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THE ONE-GATE MANAGEMENT SYSTEM AND TEMPLE CONSERVATION: A COMPARATIVE STUDY OF BOROBUDUR AND ANGKOR WAT TEMPLES

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ABSTRACT

This study aims to analyze the management of Borobudur Temple in Indonesia and Angkor Wat in Cambodia as world heritage sites, focusing on a comparison between single-gate management and conservation-based approaches. The research adopts a qualitative descriptive method, involving data collection through literature review, observation, and interviews. Data analysis is conducted using the Miles and Huberman approach, which includes data reduction, data presentation, and conclusion drawing. The findings reveal that the management of Borobudur Temple has undergone significant transformation, shifting from multi-party management to a single-gate system in 2024 under InJourney Destination Management (IDM). This approach integrates Borobudur as both a tourist destination and a place of worship for Buddhists, with challenges arising in harmonizing conservation and tourism needs. Meanwhile, Angkor Wat has been managed by the APSARA Authority since 1995, with a stronger emphasis on conservation and controlled management to maintain its appeal to tourists while prioritizing the preservation of its cultural and historical values. The study concludes that single-gate management has the potential to enhance efficiency and synergy but requires adaptive strategies to ensure conservation sustainability. The novelty of this research lies in its comprehensive comparison of two management models, offering valuable insights for managing other world heritage sites. The study recommends a more balanced integration of tourism, conservation needs, and local community involvement to support the advancement of social sciences and humanities, particularly in the field of cultural heritage management studies.

Keywords: *Angkor Wat, Borobudur Temple, Single-Gate Management, Tourism, World Heritage Site Management*

INTRODUCTION

Management of world heritage sites presents a range of complex challenges, encompassing cultural preservation, tourism development, and local community empowerment (Liu et al., 2022; Nag & Mishra, 2024). Borobudur Temple in Indonesia and Angkor Wat in Cambodia, as two UNESCO-recognized world heritage sites, face similar management issues. The management of Borobudur Temple, previously overseen by multiple stakeholders, transitioned in 2024 to a one-gate system under InJourney Destination Management (IDM) (Achmad, 2018). However, this shift has introduced various challenges, including balancing conservation needs, tourism sustainability, and its religious function as a Buddhist worship site (Chatterjee, 2021;

Miura, 2022). Meanwhile, the management of Angkor Wat by the APSARA Authority since 1995 has emphasized cultural value conservation and controlled tourism access (Sok et al., 2023). The importance of this research lies in addressing the urgent need to understand and compare one-gate management and conservation models, which remain underexplored, particularly in the Southeast Asian context.

Previous studies have extensively discussed heritage site management but with differing focuses. For example, research by Hosseini et al. (2021) and Labadi et al. (2021) highlighted the importance of collaborative management among governments, private sectors, and local communities in ensuring the sustainability of world heritage sites. Their study demonstrates that effective collaboration can enhance conservation efficiency and tourism appeal. In Indonesia, Putri et al. (2022) revealed that Borobudur's management prior to the one-gate system often suffered from fragmentation and lack of coordination. This study serves as a foundation for evaluating whether the one-gate system can address these issues.

Furthermore, research by Esichaikul & Chansawang (2022b, 2022a) indicated that community-based approaches in managing world heritage sites, such as at Angkor Wat, positively impact the preservation of cultural values. This study emphasized the role of the APSARA Authority in empowering local communities, although challenges remain due to the pressures of mass tourism (Rashid, 2020). These findings are relevant in comparing how community-based approaches in Cambodia differ from corporate-based management in Indonesia.

Recent research by Trogisch & Fletcher (2022) explored the dynamics of conflicts between conservation and tourism at various world heritage sites. Their study identified that one-gate management could reduce conflicts of interest but risks overlooking local community involvement (Afdhal, 2023). This perspective is crucial for evaluating the management changes at Borobudur in 2024. Additionally, UNESCO (2024) provided general guidelines for world heritage site management, including the importance of multi-stakeholder engagement strategies. While these guidelines are comprehensive, they lack an in-depth comparative analysis of management models applied at Borobudur and Angkor Wat. This research gap highlights the need to understand how different approaches impact the preservation and utilization of world heritage sites.

This study also builds on research by Kulkov et al. (2024), which emphasized the significance of digital technology in supporting heritage site management. The use of technology for conservation monitoring and tourism access control at Angkor Wat has become an example of best practices. However, similar implementations at Borobudur require further evaluation, particularly in the context of its transition to a one-gate system (Tranter et al., 2022). While many studies have examined conservation and tourism aspects separately, there is a lack of holistic analyses that connect these two dimensions in a cross-country comparative context. Existing studies tend to focus on a single location or independently address conservation and tourism aspects, leaving a gap in understanding their interaction in world heritage management. By examining the similarities and differences in the management of Borobudur and Angkor Wat, this

research seeks to provide deeper insights.

The novelty of this research lies in its comparative approach, integrating the analysis of one-gate management at Borobudur with community-based conservation at Angkor Wat. This perspective not only offers practical insights into the effectiveness of both management models but also helps identify adaptable elements for managing other world heritage sites. This more comprehensive approach is expected to offer adaptive and sustainable solutions to the challenges of conservation and tourism. Additionally, this study is not only relevant to world heritage site management but also contributes theoretically and practically to understanding the relationship between conservation, tourism, and local community empowerment. The findings can serve as a vital reference for policymakers and heritage site managers in designing more effective and inclusive management strategies.

RESEARCH METHOD

This study employs a qualitative descriptive approach aimed at providing an in-depth understanding of the management of world heritage sites, particularly Borobudur Temple in Indonesia and Angkor Wat in Cambodia. This approach is considered relevant as it allows researchers to uncover the meanings, patterns, and social dynamics underlying the management of these two sites, as well as explore the interactions between conservation, tourism, and local community empowerment. As suggested by Leavy (2022), qualitative methods are highly suitable for understanding cultural tourist behavior and holistically managing tourism destinations. This method also offers the flexibility to interpret social phenomena contextually and comprehensively, as supported by previous research.

To gather rich and in-depth data, this study relies on three primary data collection techniques: observation, interviews, and documentation. Observation was conducted directly at the research locations, Borobudur Temple and Angkor Wat. A participatory observation approach enabled the researcher to understand the physical environment, visitor dynamics, and management practices through direct observation of interactions between visitors and site management staff. This approach captured contextual details that could not be obtained through interviews or documentation.

In-depth interviews served as the second technique, providing direct information from key informants, such as site management staff, policymakers, and representatives of local communities. At Borobudur Temple, interviews included staff from InJourney Destination Management (IDM) and local community members actively involved in site management. At Angkor Wat, interviews focused on staff from the APSARA Authority and local communities engaged in cultural preservation. The interviews explored issues related to conservation, tourism strategies, and local community empowerment, offering a comprehensive perspective on the challenges and management strategies at both sites.

Documentation complemented the observational and interview data by collecting written materials such as annual reports, scientific articles, books, journals, and UNESCO guidelines on world heritage site management. Additionally, documentation included photographs, maps, and relevant digital artifacts to provide historical context and strengthen empirical findings. The collected data were analyzed using the interactive model by Miles & Huberman (2020), which involves three stages: data reduction, data display, and conclusion drawing. During the data reduction stage, information gathered from various techniques was filtered and focused on aspects relevant to the research objectives, while identifying key patterns and themes. The reduced data were then organized into narrative descriptions, diagrams, tables, and relationship matrices between categories to provide a comprehensive depiction. The final stage, conclusion drawing, involved inductive and deductive interpretations to answer the research questions. The validity and reliability of the findings were tested through data triangulation from multiple sources. This ensured the robustness of the conclusions and provided a well-rounded analysis of the management of Borobudur Temple and Angkor Wat.

RESULTS AND DISCUSSION

The Functions of Borobudur Temple as a Spiritual, Educational, and Tourism Facility

Borobudur Temple, an enduring symbol of Indonesia's rich cultural and spiritual heritage, was built around 800 AD during the reign of King Samaratungga of the Syailendra dynasty by Mahayana Buddhists. Located in Borobudur Village, Magelang Regency, the temple sits at coordinates 7°36'28" south latitude and 110°12'13" east longitude (Haldoko et al., 2014). Initially rediscovered by Sir Thomas Stamford Raffles in 1815, the temple was found in a state of severe disrepair. Subsequent restoration efforts began during the Dutch East Indies colonial era and continued after Indonesia's independence. Recognizing its immense historical and cultural value, the Indonesian government designated Borobudur as a National Cultural Heritage through the Minister of Education and Culture's Decree Number 286/2014, further cementing its role as an essential part of the nation's identity (Achmad, 2018; Ardiyansyah, 2019).

Borobudur Temple serves as a sacred site for spiritual practice, an educational medium, and a prominent tourism destination. Its design is deeply rooted in Buddhist cosmology, symbolizing the universe and the journey toward enlightenment. The mandala-shaped structure comprises a square base with concentric circular tiers. The central stupa at its apex represents the pinnacle of enlightenment, while the surrounding smaller stupas form a sacred spatial arrangement. These elements embody the Vajradhatu Mandala and Gharbhadatu Mandala, symbolizing absolute and relative realities, as explained in Buddhist philosophy (Utami et al., 2020). Since its first use as a modern spiritual center in 1953, initiated by Anagarika The Boan An and Khoe Soe Kiam, Borobudur has hosted significant Buddhist ceremonies such as Vesak, Asadha, Kathina, and Maghapuja. These events highlight its enduring role as a center for devotion and spiritual connection among Buddhists worldwide (Hermawan, 2019; Yatno, 2020).

The temple is also a repository of moral and philosophical teachings, evident in its intricate structures, ornaments, and reliefs. With six square platforms and three circular terraces, Borobudur is adorned with 2,672 relief panels and 504 Buddha statues. These panels depict stories from Buddhist scriptures such as Lalitavistara, which narrates Siddhartha Gautama's life, Jataka, which portrays his previous lives, and Avadana, which recounts tales of holy figures. The temple's ten pyramid-like levels represent the Dasabhumi, or the ten stages of Bodhisattva development, guiding individuals toward Buddhahood (Yatno, 2020). Additionally, the mandala-like design of the temple reflects Buddhist philosophy, believed to transform an individual's inner flow toward virtue and self-perfection.

Borobudur's educational role is further demonstrated through activities like the Indonesia Tipitaka Chanting, held annually during *Asadha*. This event provides an opportunity for Buddhists to engage deeply with the Tipitaka scriptures, which include the *Abhidhamma Pitaka* (philosophy), *Sutta Pitaka* (sermons), and *Vinaya Pitaka* (monastic rules). Such programs make Borobudur not only a place of worship but also a vibrant educational space for collective learning and spiritual growth (Yatno, 2020).

As a tourist destination, Borobudur attracts both general visitors and those seeking religious experiences. Its architectural beauty and cultural significance captivate audiences, while religious events, such as the Vesak lantern festival, add to its appeal. The influx of tourists has brought economic benefits to the surrounding community, leading to the development of hotels, restaurants, and souvenir shops. These facilities create employment opportunities, improving the local economy and enhancing the standard of living. Moreover, the interaction between visitors and locals fosters cultural exchange, promoting open-mindedness and harmony within the community (Yatno, 2020).

Through its architectural grandeur, spiritual significance, and cultural legacy, Borobudur Temple continues to inspire and connect people across generations. Its multifaceted role as a sacred site, educational medium, and tourism destination underscores its timeless relevance in bridging the past with the present and fostering a deeper appreciation of Indonesia's cultural heritage.

The One-Gate Management System at Borobudur Temple

Borobudur Temple, a magnificent testament to ancient craftsmanship, was in a state of severe damage when it was first rediscovered in 1815 during colonial rule. Over the years, the Indonesian government assumed responsibility for its preservation following the country's independence. However, the deteriorating condition of its stones presented a persistent challenge. Researchers from UNESCO, including Coremans, identified the phenomenon of "stone cancer" as a significant cause of the temple's decay. Environmental factors such as high humidity and fluctuating temperatures, exacerbated by rainwater, contributed to the gradual erosion of the temple's structure, a common vulnerability in ancient edifices (Binarti et al., 2022; Hasanah et al., 2020). To combat this degradation, Indonesia embarked on an ambitious restoration

project on August 10, 1973 (Achmad, 2018). A decade later, in 1983, Borobudur reopened to the public as a prominent tourist destination (Ardiani et al., 2022; Kusumowidagdo et al., 2022).

Recognizing the need for sustained preservation, PT Taman Wisata Candi Borobudur (TWC) was established on July 15, 1980, to oversee its management (Wiratmoko, 2012). Over time, the governance structure expanded to include the Borobudur Conservation Center (BKB) and the Magelang Regency Government, each playing a critical role in safeguarding this UNESCO World Heritage Site. The BKB focuses on the temple's architectural, historical, and cultural significance while also maintaining its dual function as a religious and tourist site. Meanwhile, the Magelang Regency Government's involvement stems from the temple's location within its jurisdiction. Together, these entities have delineated Borobudur into five distinct management zones, each with specific purposes to ensure holistic preservation.

Zone 1, known as the sanctuary zone, encompasses the core area of Borobudur, spanning approximately 0.078 km². Managed by the Borobudur Conservation Center under the Ministry of Education, Culture, Research, and Technology, this zone is dedicated to protecting the monument and its immediate surroundings. Adjacent to this is Zone 2, a buffer zone covering 0.87 km². This area serves to safeguard the historical environment and is managed by PT Taman Wisata Candi Borobudur, which operates under the Ministry of State-Owned Enterprises.

The outer zones—Zones 3, 4, and 5—fall under the purview of the Magelang Regency Government. Zone 3, with an area of 10.1 km², is designated as a development zone, fostering sustainable tourism and community involvement. Zone 4, a historical scenery preservation zone spanning 26 km², aims to protect unearthed ancient relics, ensuring they remain undisturbed. Finally, Zone 5, the largest at 78.5 km², is also a historical scenery preservation zone, providing an additional layer of protection to the temple's surroundings (Susiyanto, 2022; Sutono et al., 2021).

The collaborative efforts of these three entities reflect a comprehensive approach to preserving Borobudur Temple. By addressing architectural, environmental, and socio-economic factors, the governance framework not only safeguards the physical integrity of the temple but also nurtures its cultural and historical legacy for future generations. Each party involved in the management of Borobudur Temple implements policies aligned with their respective objectives and interests. One of the key stakeholders is PT Taman Wisata Candi (TWC), a company established on July 15, 1980, with the primary purpose of managing the environments of Borobudur, Prambanan, and Ratu Boko temples, along with other historical and archaeological heritage sites. Operating under the Ministry of State-Owned Enterprises (SOEs), TWC aims to optimize the utilization of its resources to produce high-quality, competitive goods or services while ensuring profitability. TWC's operations are divided into four core business pillars: Heritage Park, Cultural Park, Amenities, and Attraction (Kausar et al., 2024; Wijayanti & Santoso, 2022).

To achieve its objectives, TWC oversees the temple environments as tourist parks, which involves technical operations, maintenance, and supervision. Additionally, TWC plans, develops, and utilizes infrastructure, services, and public facilities within the temple areas to support

tourism activities. These efforts are carried out through various programs, including the promotion and development of tourism partnership networks, preparation of tourism data, organization of tourism events, and optimization of human resources and institutional capacities of tourism actors. Furthermore, TWC focuses on the development of tourist destinations and village tourism to enhance their quality and appeal, including producing tourism products that are competitive, sustainable, and highly marketable (Kausar et al., 2024).

However, TWC's programs and activities primarily emphasize managing tourist facilities and enhancing visitor experiences. The physical and scientific conservation of the temples remains under the responsibility of the Borobudur Conservation Center (BKB). This division of roles demonstrates a clear collaboration, with TWC concentrating on tourism management while BKB oversees cultural heritage preservation, thereby achieving a balance between the utilization and conservation of this historical site.

The Borobudur Conservation Center (BKB), operating under the Ministry of Education, Culture, Research, and Technology, is dedicated to the conservation and preservation of Borobudur Temple. Recognizing the natural deterioration of the temple due to its centuries-old existence, BKB's primary responsibility in Zone 1 is to monitor the state of conservation of the temple. This mandate is outlined in the Strategic Plan of the Borobudur Conservation Center for 2020-2024 (Esposito Andujar, 2020; Kausar et al., 2024).

To fulfill this role, BKB conducts continuous and systematic monitoring by documenting and analyzing changes in the temple's condition. This ongoing process forms the foundation for conservation strategies. Since the conclusion of the second restoration in 1983, BKB has routinely monitored variables such as temple maintenance, structural stability, environmental conditions, geohydrology, and utilization. These efforts ensure that the temple's preservation is approached comprehensively and proactively.

Collaboration with other managing entities, such as PT Taman Wisata Candi (TWC) and the Magelang Regency Government, is another essential aspect of BKB's operations. Given that these organizations have distinct visions and objectives, synergy is critical. BKB works with TWC to maintain cleanliness and order in Zone 1, facilitate events such as Buddhist holiday celebrations, and supervise activities in Zones 1 and 2. Cooperation with the Magelang Regency Government extends to monitoring the cultural landscape, utilizing Mendut and Pawon Temples, and organizing events like the Borobudur Marathon and National Obvit security exercises at Gunadharma Field.

BKB also engages in intensive collaboration with UNESCO, particularly in research, conservation, and capacity-building. For example, BKB has partnered with Prof. Dr. Hans Leisen and his team from Germany to study the impact of Mount Merapi's volcanic ash on Borobudur's surface and further explore material conservation. Other collaborations include work with Prof. Dr. Constantino Meucci from Italy on stone degradation and conservation, and Prof. Toshikazu Hanazato from Japan on temple structural analysis post-2006 earthquake. These partnerships enhance BKB's ability to preserve the temple using cutting-edge expertise and techniques.

Additionally, BKB collaborates with universities and research institutions both domestically and internationally. These include Gadjah Mada University (UGM), University of Indonesia (UI), Islamic University of Indonesia (UII), and international institutions like the University of Tsukuba and Ritsumeikan University. Such collaborations encompass diverse disciplines, ranging from archaeology and architecture to chemistry and biology. Student exchanges and internships are also facilitated with institutions like Kyungpook National University, Kyoto University, and the Tokyo National Research Institute for Cultural Properties.

BKB serves as a research and internship hub for students from various disciplines, including chemistry, biology, archaeology, architecture, geography, and tourism. Participating students hail from institutions such as UGM, UI, ISI Yogyakarta, Sebelas Maret University, and many others. These programs allow students to gain hands-on experience while contributing to the preservation efforts at Borobudur Temple. As the forefront entity in preserving and conserving Borobudur Temple, BKB's collaboration with diverse stakeholders underscores its commitment to safeguarding this UNESCO-recognized world cultural heritage site. By engaging in extensive partnerships and leveraging multidisciplinary expertise, BKB ensures the continued protection and appreciation of Borobudur Temple as a vital cultural and historical treasure.

The Magelang District Government also plays a crucial role in managing the Borobudur Temple area. One of its efforts includes developing a Disaster Risk Assessment for the Borobudur area (Rindrasih et al., 2024; Satriya et al., 2023). This initiative is based on the diverse natural conditions, the characteristics of local communities, and disaster risks, especially due to the area's proximity to the active Mount Merapi volcano. Therefore, structured and directed mitigation measures are necessary.

Additionally, the Magelang District Government has designated the Borobudur area as an environmentally friendly and sustainable tourist destination. To support this initiative, the government allocated 6.8 trillion rupiahs for various programs, such as introducing electric vehicles (motorbikes and buses) within the Borobudur area, constructing waste management facilities, reorganizing markets, and developing tourism infrastructure. These efforts aim to create a green and eco-friendly Borobudur area (Utami et al., 2020).

Although the Magelang District Government plays an important role, the primary authority over the management of the Borobudur Temple area lies with the central government through the Ministry of State-Owned Enterprises (BUMN) and the Ministry of Education, Culture, Research, and Technology. This is due to Borobudur's status as a national asset and a UNESCO World Heritage Site. With the involvement of various stakeholders, it is expected that management efforts will yield optimal results, including minimizing damage to the temple's structure, maximizing its value for the public, and generating revenue for maintenance and development. However, the diverse parties involved also increase the potential for conflicts of interest. As noted by Hari Setiawan, a staff member at the Borobudur Museum and Cultural Heritage Unit, during an interview, the involvement of multiple parties often leads to friction due to differing priorities. For example, the Borobudur Conservation Center (BKB) focuses on

preservation funded by the state budget (APBN), whereas TWC emphasizes financial benefits through the management of tourist activities and events.

In 2024, the management of the Borobudur area was officially unified under a single authority. The Minister of State-Owned Enterprises, Erick Thohir, announced that the management of the Borobudur tourist area is now handled by PT Taman Wisata Candi Borobudur, Prambanan, and Ratu Boko (TWC), which has since been rebranded as In Journey Destination Management (IDM) (Hermawan, 2019). This policy is also outlined in Presidential Regulation No. 101 of 2024 regarding the management of the Borobudur Temple complex. IDM has established a new entity, Taman Wisata Borobudur (TWB), to specifically manage Borobudur Temple independently from other destinations such as Prambanan and Ratu Boko. This step marks the beginning of a reorganization process that emphasizes new pillars: conservation, greening, spirituality, and education.

As part of this reorganization, IDM has expanded green open spaces in the Borobudur Temple complex, adding landscape park facilities, museums, and the Borobudur Art Village. Notably, a museum was constructed featuring an engaging collection, including Virtual Reality (VR) games, to attract visitors. The museum introduces the history of Borobudur, allowing visitors to see the temple not merely as a photo backdrop but as a significant site of discovery, restoration, and preservation. This initiative aligns with UNESCO's recommendation to reduce the Basic Building Coefficient (KDB) in the Borobudur area to below 4 percent, or precisely 3.9 percent.

To minimize damage to the temple structure, several policies have been implemented. These include limiting the number of daily visitors through an online registration system, enabling tourists to access information shared by the management. Visitor numbers are capped at 150 individuals on the temple structure at a time, with a maximum of 1,200 visitors per day across eight sessions. Furthermore, visits to areas surrounding Borobudur Temple have been expanded to develop alternative destinations and reduce pressure on the temple itself (Indahri, 2022). The government also encourages local community involvement in preserving cultural identity and local wisdom through sustainable tourism and creative economy initiatives, such as supporting MSMEs (Indahri, 2022).

To attract international tourists, especially Buddhists—whose global population reaches 490 million—IDM has built a spiritual meditation center within the Borobudur Temple complex. This center provides a dedicated space for prayer and reflection, particularly for Buddhist visitors. Additionally, the Borobudur Art Village spans 10.74 hectares and features public facilities such as restrooms, worship spaces, and culinary centers. Visitors can access the area via electric vehicles or pedestrian walkways. To enhance the experience, the village offers art galleries, amphitheaters, museums, pavilions, and MSME product centers showcasing unique crafts from the Borobudur region. These efforts provide an authentic and holistic experience for tourists (Andriyanto et al., 2024).

Angkor Wat Temple: From Discovery to Major Restoration

Angkor Wat Temple was founded in the 12th century by King Suryawarman II who reigned from 1113-1150 AD. The temple is also known as a Khmer temple and is the largest religious building (temple) in the world because it was built on an area of 162.6 hectares (1.626 km²). Before functioning as a Buddhist place of worship, Angkor Wat was originally built to be dedicated to Hindu gods. King Suryawarman II built it for the god Vishnu who was believed to be the patron god. Construction of Angkor Wat began in 1116, three years after King Suryawarman II became emperor (Bhagentsang et al., 2021).

The construction of Angkor Wat went through a long and arduous process as it required around 300,000 workers, which included architects, sculptors, masons, construction workers, and servants. In addition, most of Angkor Wat was built of stone, which took 30 years to complete (Bhagentsang et al., 2021). King Suryawarman II only wanted visitors to enter from the west so the road to the complex was deliberately built in the forest, as this direction is associated with Vishnu and the land of the dead. The end of Suryawarman II's reign was in 1150, coinciding with his death. Along the way, the Angkor Wat complex ceased to be used by Hindus and was taken over as a place of worship for Buddhists. In fact, by the time construction ended in 1295, Angkor Wat was already a Buddhist place of worship (Bhagentsang et al., 2021).

Angkor temples have the heritage value of an ancient archaeological landscape with temples, monuments, and the remains of layered towns and settlements from the 9th to 15th centuries. Angkor's cultural landscape is defined by contemporary rice paddies, ancient highways, barrows, ditches, canals and bridges, as well as more recent infrastructure. At Angkor, the environment is inseparable from the monuments including forests, natural features and farmland (Peou et al., 2018).

Angkor Wat was rediscovered by French explorer Henri Mouhot in 1860. Henri Mouhot's discovery triggered a series of major restoration projects that continue to this day (Chapman, 2023; Marwoto & Manurung, 2020). In 1908, the restoration of Angkor Wat in the modern era began with the formation of the Conservation d'Angkor (Angkor Conservancy) by the École française d'Extrême-Orient (EFEO) involving a number of countries such as France, Japan, and China (Suy et al., 2018). The discovery of the Angkor Wat temple has become a tourist attraction in the last two decades so that tourists have increased rapidly. The goal of the tourists is to stand in the shadow of Angkor Wat temples, namely Ta Prohm and Bayon (Marwoto & Manurung, 2020).

The Conservation of Angkor Wat Temple: Balancing Tourism, Culture, and Nature

Angkor Wat, like Borobudur Temple, has also suffered significant damage. Situated in the Angkor area with its distinctive Khmer Empire architecture, this site holds immense cultural, religious, and symbolic value. Moreover, Angkor Wat is of high architectural, archaeological, and artistic significance. However, the preservation of Angkor Wat is under serious threat from two major factors. The first is endogenous factors, where over 100,000 residents spread across 112

historic settlements within the area continuously attempt to expand their living spaces. This activity poses a significant risk to the preservation of the site's historical integrity. The second is exogenous factors, particularly related to Angkor's proximity to Siem Reap, the provincial capital and a major tourism hub. One of the most severe threats from these external factors occurred in 1975 when Khmer Rouge rebels took control of the Angkor area. They vandalized the temples, decapitating statues and scattering or hiding the fragments in the forest. The Khmer Rouge genocide inflicted devastating damage, leading to the near destruction of Angkor Wat and its eventual closure (Suy et al., 2018). These internal and external threats highlight the vulnerability of Angkor Wat's preservation. Therefore, efforts to conserve and protect this invaluable cultural heritage are increasingly urgent to ensure its sustainability for future generations.

Cambodia ratified the World Heritage Convention in 1991, thus embracing parties such as the Royal Government and the International Coordinating Committee for the Protection and Development of the Historic Site of Angkor (ICC-Angkor) to support the conservation and sustainable development of Angkor in a way that maintains and promotes its Outstanding Universal Value as well as its wider natural and cultural values (Peou et al., 2018). To protect and manage the Angkor area, in 1995 the APSARA National Authority was established (APSARA, 2012; Suy et al., 2018). APSARA is the government agency responsible for the care, control, and management of Angkor. APSARA's functions, performance, and services are needed to address management issues related to governance, capacity building, and adequate resources are essential to ensure effective management and conservation at Angkor (Peou et al., 2018). The Royal Government of Cambodia and APSARA National Authority, with ongoing assistance from the global community and ICC-Angkor established under the auspices of UNESCO, have led more than 70 major conservation projects. ICC Angkor has also prepared and endorsed the Angkor Charter in 2012 (Peou et al., 2018).

The Angkor Heritage Management Framework (HMF) faces a range of challenging issues such as mass tourism and visitor impacts, intensifying urban development and land use, unauthorized development within protected zones, population growth, communication within APSARA and stakeholders, rural poverty, threats to traditional customs and practices, environmental degradation, and climate change. Today, conservation at Angkor must address the challenges of a burgeoning tourism sector, environmental degradation, urban development, population growth and poverty (Peou et al., 2018).

In 2019, 2.2 million people explored the archaeological site. The surge in hotels, restaurants and tourists put immense pressure on water demand, leading to drastic water supply shortages. The temple relies on a constant supply of groundwater to remain standing so the shortage of water supply sparked concerns over the preservation of the heritage site (Chim et al., 2021; Klassen & Evans, 2020; Valipour et al., 2020). Various policies and strategies have been developed to address current and emerging issues and to guide APSARA National Authorities.

The conservation policies for Angkor Wat are built upon a holistic framework that integrates natural, cultural, and community-focused approaches to ensure the site's long-term sustainability. Recognizing the interconnectedness of natural and cultural values, the first policy emphasizes the protection and management of Angkor's ecosystems and natural resources to preserve its heritage while sustaining life. Complementing this, the second policy focuses on identifying, assessing, and managing the cultural landscape of Angkor, including its physical and non-physical values, to safeguard its heritage significance.

Further, the third policy ensures the protection and enhancement of monuments and objects at Angkor for both present and future generations. Alongside these efforts, the fourth policy highlights the importance of preserving traditional knowledge and cultural expressions as an integral part of Cambodia's rich heritage. These policies lay the foundation for sustainable development, as stated in the fifth policy, which advocates for inclusive and equitable growth that benefits rural communities through poverty alleviation and community engagement.

Tourism management plays a pivotal role in this framework. Policy six ensures that tourism at Angkor not only benefits local communities and forms industry partnerships but also minimizes site impacts and enhances visitor experiences while transmitting Angkor's heritage values. To deepen public understanding and appreciation of the site, policy seven emphasizes the importance of interpretation and education as tools to inspire and engage current and future generations.

Strong governance is essential for implementing these policies effectively. The eighth policy highlights the vision, leadership, expertise, and resources of the APSARA National Authority in preserving Angkor's natural and cultural values. Furthermore, policy nine underscores the importance of robust communication with communities and stakeholders to promote effective engagement and the broader heritage management vision. Lastly, policy ten calls for transparency and accountability in governance through shared knowledge, effective record-keeping, and integrated data management, ultimately strengthening heritage management at Angkor (Peou et al., 2018).

These policies are implemented across four main areas of conservation. The first is Heritage Conservation, which includes frameworks such as the Angkor Charter, Risk Map, Landscape Assessment, Environmental Impact Assessment, and Landscape Master Plan. The second is Life in the Community, focusing on community-based programs, education, training, and the preservation of traditional cultural practices in tourism. The third area is Sustainable Tourism, supported by a Tourism Management Plan, Carrying Capacity Study, Visitor Services Plan, and Interpretation Plan. Finally, Governance and Capacity encompasses strategic planning, professional development, communication strategies, information management, and research agendas to ensure effective conservation and sustainable development at Angkor Wat.

Based on the description above, the management of Angkor Wat temple has the main goal of conservation. The problems faced by Angkor Wat managers are very complex. The history of the Khmer Rouge, which banned religion, caused Angkor Wat to lose almost all of its parts

because almost all statues were beheaded and hidden. To date, there is no information on the restoration of statues that have been lost or damaged. Another threat also comes from around the temple area regarding unauthorized settlements being built. This causes environmental degradation and threatens the sustainability of Agkor Wat.

An issue that remains a challenge is the limited water resources. The Angkor Wat temples depend on a constant supply of groundwater to remain standing. Lack of water supply can hinder the preservation of Angkor Wat temple. This is exacerbated by tourist visits, especially during peak season, and the people living around the temple who use the same water source. Although the management is done through one door, namely APSARA, there is still friction with stakeholders such as hotel and restaurant entrepreneurs. The complexity of the problem is also the basis for policy making at Angkor Wat.

The management of Borobudur temple with Angkor Wat temple has a big difference, especially regarding the objectives to be achieved. The existence of Borobudur temple is only faced with the problem of damage due to natural factors and the excess number of visitors so that the historical values in Borobudur temple are still visible. This is a tourism asset because it was once one of the wonders of the world. In addition, Borobudur temple is also still used for worship by Buddhists. Based on this, the management of Borobudur temple wants to achieve 2 main objectives, namely for tourism purposes and to provide a religious place for Buddhists. This goal is the basis for the manager of Borobudur temple, IDM, in rearranging (remasterplan) so that the Borobudur temple area can be used for tourist purposes, accommodating the needs of Buddhists who worship, while maintaining the order of Borobudur temple to remain in conservation.

Meanwhile, the history of Angkor Wat has had a long journey. The temple, which was originally built for Hindus, was converted to Buddhists. The existence of the Khmer Rouge who banned religion led to the destruction of statues which caused the Angkor Wat area to be closed. Natural factors are also a common cause of damage to the temple because it is in the open. The temple is currently only used for tourist purposes and focuses on conservation. The management faces many challenges, including illegal settlements that disrupt the water supply in the Angkor Wat area, friction of interests between conservation and stakeholders in the tourism business, environmental degradation, and so on.

CONCLUSION

The management of world heritage sites, such as Borobudur Temple in Indonesia and Angkor Wat in Cambodia, presents unique complexities compared to general tourist attractions. These sites hold immense cultural and historical value, necessitating their preservation and authenticity. Borobudur Temple, recognized by UNESCO as a world heritage site, initially experienced multi-party management, involving the Borobudur Conservation Center, PT Taman Wisata Candi (TWC), and the Magelang Regency Government. However, with the issuance of

Presidential Regulation Number 101 of 2024, management shifted to a single-gate system under InJourney Destination Management (IDM), which now oversees Borobudur, Prambanan, and Ratu Boko temple areas. This centralized approach aligns with current needs for conservation, education, and sustainability, ensuring that Borobudur remains not only a major tourist destination but also a site of spiritual significance for Buddhists worldwide. In contrast, Angkor Wat has been managed by the APSARA National Authority since 1995, focusing primarily on conservation and controlled tourism. While it attracts a high volume of visitors, Angkor Wat faces challenges such as illegal settlements, environmental degradation, and conflicts of interest between stakeholders. The integration of a single-gate management system, as seen in both Borobudur and Angkor Wat, holds potential to enhance efficiency and synergy, but requires adaptive strategies to balance tourism, conservation, and local community involvement. This study contributes novel insights by comparing two distinct management models, offering valuable lessons for the governance of other world heritage sites. The findings suggest that a well-integrated approach, blending tourism and conservation, can support the sustainable preservation of cultural heritage while fostering a deeper understanding of social sciences and humanities in the realm of cultural heritage management.

ETHICAL STATEMENT AND DISCLOSURE

This study was conducted in accordance with established ethical principles, including informed consent, protection of informants' confidentiality, and respect for local cultural values. Special consideration was given to participants from vulnerable groups to ensure their safety, comfort, and equal rights to participate. No external funding was received, and the authors declare no conflict of interest. All data and information presented were collected through valid research methods and have been verified to ensure their accuracy and reliability. The use of artificial intelligence (AI) was limited to technical assistance for writing and language editing, without influencing the scientific substance of the work. The authors express their gratitude to the informants for their valuable insights, and to the anonymous reviewers for their constructive feedback on an earlier version of this manuscript. The authors take full responsibility for the content and conclusions of this article.

REFERENCES

Achmad, S. M. (2018). Pemugaran Candi Borobudur Tahun 1955-1983. *Jurnal Prodi Ilmu Sejarah*, *3*(4), 503–517.

Afdhal, A. (2023). Peran Perempuan dalam Perekonomian Lokal Melalui Ekowisata di Maluku: Tinjauan Sosio-Ekologi dan Sosio-Ekonomi. *RESIPROKAL: Jurnal Riset Sosiologi Progresif Aktual*, *5*(2), 208–224. https://doi.org/10.29303/resiprokal.v5i2.427

Andriyanto, A., Hadiprashada, D., & Firmansyah, M. A. (2024). Transformation of The Meaning of Njalang Tradition: From A Personal Ritual To A Medium of Preservation And Cultural Tourism

Among The Nasal Clan In Bengkulu. *Baileo: Jurnal Sosial Humaniora*, *2*(1), 1–17. https://doi.org/10.30598/baileofisipvol2iss1pp1-17

APSARA. (2012). *Angkor: World Heritage Area Tourism Management Plan*. https://apsaraauthority.gov.kh/wp-content/uploads/2021/08/Angkor-Tourism-Management-Plan-compressed.pdf

Ardiani, Y. M., Kurniawan, K. R., & Lukito, Y. N. (2022). *The Gap on Architecture Conservation Regulations from Colonial until Postcolonial Era in Indonesia*.

Ardiyansyah, P. (2019). Analisis Nilai Penting Situs-Situs di Kawasan Cagar Budaya Borobudur. *Borobudur*, *13*(1), 55–82. https://doi.org/10.33374/jurnalkonservasicagarbudaya.v13i1.211

Bhagentsang, D., Gusain, I., Inayat, Z., Park, J., Wang, J., Caperchione, K., Hobart, A., MacDonald, C., Tam, B., & Zhang, S. C. (Sam). (2021). *Angkor Wat: Exploring the Art, Science, and History Behind one of the World's Greatest Religious Sites*. Golden Meteorite Press.

Binarti, F., Koerniawan, M. D., Triyadi, S., & Matzarakis, A. (2022). The predicted effectiveness of thermal condition mitigation strategies for a climate-resilient archaeological park. *Sustainable Cities and Society*, *76*, 103457. https://doi.org/10.1016/j.scs.2021.103457

Chapman, W. (2023). Heritage Tourism in Southeast Asia: A Historical Perspective William Chapman. *Heritage and Cultural Heritage Tourism: International Perspectives*, 1. https://doi.org/10.1007/978-3-031-44800-3_1

Chatterjee, A. B. (2021). Challenges for Cultural Tourism & Sustainability of the World Heritage Site of Angkor, Cambodia. *Journal of Heritage, Archaeology & Management (JHAM) Volume 1 Issue 1, 2021*, 30.

Chim, K., Tunnicliffe, J., Shamseldin, A., & Sarun, S. (2021). Sustainable water management in the angkor temple complex, cambodia. *SN Applied Sciences*, *3*(1), 74. https://doi.org/10.1007/s42452-020-04030-0

Esichaikul, R., & Chansawang, R. (2022a). Community participation in heritage tourism management of Sukhothai historical park. *International Journal of Tourism Cities*, *8*(4), 897–911. https://doi.org/10.1108/IJTC-03-2021-0035

Esichaikul, R., & Chansawang, R. (2022b). Sustainable Integration of Cultural Heritage and Tourism Management at World Heritage Sites in Sukhothai Province, Thailand. *Journal of Management and Development Studies*, *11*, 45–59.

Esposito Andujar, A. (2020). Heritage Assemblages. The Heritage Site of Borobudur (Indonesia) as a Cultural Landscape. *Moussons. Recherche En Sciences Humaines Sur l'Asie Du Sud-Est*, *36*, 125–161. https://doi.org/10.4000/moussons.6643

Hasanah, N. A. I., Maryetnowati, D., Edelweis, F. N., Indriyani, F., & Nugrahayu, Q. (2020). The climate comfort assessment for tourism purposes in Borobudur Temple Indonesia. *Heliyon*, *6*(12). https://doi.org/10.1016/j.heliyon.2020.e05828

Hermawan, B. (2019). Making Borobudur a Buddhist Religious Tourist Destination: An Effort to Preserve Buddhist Temples in Indonesia. *International Review of Social Research*, *9*(1), 71–77. https://doi.org/10.2478/irsr-2019-0008

Hosseini, K., Stefaniec, A., & Hosseini, S. P. (2021). World Heritage Sites in developing countries: Assessing impacts and handling complexities toward sustainable tourism. *Journal of Destination Marketing & Management*, *20*, 100616. https://doi.org/10.1016/j.jdmm.2021.100616

Indahri, Y. (2022). Upaya Pelestarian Candi Borobudur Sebagai Cagar Budaya. *Info Singkat*, *XIV*(12), 25–30.

Kausar, D. R., Damanik, J., & Tanudirjo, D. (2024). Borobudur as priority tourism destination: how political economy affects world cultural heritage site management and heritage preservation. *IOP Conference Series: Earth and Environmental Science*, *1366*(1), 12057. https://doi.org/10.1088/1755-1315/1366/1/012057

Klassen, S., & Evans, D. (2020). Top-down and bottom-up water management: A diachronic model of changing water management strategies at Angkor, Cambodia. *Journal of Anthropological Archaeology*, *58*, 101166. https://doi.org/10.1016/j.jaa.2020.101166

Kulkov, I., Kulkova, J., Rohrbeck, R., Menvielle, L., Kaartemo, V., & Makkonen, H. (2024). Artificial intelligence-driven sustainable development: Examining organizational, technical, and processing approaches to achieving global goals. *Sustainable Development*, *32*(3), 2253–2267. https://doi.org/10.1002/sd.2773

Kusumowidagdo, A., Wiradinata, T., Rahadiyanti, M., Wardhani, D. K., & Rembulan, C. L. (2022). Defining the sense of place components in the food and craft market at the world heritage site. *Humaniora*, *13*(2), 111–118. https://doi.org/10.21512/humaniora.v13i2.7680

Labadi, S., Giliberto, F., Rosetti, I., Shetabi, L., & Yildirim, E. (2021). Heritage and the sustainable development goals: Policy guidance for heritage and development actors. *International Journal of Heritage Studies*.

Leavy, P. (2022). *Research design: Quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches*. Guilford Publications.

Liu, Y., Wang, Y., Dupre, K., & McIlwaine, C. (2022). The impacts of world cultural heritage site designation and heritage tourism on community livelihoods: A Chinese case study. *Tourism Management Perspectives*, *43*, 100994. https://doi.org/10.1016/j.tmp.2022.100994

Marwoto, I., & Manurung, M. (2020). The Ambiguous Feasibility of Borobudur Temple. *International Journal of Innovation, Creativity and Change*, *14*(8).

Miles, M. B., & Huberman, A. M. (2020). *Qualitative Data Analysis: An Expanded Sourcebook* (9th ed.). sage.

Miura, K. (2022). A dilemma of World Heritage ideals and challenges in Southeast Asia. *International Journal of Cultural Property*, *29*(4), 433–457. https://doi.org/10.1017/S094073912200025X

Nag, A., & Mishra, S. (2024). Sustainable competitive advantage in heritage tourism: Leveraging cultural legacy in a data-driven world. In *Review of Technologies and Disruptive Business Strategies* (Vol. 3, pp. 137–162). Emerald Publishing Limited. https://doi.org/10.1108/S2754-586520240000003008

Peou, H., Kérya, C. S., Khun-Neay, K., Kong, S., & Sambon, T. (2018). *Angkor: Heritage Management Framework*. https://icc-angkor.org/wp-content/uploads/2018/09/Angkor-Heritage-Management-Framework-October-2013.pdf

Putri, P. D., Faisal, G., Izzati, H., Rihadiani, R. R., Irawan, D. S., & Adishakti, L. T. (2022). Cultural—Natural Mapping Strategies and Approaches for Heritage Conservation. *International Conference on Indonesian Architecture and Planning*, 629–644. https://doi.org/10.1007/978-981-99-1403-6_41

Rashid, T. (2020). Local Community and Policy Maker Perspectives on Sustainable Livelihoods, Tourism, Environment, and Waste Management in Siem Reap/Angkor Cambodia. *International Journal of Asia-Pacific Studies*, *16*(1), 1–37. https://doi.org/10.21315/ijaps2020.16.1.1

Rindrasih, E., Effendi, K. C., & Silviani, D. (2024). Expert perspectives on disaster risk reduction

strategies in the tourist area of Borobudur-Yogyakarta-Prambanan in Indonesia. *Progress in Disaster Science*, *24*, 100379. https://doi.org/10.1016/j.pdisas.2024.100379

Satriya, C. Y., Wahyuni, H. I., & Sulastri, E. (2023). Socio-ecological resilience and social system in Candirejo village, Magelang: A case study on sustainable tourism development. *Journal of Resilient Economies*, *3*(2), 24–43. https://doi.org/10.25120/jre.3.2.2023.4014

Sok, S., Nguonphan, P., & Hem, T. (2023). Cultural Corridor and Heritage Tourism Development in Cambodia. In *The Palgrave Handbook of Global Social Change* (pp. 1–18). Springer. https://doi.org/10.1007/978-3-030-87624-1_118-1

Susiyanto, S. (2022). Concept application analysis green tourism in the development of Borobudur Temple as a super priority destination. *Ideas: Jurnal Pendidikan, Sosial, Dan Budaya*, *8*(4), 1371–1378. https://doi.org/10.32884/ideas.v8i4.1080

Sutono, A., Tahir, S., Sumaryadi, S., Hernowo, A., & Rahtomo, W. (2021). The implementation of halal tourism ecosystem model in Borobudur Temple as tourism area. *Indonesian Journal of Halal Research*, *3*(1), 13–20. https://doi.org/10.15575/ijhar.v3i1.11119

Suy, R., Chhay, L., & Choun, C. (2018). Protection and Management Policy on Angkor Wat Temple in Cambodia: An Overview. *Asian Themes in Social Sciences Research*, *1*(1), 10–13. https://doi.org/10.33094/journal.139.2018.11.10.13

Tranter, S. N., Ahmadia, G. N., Andradi-Brown, D. A., Muenzel, D., Agung, F., Ford, A. K., Habibi, A., Handayani, C. N., Iqbal, M., & Krueck, N. C. (2022). The inclusion of fisheries and tourism in marine protected areas to support conservation in Indonesia. *Marine Policy*, *146*, 105301. https://doi.org/10.1016/j.marpol.2022.105301

Trogisch, L., & Fletcher, R. (2022). Fortress tourism: exploring dynamics of tourism, security and peace around the Virunga transboundary conservation area. In *Peace Through Tourism* (pp. 21–42). Routledge. https://doi.org/10.4324/9781003299578-3

UNESCO. (2024). *World Heritage List*. https://whc.unesco.org/en/list/

Utami, R. N. F., Muhtadi, D., Ratnaningsih, N., Sukirwan, S., & Hamid, H. (2020). Etnomatematika: Eksplorasi Candi Borobudur. *Jurnal Penelitian Pendidikan Dan Pengajaran Matematika*, *6*(1), 13–26. https://doi.org/10.37058/jp3m.v6i1.1438

Valipour, M., Ahmed, A. T., Antoniou, G. P., Sala, R., Parise, M., Salgot, M., Sanaan Bensi, N., & Angelakis, A. N. (2020). Sustainability of underground hydro-technologies: From ancient to modern times and toward the future. *Sustainability*, *12*(21), 8983. https://doi.org/10.3390/su12218983

Wijayanti, E., & Santoso, S. (2022). Tourism Destination Management Recovery Strategy and Culinary Business Actors With Chse Dan Implementation Information System Design Support (Case Study of Dpsp Borobudur). *Journal of Economics, Management, Entrepreneurship, and Business (JEMEB)*, *2*(2), 50–73. https://doi.org/10.52909/jemeb.v2i2.81

Wiratmoko, B. A. (2012). Pengaruh Taman Wisata Candi Borobudur Terhadap Kondisi Kehidupan Sosial Ekonomi Masyarakat Kabupaten Magelang 1980-1997. *Journal of Indonesian History*, *1*(2), 125–133.

Yatno, T. (2020). Nilai Simbol Candi Borobudur dalam Wisata Kapitalis Global. *Sabbhata Yatra: Jurnal Pariwisata Dan Budaya*, *1*(2), 114–125. https://doi.org/10.53565/sabbhatayatra.v1i2.255