and learn about agricultural practices. Agro-tourism, which combines agriculture with tourism, offers a unique way to diversify rural economies, especially in tribal areas where traditional farming practices prevail. To achieve Sustainable Development Goals (SDGs) 8, 12, and 14, the World Tourism Organization (WTO) proposed tourism activities and facilities as an instrument (Khangarot & Sahu, 2019) <sup>[9]</sup>. Agro-tourism has emerged as a promising avenue for sustainable rural development, offering economic opportunities while preserving local culture and the environment (Apaza-Panca *et al.*, 2020; Ammirato *et al.*, 2020, Tew & Barbieri, 2012) <sup>[2, 1, 18]</sup>. Various systematic literature reviews have been conducted to analyze the field's research landscape, identifying key themes and future directions of agro-tourism research (Rauniyar *et al.*, 2020; Jamalludin *et al.*, 2024) <sup>[17, 8]</sup>. These reviews highlight the multidisciplinary nature of agro-tourism research, encompassing topics such as rural development, sustainability, and tourism management. Studies have shown that agro-tourism can mitigate rural-urban migration,

generate employment, and promote local identity (Apaza-Panca *et al.*, 2020) <sup>[2]</sup>. Additionally, it serves as an educational tool for visitors to learn about agriculture while providing income diversification for farmers (Jamalludin *et al.*, 2024) <sup>[8]</sup>. However, challenges remain in balancing tourist needs with those of rural communities and minimizing environmental impacts (Ammirato *et al.*, 2020) <sup>[1]</sup>. Overall, agro-tourism represents a viable strategy for achieving sustainable rural development goals.

### Rationale for the study

Agro-tourism, a niche form of tourism that allows urban residents to experience rural lifestyles and agricultural practices, is gaining popularity in India because of its potential economic and cultural benefits (Havale & Chaudhari, 2022) <sup>[7]</sup>. It offers advantages for farmers, local communities, and tourists, including additional income streams, job creation, and opportunities to connect with nature (Mahida, 2023) <sup>[11]</sup>. Kolutmara is one of the entry points for the Pench Tiger Reserve in Maharashtra. It is approximately 80 km from Nagpur city. It harbors the backwaters of the Pench Reservoir, which draw many species of birds as well as wild animals to it. The management of the Pench Tiger Reserve (PTR) started agro-tourism in Kolutmara, which is situated on the western bank of the Pench River under the Nagalwadi buffer range of the reserve's west side, from 2021–22. The agro-tourism project involves bullock cart riding, buffalo riding, and participation in farm activities. Tourists are introduced to the rich tribal culture, their daily lives, festivals, and farming techniques of the different crop varieties being grown in the village. Tourists can also enjoy boating in the nearby Pench River against the backdrop of a scenic, serene forest landscape. Tourists can enjoy the rich bird diversity and heritage of the area. Stargazing and staying at machaans erected on the village farm would make their night memorable. Other features include interactions with tribal communities, rural games, and sunrise and sunset views. Local cuisine is cooked and served to visitors on an agricultural farm via locally grown vegetables. This is an initiative of the Pench Tiger Reserve. This project involved the Kolutmara Eco-Development Committee and the Anandibai Self-Help Group (SHG) in implementation. Kolutmara also has a stay facility in its tourism complex where tourists can book safaris. The cost of all the activities is Rs. 2,000 per family, excluding machaan stay and food. The project envisages providing direct employment to approximately 50 local tribal families.

The Indian Society of Ecological Economics reported that some of the greatest obstacles to effectively managing agro-tourism include the high cost of land development, initial investment, staff members' poor communication skills, the inability to add new activities, and the absence of specific policies for agro-tourism promotion (Krishna, 2019) <sup>[10]</sup>. Agro-tourism has several influencing growth factors, such as climate, socioculture, demography, and economic background, as a newly emerging phenomenon in the urban population (Havale & Chaudhari, 2022; Mahida, 2023) <sup>[7, 11]</sup>. The promotion of agro-tourism, while promising, involves several significant challenges that must be addressed to ensure its success. The key factors influencing the growth of agro-tourism include climate conditions, sociocultural

dynamics, demographic variables, and economic background (Havale & Chaudhari, 2022) <sup>[7]</sup>. For example, the Kolutmara project has the potential to enhance rural economic development and create employment opportunities, provided that these challenges are effectively managed. Furthermore, the attitudes of young adults toward agro-tourism are crucial, as they reflect evolving consumer preferences and lifestyle choices (Vasavada, 2020) <sup>[19]</sup>. Understanding perceptions is essential for crafting sustainable agro-tourism practices and policies in India (Vasavada, 2020; Mahida, 2023) <sup>[19, 11]</sup>. Investigating the opportunities and obstacles associated with agro-tourism in Kolutmara is therefore vital. This case study was performed to understand the factors mentioned above to maximize the benefits of agro-tourism while minimizing its potential drawbacks. Hence, this study was conducted to study local tribes' perceptions of the potential for agro-tourism in Kolutmara. Efforts have been made to document possible challenges in promoting and sustaining agro-tourism projects in Kolutmara through participatory observation.

### Methodology

The research adopts a qualitative case study approach, analyzing instances of agro-tourism projects in and around the Kolutmara of Pench tiger reserve tribal regions. Data are collected through in-depth interviews with various stakeholders, focused group discussions, participant observation, and a review of secondary sources. The data were also collected by administering an interview schedule to tourists visiting Kolutmara agro-tourism sites and people willing to travel and visit agro-tourism destinations in the Kolutmara in the Pench Tiger Reserve. The study covers in-depth interviews with five forest department officials from Pench Tiger Reserve Management, five from the Kolutmara Eco-Development Committee, five Anandibai SHG members, and 30 tourists visiting an agro-tourism facility. The study was conducted from April–May 2024.

### Results

The results have been categorized into objectives such as local tribal people's perceptions of the potential of agro-tourism in Kolutmara, challenges mentioned and observed in the field for promoting and sustaining agro-tourism, and possible impacts of agro-tourism on the livelihood and culture of local tribal people.

#### Local tribal people's perceptions of the potential of agro-tourism in the Kolutmara

The local tribal people of Kolutmara perceive agro-tourism as a transformative force that has brought economic and social benefits to their community. Traditionally reliant on fishing and farming, the introduction of agro-tourism has diversified income sources and has the potential to significantly boost household earnings by an additional 50--60k INR annually. This new revenue stream has reduced the need for migration to urban areas, helping to maintain the community structure and preserve local culture. Research has explored agro-tourism and sustainable agriculture as potential livelihood strategies for tribal communities. Agro-tourism projects have shown promise in creating jobs, promoting inverse migration, and conserving land in marginalized areas (Olya, *et al.*, 2014) <sup>[13]</sup>.

The cultural exchange enabled by agro-tourism has instilled a sense of pride among local villagers, who engage tourists in traditional practices such as farming, fishing, and bullock cart rides. The commercialization of local handicrafts, pottery, and other handmade products will slowly emerge as a significant income stream, particularly benefiting self-help groups (SHGs). This development will also contribute to the financial empowerment of women, who are increasingly involved in various tourism-related enterprises. Despite these successes, as stated by respondents, there is a recognized need for further development, including the expansion of infrastructure such as machaans (heighted bamboo structures and Traditional Gond houses) and the establishment of shopping centers to promote local products. Promoting handicrafts can attract more tourists and support local culture. Overall, local tribal people view agro-tourism as a vital initiative that not only enhances their economic stability but also empowers women and preserves their cultural heritage, with ongoing improvements promising even greater benefits for the Kolutmara.

### Challenges for promoting and sustaining agro-tourism in Kolutmara

Agro-tourism faces numerous challenges in terms of its promotion and sustainability. Financial obstacles include high initial investment costs and labor expenses. Human resource challenges include the weak communication skills of staff and farmers' lack of commercial mindsets (Krishna *et al.*, 2019; Vishwanath *et al.*, 2022) <sup>[10, 20]</sup>. Technical challenges involve insufficient literature on agro-tourism practices. Policy-related issues include a lack of governmental support and specific promotion policies (Krishna *et al.*, 2019; Vishwanath *et al.*, 2022) <sup>[10, 20]</sup>. Seasonal fluctuations in tourist numbers during peak agricultural activities also pose difficulties. It is also well understood that farmers often lack experience and expertise in tourism management, requiring new skill development. In the present study, major challenges, as observed and mentioned by the respondents, were categorized under accessibility, marketing, seasonality, and lack of training and support.

#### 1. Accessibility

Accessibility toward agro-tourism is observed in the field, and tourists' viewpoints are taken. The majority of the respondents agreed with the statement that agro-tourism is impacted by poor road conditions and connectivity. Furthermore, we find that tourists agree with the statement that better connectivity with nearby cities affects the accessibility of agro-tourism locations. Kolutmara Agro-tourism is approximately 12 km from the main road, which actually affects the footfall of tourists in these centers. Overall, better accessibility positively affects the agro-tourism activity of a region. In December 2023, the Tribal Minister of Maharashtra visited Kolutmara, drawing attention to the region's critical connectivity issues. Traveling from Kuwrahmsen to Kolutmara by boat, the minister underscored the community's efforts to enhance transportation through the river. Despite the previous failure of the Waghpur Express (a camphor service started by Satpuda foundation, a prominent foundation working in PTR Maharashtra), there is a pressing need for a reliable and

affordable transport system to facilitate tourism in Kolutmara. The community opinion leader and Satpuda Foundation officials highlighted that many people from Nagpur and other locations are eager to visit but lack accessible transport options. Restarting Waghpur Express could significantly increase tourism by providing a convenient travel method. Currently, Kolutmara can be reached by two routes: Nagpur-Parsheoni-Navegaon Khairi-Kolutmara and Nagpur-Koradi-Patansaongi-Khapa-Koth-Kolutmara. Field observations and tourist feedback reveal that poor road conditions and a distance from main roads of approximately 12 km significantly deter tourists, impacting agro-tourism. The majority of respondents agreed that improved connectivity with nearby cities would enhance access to these locations. Enhancing road conditions and developing reliable transport will positively impact agro-tourism in Kolutmara, attracting more tourists and increasing local employment and economic development. Improved accessibility is crucial for the sustainable growth of agro-tourism, providing a stable livelihood for the local tribal community.

#### 2. Marketing

Agro-tourism initiatives may not receive as much attention or be as successful as they could be due to difficulties in marketing farm-based products and drawing tourists to rural areas (Praharee, 2021) <sup>[15]</sup>. Field observations and FGDs indicate that the Kolutmara agro-tourism project holds significant potential; however, the absence of a robust marketing strategy has hindered its promotion. While some posters are present, their impact is limited and insufficient to generate broad awareness. The forest department has attempted to increase visibility through promotional videos on YouTube, but these efforts have not effectively reached a wide audience. Additionally, tourists who visit the site are given visiting cards, which serve as a minimal promotional tool. The absence of extensive marketing strategies such as posters, banners, flyers, and robust social media marketing campaigns significantly limits the visibility of the Kolutmara agro-tourism project. Effective marketing is crucial for attracting more visitors, especially from urban areas such as Nagpur, Mumbai, and Pune, which are interested in rural and ecotourism experiences.

The current minimal marketing efforts fail to leverage the full potential of agro-tourism, thereby missing opportunities to increase tourist footfalls and, consequently, local employment and revenue. To realize the full benefits of agro-tourism, a comprehensive marketing strategy is urgently needed. This should include the widespread distribution of posters, banners, and flyers in strategic locations, both locally and in nearby urban centers. Additionally, a strong digital marketing campaign, including social media engagement, search engine optimization, and targeted advertisements, can significantly enhance visibility. By addressing these marketing gaps, the Kolutmara agro-tourism project can attract a larger audience, ultimately leading to greater economic development and community empowerment.

#### 3. Seasonality

Agro-tourism is highly dependent on seasonality. Agro-tourism in India faces several challenges, including

seasonality, which affects tourist arrivals and revenue stability (Mishra *et al.*, 2018) <sup>[12]</sup>. The summer season is hot mainly in the Pench Tiger Reserve. Owing to this weather condition, the tiger reserve attracts the majority of tourist visits during the winter season. People from the tourism industry and resort owners in the locality are not interested in diversifying their businesses in other directions and are involved in the routine Tiger centric tourism. To address the issue of seasonality, farmers require additional support in the form of complete tourism packages to sustain livelihoods throughout the calendar. This will require additional investment in the construction of infrastructure in the form of comfortable homestays and allied tourism activities to sustain the interest of tourists at agro-tourism sites. To support this, forest department has started paragliding, Para motoring, nature trails and such kind of activities in the winter season as summer season is very uncomfortable

#### **4. Lack of capacity to run hospitality business and government support**

Unlike other service industries, tourism relies heavily on continuous interactions with visitors. Providing exceptional service is essential to ensuring customer satisfaction in this sector. Lack of governmental support was the major challenge, though Government support is provided through EDC in form of LPG connections, subsidy on farming equipment, monitoring support in farm fencing etc. Agrotourism initiative started by forest department just to help some families of village but through agrotourism, it is impacting more people and promoting rural tourism hence giving employment to a more population as expressed by the vast majority of the farmers. Whereas almost three-fourths of the farmers, expressed that there was no specific policy for promoting agrotourism. The probable reason for the abovementioned challenge might be that since the concept has emerged in the recent past, proper research has not been undertaken, and policy recommendations have not been put forth before the government (Vishwanath *et al.*, 2022) <sup>[20]</sup>. The financial support and infrastructure in tribal areas of the Pench Tiger Reserve remain underdeveloped. Consequently, tribal farmers frequently rely on private moneylenders to meet their financial needs. The absence of banking institutions or the complexity of their procedures often impedes tribal farmers from securing loans. For tribal farmers interested in developing agro-tourism sites, significant investment is required to make these sites appealing to visitors.

This financial constraint poses significant challenges for tribal farmers interested in developing agro-tourism sites, as substantial investments are needed to make these sites attractive to visitors. To address these issues, the government has introduced several initiatives to promote and support agro-tourism. The Village Micro-Plan, prepared under the guidance of the concerned R.F.O. and distributed among senior F.G.s and foresters, aims to identify and fulfill the urgent needs of villagers, thereby minimizing the burden on forests. Through the Eco-Development MicroPlan, activities such as the distribution of LPG connections, improved chullas, and pressure cookers have been carried out, along with the provision of community assets such as watering points for village cattle. Furthermore, 39 youths

are receiving livelihood training in hospitality management in association with NGOs. However, these efforts are not sufficient. The situation is different in the case of the agro-tourism sector than in routine tourism, where the major players are hotel or resort owners, tour package and taxi operators, guides, and others. The existing agrotourism sites in Koltimara, which were established in 2022, are very limited in number or run as an allied activity with the support of the forest department. The agro-tourism sector still lacks the involvement of large players. This leads to the sector being unorganized. To promote agro-tourism, the local tribal people who are involved in agro-tourism do not possess the necessary skills to be able to design and deliver services according to the requirements of the visitor.

#### **Possible impacts of agrotourism on the livelihood and culture of local tribes**

The sociocultural impact of agro-tourism in Koltimara is measured through participatory discussions with the community and through the responses of forest department officials.

#### **Sociocultural impact of agrotourism**

Agro-tourism has emerged as a significant tool for socioeconomic development in rural communities. Studies in Malaysia and China have shown that agro-tourism can provide supplementary income, create new employment opportunities, and alleviate poverty. It also contributes to environmental conservation and cultural appreciation (Li Yang, 2012; Hamzah *et al.*, 2012) <sup>[21, 6]</sup>. The local tribals of Koltimara have varied opinions regarding the sociocultural impact of agro-tourism. During the discussion, most respondents disagreed with the notion that agro-tourism promotes local culture. A closer examination reveals that during the discussion, respondents believe that agro-tourism has the potential to improve the quality of life of local residents, as it provides a seasonal additional livelihood option. In contrast, during the discussion, a few respondents believed that the influx of outsiders due to agro-tourism would lead to an increase in local crime. The majority of respondents disagreed with the statement that agro-tourism causes conflicts between visitors and the local population. However, challenges persist in developing and operating agro-tourism enterprises, necessitating government support (Li Yang, 2012) <sup>[21]</sup>.

#### **Impact of agro-tourism on the livelihood of local tribes**

Agro-tourism has the potential to significantly increase household incomes and reduce reliance on traditional farming alone. Studies conducted in Kangra Valley, India, and Kruger National Park, South Africa (Rogerson, 2012), have demonstrated that agrotourism can generate income for local communities, alleviate poverty, and empower women entrepreneurs. Recently, initiated agro-tourism in Koltimara has significantly contributed to local employment, engaging 30 to 40 people in various roles. For example, women from self-help groups (SHGs) manage canteens on farms, whereas boat owners and bullock cart operators benefit from the influx of tourists. This initiative has transformed the local economy, supplementing traditional farming revenue with an additional 40--50k INR annually, providing work opportunities on weekends and some weekdays.

Tourists are drawn to the authentic village experience, asking questions about farming, learning to catch fish, and enjoying activities such as bullock cart rides and boating. They also appreciate the local cuisine including witnessing entire process of harvesting vegetables to cooking and the unique experience of sleeping under the open sky, aspects not found in urban environment. The advent of agro-tourism has contributed to the emergence of souvenir shops, creating additional revenue streams for local communities. Previously, tourism in the area was confined primarily to safaris and accommodations provided by private hoteliers. However, new initiatives such as the Dark Sky Initiative (It has been recently declared as India's first ever dark sky park, and fifth in Asia) and nature trails have recently been introduced, garnering substantial interest, especially from urban centers. The willingness of tourists to pay for these distinctive experiences suggests promising potential for increased revenue.

While specific data on per-day payments to local people from agro-tourism are not provided, the additional income and employment opportunities mentioned indicate a substantial positive impact. This shift not only provides financial support but also promotes a sustainable model of tourism that benefits the local community and reduces pressure on forest resources.

### Discussion

Agro-tourism in Koltimara provides an additional livelihood opportunity for the local tribal community, fostering stronger community bonds, increasing cultural pride, and enhancing the engagement of youth in local enterprises. Field investigations revealed that capacity-building programs focused on sustainable agricultural practices have been implemented for farmers. The promotion of these practices contributes to biodiversity conservation, potentially reducing rural-to-urban migration. To advance agro-tourism in Koltimara, a multipronged strategy is essential. Since the initiative began in 2022, ensuring the active participation of tribal members from the planning phase onward is crucial. This approach helps address potential community concerns from the outset and facilitates the efficient implementation and monitoring of activities by keeping local stakeholders involved throughout the process. Koltimara, known for its rich biodiversity and cultural heritage, presents significant potential for agro-tourism ventures. However, to effectively harness this potential, it is essential to implement capacity-building and training programs for local communities. Diversifying income sources is crucial for a population historically dependent on fishing and agriculture. The agro-tourism initiative has also positively impacted the environment by providing legitimate employment opportunities, thus diverting locals from illegal activities such as hunting. This shift contributes to wildlife conservation, particularly that of tigers, and reduces biotic pressure on forests. Engaging local communities in tourism will foster positive relationships with forest departments and encourage the adoption of sustainable practices. The integration of rural development programs in the buffer zone, supported by formal contracts and agreements between the Tiger Conservation Foundation, district authorities, and eco-development committees (EDCs), may ensure a coordinated approach to development while

addressing wildlife conservation concerns. The formation of EDCs, self-help groups (SHGs), and nature cushions, along with the confederation of these committees, promotes self-sufficiency and community involvement in tourism management.

The tourism benefits are directed to EDCs, which, in return, commit to protecting the Tiger Reserve and reducing biotic pressures. Additionally, government schemes such as those offered by the National Bank for Agriculture and Rural Development (NABARD) and subsidies for sustainable tourism projects provide financial support to tribal farmers, enabling them to develop agro-tourism sites and improve their livelihoods. Stakeholders unanimously agree that policy-level research, combined with public-private partnerships, is essential for the promotion and sustainability of agro-tourism in the region. By enhancing the skills of ecotourism guides to become naturalists, the local community can offer more enriching experiences to visitors, such as identifying various types of spiders, dragonflies, and other biodiversity, beyond just tiger sightings. Enhancing the capacity of local guides and expanding tourist activities can further increase the economic benefits for the community, ensuring long-term sustainability and growth.

### Conclusion

This study explores the potential of Koltimara village within the Pench Tiger Reserve for agro-ecotourism development and highlights several key opportunities. Integrating the unique tribal culture, showcasing traditional practices alongside sustainable living methods, and offering authentic experiences such as farm-to-table cuisine can significantly enhance tourist appeal. The findings suggest that promoting homestays managed by the Gond community, with options ranging from eco-huts to deluxe rooms, can address current accommodation limitations. Furthermore, expanding the existing agro-ecotourism center to encompass more families within the village would create a more robust and inclusive tourism infrastructure. Encouraging traditional handicrafts and ensuring fair pricing through government-regulated charts would not only benefit local artisans but also foster cultural appreciation among tourists. The unique cultural heritage, traditional practices such as mud houses and organic kitchen gardens, and the existing successful model run by a single family demonstrate the viability of this approach. Today, importance is given to modern music, but this form of tribal dance and music is 300 years old and should be promoted. Additionally, expanding access to tourist entry gates and extending the jungle safari area would cater to diverse tourist preferences and enhance research opportunities related to biodiversity. Overall, this study underscores the potential of agro-tourism to empower the Gond community, generate diverse income streams, and promote sustainable development within the Koltimara village of the Pench Tiger Reserve. Implementing a holistic approach that prioritizes community involvement, capacity building, and strategic marketing will be crucial for realizing the full potential of this initiative. By implementing these strategies, Koltimara can leverage agro-ecotourism to generate diverse income sources for the Gond community, promote cultural preservation, and achieve sustainable development within the Pench Tiger Reserve.

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**Conflict of interest**

All the authors declare that they have no conflicts of interest.

**Author statement**

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