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ENCAPSULATES THE MALAY SETTLEMENTS

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Abstract

This study delves into the resilience of Malay settlements—specifically Kampung Sayong, Kampung Morten, Kampung Balik Pulau, and Kampung Duyong—as they face the challenges of rapid urbanization and environmental changes. By comparing these communities, this research summarises the different ways they adapt to modernity and protect their cultural heritage and distinctiveness. The findings reveal a strong commitment among residents to preserve their heritage, engage in community conservation efforts, and diversify their economic activities, which aligns with SDG 11: Sustainable Cities and Communities and SDG 15: Life on Land. Nonetheless, the Malay community also faces serious problems in the urban landscape that affect development, particularly in understanding the impact of the growing landscape and land grabbing, which hampers their way of life and cultural practices. Active participation in governance and decision-making processes emerges as a crucial factor in fostering resilience, as it allows residents to feel a sense of ownership and adaptability in the face of change, echoing the principles of SDG 16: Peace, Justice, and Strong Institutions. Looking to the future, the study highlights the importance of preserving Malay identity and encouraging intergenerational knowledge transfer, ensuring that these communities can thrive sustainably and contribute to SDG 4: Quality Education. The knowledge from this research extends understanding of culture and cultural resilience and points to the need for partnership in cultural development, suggesting a positive prospect for Malay people on their journey in a constantly evolving context.

Keywords: Malay settlements, community resilience, urbanization, SDGs, community conservation

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INTRODUCTION

Culturally enriched and historically grounded Malay settlements provide the people living in them with utmost comfort and pride. Throughout the centuries, these communities have been vibrant and important institutions for transmitting traditions, telling stories, and fostering social relations. The Malay Architecture of the traditional buildings includes the designs and symbols that portray the Malay community's beliefs and practices (Zainudin & Hamzah, 2021). But for the past few years, these cherished abodes have been in danger and are being threatened in ways that even their conventional foundations cannot subdue. Currently, the process of urbanization due to economic development and globalization affects the structure of Malay settlements (Sendut, 1962 & 1965). Opportunities always accompany these transformations, but they also obscure the traditional lifestyle that is dear to many district residents (Shari, 1992). Encouragingly, notable buildings such as historic houses and community halls are now being replaced by a new generation of modern buildings, creating a sense of loss in the community (Ismail *et al.*, 2023). Residents always feel a particular kind of feeling in their hearts as they see places that define their memories fade away gradually. As much as it is hard to dispute, the effect of globalization cannot be ignored. The dynamics of these communities change as new influences and lifestyles filter through the modern world and infiltrate them. Meanwhile, some people embraced these changes, while many feel displaced from their ancestry. Millennials, in particular, fail to understand the cultural way of life practised in the households of their ancestors (Rahman & Abdullah, 2022). These generational differences raise questions about whether this form of heritage is being passed down and whether such forms of remembering are sustainable in the future. These challenges. However, it evokes the concept of community conservation as the hope of the future. People are mobilizing to protect not only their cultural identity but also the material settings within which they live their lives. Conservation initiatives aim to maintain traditional building styles and to encourage cultural engagement and the social relations that have sustained the society (Samsudin, 2024). Whenever people participate in such programs, they rediscover the essence of belonging to a specific region and feel proud to defend its culture and traditions (Schumacher, 1976). Overall, the future of Malay settlements depends on the ability to modernize without undermining the culture of the Malay people. People look forward to a day when they embrace a new age of contemporary growth, which will not overshadow the traditions of their ancestors. The incorporation of historical elements into architecture and design in the context of the modern city can help respect people's history while embracing current challenges, thereby enabling the narratives of people to live on (Yusof, 2023).

THE MALAY SETTLEMENTS

Historical Contexts

Malay settlements can be traced back to trade and resource exploitation that thrived in riverine and coastal zones in Malaysia. As stated by Zainudin and Hamzah (2021), initial Malay communities were established to capture the most suitable territories for cultivation, fishing, and commerce. Like Dharavi in India and favelas in Brazil, informal settlements are attributed to migration and job opportunities in urban areas (Bhan, 2009). Similarly, settlements like Lyari town in Karachi, Pakistan, also show trends where growth is driven by economic factors. In Indonesia, slum communities are due to rural-urban migration and socio-economic factors (Dhar, 2019).

Geography and Sustainability

The geographical environment is particularly significant for Malay settlements, which are usually located in areas well suited for agriculture and fishing. The same pattern is observed in Indonesia: settlements also follow it along the coast and near rivers, using natural resources for their livelihoods (Gehl, 2010; Pratiwi *et al.*, 2020). However, most slums in India and Pakistan are located in urban areas and are usually swampy or otherwise unsuitable for human habitation (Davis, 2006). Informal settlements in various parts of the world share similar geographical features, including the adverse impacts of climate change, such as rising sea levels and floods, which pose a real threat to residents' livelihoods (Sharma *et al.*, 2022).

Architecture and Malay Community

Malay settlements reveal cultural and environmental orientations that shape the principles of functionality and aesthetics in architectural design (Gul & Tchounwou, 2022). Rumah Melayu of the past exemplifies vernacular architectural practice and the community's physical conditions, in which built forms reflect cultural practices. Ismail *et al.* (2023) note that incorporating local materials and designs is one of the sustainable practices that align with the concept of place-responsive architecture. According to Abdullah (2022), a community's identity is expressed through architectural elements, underscoring the need to preserve heritage in urban design. Cultural practices among Malay settlements enhance unity and togetherness, as do those in other informal settlements found in most societies globally. In India, people living in slums are very particular about festivals and traditions to uphold relationships and family values; in Brazil, favelas also have deep connections to the culture, with music and dancing being significant in depicting hardship and reducing suffering (Valladares, 2019). Cultural festivals common in Pakistan's informal settlements provide essential means of identification and unity among the inhabitants (Khan,

2018). In both cultures, such practices contribute to the strengthening of community cohesion and identity in the face of socio-economic adversity.

Technological Integration

Traditional and new technologies must be incorporated into Malay settlements as residents adapt to new technologies to improve their lives. This approach is prevalent in informal settlements worldwide, where communities use both indigenous practices and innovations to address their problems, as observed by Singh and Rahman (2021). People living in slum areas of India have advocated for the use of mobile technology to access information and resources (Dahlia, 2020 onward), and favela residents of Brazil have demonstrated creativity in developing waste management and sanitation solutions (Lima *et al.*, 2023). Local communities in Indonesia also apply technical knowledge to sustainable resource management, as seen among the Malay settlements (Agustina, 2022).

Social and Political Dynamics

The social and political factors play a significant role in determining the spatial development and stability of Malay settlements, and the dynamics of community participation are critical in addressing the question of the marginalization of Malay settlements (Mohamed, 2022). A similar dynamic holds for the inhabitants of informal settlements in India, Pakistan, and Brazil, who organize to demand better services and political inclusion (Patel & Arora, 2020). In Indonesia, community-based organizations enable residents to fight for their rights – the same way the Malay settlements improved their political status (Pratiwi *et al.*, 2020). Thus, the need to manage the development of informal settlements and to include their populations in the process is global (Hassan & Othman, 2024).

The Pace of Urbanization

Urbanization poses tremendous pressure on Malay settlements, whereby their areas of occupation become swamped by expanding urban areas, and various communities are pushed out of their territories (Sharma *et al.*, 2022; Evers, 2016). This brings conflict as urbanization leads to competition for space, whereby space, culture, and history are favoured (Ranjan & Singh, 2023). The same trends are seen in India. For example, Mumbai, which swallows up migrants, leading to slum expansion in Dharavi, has inadequate infrastructure and amenities (Davis, 2006). São Paulo in Brazil, for example, has expanded with numerous favelas of informal structures that lack legal tenure and often lack basic services (Valladares, 2019). The problems of urbanization in Pakistan can be seen in Karachi, where informal settlements are threatened with eviction due to urban development initiatives (Khan, 2018). Jakarta's informal settlements in Indonesia are no different, with people constantly being evicted for development purposes. In all countries of the world, urbanization exacerbates problems associated with

housing, infrastructure, and social facilities and, therefore, calls for sustainable urban development that considers the needs of communities (Meyer *et al.*, 2023).

Flood Issues

Flooding is a significant concern for Malay settlements, especially those near riverbanks and coastal areas. Climate change has intensified flooding and its effects, leading to increased flood risks and impacts on agricultural practices, infrastructure, and community living standards (Sharma *et al.*, 2022). Apart from the initial effects, flooding also causes medium- and long-term impacts, such as soil erosion and the loss of arable land (Hassan & Othman, 2024). For that same reason, numerous communities living in informal settlements worldwide are at high risk of flooding, especially in areas that experience heavy rainfall. For instance, in India, slums such as Dharavi are typically found in areas highly vulnerable to flooding, especially during the monsoon season (Dahlia, 2020). Developing nations, especially Bangladesh's informal settlements, are highly vulnerable to floods, making the already marginalised populace even more vulnerable (Ahmed & Feroze, 2021). Favelas in Brazil are also threatened by landslides during heavy rainfall, highlighting the complex relationship between human settlements and disasters (Lima *et al.*, 2023). Such flood problems should serve as a wake-up call for governments worldwide to embrace efficient disaster management measures and adaptation processes that increase the resilience of Malay and informal settlements.

Economic Impact

Malay settlements face many contemporary issues that undermine the community's culture and its continued existence: the loss of territory due to urbanization, environmental changes driven by climate change, assimilation into modern cultural norms, and economic pressures from globalization (Mohamed, 2022). Due to extensive urbanization, traditional lands have been invaded, leading to forced displacement and loss of cultural sites; climate change remains a significant threat, especially to those living along riverine areas and coasts, as the rain becomes unpredictable and floods engulf riverside and coastal farms and homesteads (Sharma *et al.*, 2022). Malay settlements continue to have economic relevance in development, but their traditional sources of income are gradually eroding due to modernization and urbanization. This is evident in informal settlements worldwide, where people depend on informal livelihoods (Ranjan & Singh, 2023). For the people living in the slums of India, informal sector jobs are the only source of living, while the favelas of Brazil also rely heavily on informal employment (Valladares, 2019). In Indonesia, most of the urban poor depend on local markets or small-scale enterprises for their livelihoods, a characteristic observed in many informal urban settlements around the world.

Malay Community Conservation

Community conservation is important for sustaining Malay settlements and encouraging the people to be more responsible in protecting the cultural and natural tangible assets. Comparable trends occur in other informal settlements globally where residents work to preserve natural resources and cultural heritage (Hassan & Othman, 2024). Community-centered projects in Brazil focus on the sustainable management of the natural environment as well as the welfare of favelas. At the same time, the informal structures in India and Pakistan demonstrate how residents increase the sustainability of their communities (Dahlia, 2020). These above examples show that there is conservation in various ways. The future of Malay settlements is in sync with the United Nations Sustainable Development Goals (SDGs), which focus on eradicating poverty, providing clean water, making and improving cities, and taking climate action. These goals are relevant to the issues of informal settlements globally, such as social and environmental justice and economic development that aims at improving the living standards of the inhabitants of such regions (Ranjan & Singh, 2023). Thus, the incorporation of SDG principles into local development plans can help communities all over the world to build a sustainable future. The juxtaposition of Malay settlements with the informal settlements in India, Pakistan, Indonesia, Brazil, and globally creates a sense of a conducive environment and comparable challenges in the search for sustainable development. The study also underscores the need to develop holistic approaches to managing communities' interactions with the urban environment, the effects of environmental changes such as flooding, and social and economic forces while not undermining the local communities' cultures, as well as incorporating issues of sustainability and inequality. Due to their efforts to engage the community and build capacity, stakeholders can increase the adaptation capacity of Malay settlements and comparable populations globally in response to contemporary difficulties.

RESEARCH METHODOLOGY

Meanwhile, the journey of exploring Malay settlements begins with a reconnaissance survey, which lays the groundwork for research parameters. This phase is not just about documenting but about engaging in the dense social practices of these communities. It is an opportunity to comprehend the geographical territory and the pulse of the established culture (Zainudin & Hamzah, 2021). Passing through the tight and winding streets of the settlement, expose ourselves to the multiple features of sound, vision, and smell as performed by people throughout the day. The sight and sound of children at play, the smell of food from the local kitchens, and the appearance of the local houses all tell a story of a people with a history and some tradition. The first step is to define the research boundaries, or, in other words, to identify the topics of concern within

the settlements. As potential sites, the researcher seeks out curtilages, which are areas where people congregate; vernacular houses that represent the architectural form; and markets that embody the economic activity in the community (Rahman & Abdullah, 2022). The architectural features, which are usually complex and made of local materials, are not only utilitarian but also reflect the Malays' culture (Ismail *et al.*, 2023). Meanwhile, various forms of urban design, such as pathways, public squares, and green spaces, are essential for shaping how members of society interact and connect (Samsudin, 2024). In this way, observations will occur at these points on the map, providing a visual of the locations where observations will be made.

In this research, the visual analysis methods defined by Robert Venturi (1977) in his theory of architecture are based on the concepts of complexity and contradiction in architecture. Venturi (1977) developed a new paradigm for a deeper appreciation of the aesthetic value in ordinary buildings and structures. By applying Venturi's approach, the researcher interprets the photographs and other visual evidence gathered during the survey. With this lens, one can look beyond the surface of architecture and communal spaces to reveal their hidden layers. Key elements include:

1. Layered Meanings: Just as Venturi emphasized the importance of signs and symbols in architecture, the question is to explore how the designs of traditional Malay homes convey cultural narratives and community values.
2. Complexity in Simplicity: Seek attention to the seemingly simple structures that reveal complex stories, such as using local materials that reflect both environmental adaptation and cultural identity.
3. Contradictions: Venturi's embrace of contradictions invites us to examine how traditional and modern elements coexist within settlements, highlighting the dynamic nature of cultural identity.

The theory of Ekistics by Constantinos Doxiadis (1968 & 1974) is used in conjunction with observational and visual analysis techniques. Ekistics is the study of the settlement process, focusing on people and their interactions with their physical surroundings and constructed objects. Doxiadis underscored the importance of planning in both the natural environment and the cultural attributes of communities, thereby insisting on a sustainable, human-oriented approach to urbanization (Doxiadis, 1968). In this case, applying the above-mentioned theory makes it easier to explain the relationship between the physical environment of Malay settlements and the cultural and social aspects of their people. This framework encourages us to consider the following:

1. The Relationship Between Space and Culture: How the layout and design of settlements facilitate social interactions and cultural expressions.

2. Adaptation to Environment: How communities have adapted their architectural styles and urban planning to respond to environmental conditions, such as proximity to rivers and local resources.
3. Sustainability and Resilience: How traditional practices contribute to sustainable living and resilience against the pressures of urbanization and globalization.

However, when the researcher applies Ekistics to the analysis, the study has a complete picture of the Malay settlements. This approach enables one not only to document structures but also narratives, history, and people within these special places. As part of this preliminary analysis, the researcher also considers the external environment. Biogeography, including vegetation, water, and physical features such as hills and rivers in the vicinity of settlements, also shapes people's lifestyles (Yusof, 2023). Knowledge of these formations will later help us examine how they affect society and culture (Yusof, 2023). From the reconnaissance survey, apart from setting the boundaries for this study, they were better positioned to conduct a more extensive study of the Malay settlements. This phase explains how the studies are ready to embrace the communities and collect authentic flavours in the next part of the research study.

CASE STUDIES ON MALAY SETTLEMENTS

Several prominent Malay settlements along the river peripheries testify to the relationship between the community and the environment in Malaysia. Such settlements depend heavily on riverine products and simultaneously face specific problems related to environmental change and urbanisation. Kampung Morten, Malacca: Located along the Melaka River, Kampung Morten is a living museum of traditional Malay culture. (Figure 1). This settlement is known for its well-preserved wooden houses, vibrant street art, and rich cultural heritage. The community actively engages in cultural tourism, showcasing their traditional practices, crafts, and local cuisine to visitors, thereby maintaining their identity while adapting to modern economic opportunities (Lee & Wong, 2021). Kampung Sayong, Kuala Kangsar, Perak: Situated along the banks of the Perak River, Kampung Sayong is renowned for its rich history and traditional craftsmanship, particularly in pottery (Figure 2). The village showcases traditional Malay architecture, with homes built from local materials that reflect the community's identity and cultural practices. Residents engage in farming and craft-making, maintaining their heritage while adapting to contemporary needs (Yusof, 2023). Kampung Duyong, Terengganu: This settlement, located by the Terengganu River, is celebrated for its picturesque landscapes and vibrant fishing culture (Figure 3). Kampung Duyong is characterised by its wooden stilt houses and traditional fishing boats, which highlight the community's connection to the water. The settlement also serves as a centre for traditional crafts, where artisans

continue to produce handmade goods that reflect their cultural heritage (Tan & Ling, 2022). Kampung Balik Pulau, Penang: Situated near the riverbanks, this settlement exemplifies the adaptation of Malay culture to the landscape (Figure 4). The community relies on the river for transportation and resources while maintaining its traditional crafts and agriculture. The architecture here reflects the local climate and environmental features, showcasing how the community has adapted to its riverine setting (Ahmad & Iskandar, 2020).



Figure 1: Kampung Morten Melaka
Source: Fieldwork (2023)



Figure 3: Kampung Duyong, Kuala Terengganu
Source: Fieldwork (2023)

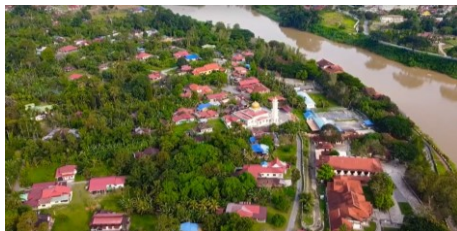


Figure 2: Kampung Sayong, Kuala Kangsar
Source: Fieldwork (2023)



Figure 4: Kampung Balik Pulau, Pulau Pinang
Source: Fieldwork (2023)

ANALYSIS ON MALAY SETTLEMENTS

The Malay settlements of Kampung Sayong, Kampung Morten, Kampung Balik Pulau, and Kampung Duyong represent cultural-historical values and living traditions of adaptation and sustainability. Every settlement focuses on the choice between tradition and contemporary issues that, in one way or another, are interconnected with the human and non-human environment. When approaching these settlements through the ekistics theory, the issues of urbanization, environmental sensitivity, and the struggle to integrate the traditional cultures of indigenous peoples were addressed. Table 1 presents an integrated analysis of

Kampung Sayong, Morten, Balik Pulau, and Duyong as four quite different settlements facing relatively similar challenges in life in the new millennium. The following section presents an analysis of each of these aspects, with interpretations of their relevance and interactions, based on the ekistics theory espoused by Doxiadis (1968 & 1974) regarding human settlement systems and environments.

Table 1: Analysis on Malay settlements

No	Aspect	Kampung Sayong	Kampung Morten	Kampung Balik Pulau	Kampung Duyong
1	Location	Kuala Kangsar, Perak	Melaka	Penang	Terengganu
2	Cultural Identity	Strong cultural heritage; traditional architecture (Zainudin & Hamzah, 2021)	Living museum of Malay culture; preserved architecture (Hassan & Othman, 2024)	Agricultural traditions; rich local food (Pratiwi <i>et al.</i> , 2020)	Maritime heritage; traditional fishing practices (Yusof, 2023)
3	Economic Activities	Agriculture, handicrafts, and small-scale trade (Ismail <i>et al.</i> , 2023)	Tourism, homestays, and local crafts (Abdullah, 2022)	Eco-tourism, durian orchards, and rice farming (Dhar, 2019)	Fishing, aquaculture, and handicrafts (Hassan & Othman, 2024)
4	Population	Primarily Malay families	Mixed population; local and tourist interaction	Mostly Malay families; agricultural communities	Primarily Malay families; fishing community
5	Social Structure	Strong communal ties and active participation in festivals (Mohamed, 2022)	Engaged in tourism, community-led initiatives	Resilient community with shared farming practices (Pratiwi <i>et al.</i> , 2020)	Close-knit community; traditional fishing networks (Yusof, 2023)
6	Urbanization Pressures	Facing encroachment and development threats (Sharma <i>et al.</i> , 2022)	Urban pressures from tourism and development	Urbanization affecting agricultural land (Dhar, 2019)	Urbanization threatening traditional practices (Hassan & Othman, 2024)
7	Environmental Vulnerability	Vulnerable to flooding; located near rivers (Sharma <i>et al.</i> , 2022)	Urban flooding risks; impact of tourism development (Koh, 2023)	Flooding and climate change risks (Sharma <i>et al.</i> , 2022)	Flooding and rising sea levels (Yusof, 2023)

No	Aspect	Kampung Sayong	Kampung Morten	Kampung Balik Pulau	Kampung Duyong
8	Adaptation Strategies	Cultural preservation; community engagement (Mohamed, 2022)	Balancing tourism with heritage preservation (Abdullah, 2022)	Organic farming; eco-tourism initiatives (Dhar, 2019)	Community-based fishing; local handicraft production (Hassan & Othman, 2024)
9	Infrastructure	Basic amenities; the need for improved flood management (Sharma <i>et al.</i> , 2022)	Good access due to tourism; need for preservation-focused infrastructure	Adequate for agriculture; needs climate resilience (Pratiwi <i>et al.</i> , 2020)	Limited infrastructure; reliant on traditional practices (Yusof, 2023)
10	Governance and Community Participation	Active local governance; and involvement in decision-making (Hassan & Othman, 2024)	Community engagement in tourism initiatives	Participatory approaches to farming practices (Mohamed, 2022)	Local governance structures; fishing community involvement (Yusof, 2023)
11	Educational Opportunities	Local schools promoting traditional values (Ismail <i>et al.</i> , 2023)	Access to educational programs through tourism (Hassan & Othman, 2024)	Community learning about sustainable practices (Dhar, 2019)	Informal education on fishing and crafts (Yusof, 2023)
12	Healthcare Access	Basic healthcare facilities; community clinics (Mohamed, 2022)	Healthcare access improved through tourism (Koh, 2023)	Limited healthcare; need for more services (Pratiwi <i>et al.</i> , 2020)	Community health initiatives focus on local needs (Yusof, 2023)
13	Community Initiatives	Cultural festivals, traditional craft workshops (Zainudin & Hamzah, 2021)	Heritage conservation projects; community events (Abdullah, 2022)	Organic farming cooperatives; eco-initiatives (Dhar, 2019)	Fishing cooperatives; environmental awareness programs (Hassan & Othman, 2024)
14	Environmental Conservation	Local conservation practices; traditional ecological knowledge (Yusof, 2023)	Efforts to balance tourism with conservation (Koh, 2023)	Sustainable farming practices; habitat preservation (Pratiwi <i>et al.</i> , 2020)	Marine conservation initiatives; sustainable fishing practices (Hassan & Othman, 2024)

Source: Fieldwork (2024)

The geographical locations of these settlements determine their socio-economic characteristics. Kampung Sayong and Kampung Duyong are located near water resources that support agriculture, farming, and fishing, which are the main sources of their livelihood. Such positioning aligns with one of the main principles of ekistics, which holds that human settlements should be in harmony with their environments. On the other hand, Kampung Morten has several advantages, such as its location in a historical part of Melaka, which has become a tourist attraction and a cultural hub. The location of settlements also defines not only the economic activity but also the cultural and social characteristics of the populations. Cultural identity is one of the main pillars of these settlements because it helps determine the practices of the people within these communities and how they are bonded together. Given the building's architectural design and its activities, Kampung Sayong maintains the spirit of an indigenous community. Likewise, the Malay culture of Kampung Morten is sustained within the limits of heritage conservation activities. Kampung Balik Pulau preserves its cultural identity through agricultural practice, while Kampung Duyong preserves it through maritime practice. Almost all the principles of ekistics focus on issues of cultural identity as the key to the sustenance of these settlements and their resistance to forces such as urbanization that seek to dissolve the essence of these civilizations

Economic Activities

These economic activities are closely associated with geographical locations and cultural characteristics of settlements (McGee, 1975). Kampung Sayong culture is primarily driven by agriculture and the handicrafts produced in the area. It also serves the community while retaining traditional techniques and knowledge, in line with ekistics that call for the proper utilization of resources. As the tourism sector is used to continue economic diversification, the residents of Kampung Morten can earn income from cultural relics and souvenirs. The community of Kampung Balik Pulau has incorporated eco-tourism and sustainable farming, with economic activities conducted in harmony with the environment. Thus, the significant economic activity in Kampung Duyong is fishing and aquaculture, revealing the community's orientation toward marine origins. There are parallels with ekistics, such as the need to vary economic activities based on local conditions to ensure they become sustainable and resilient.

Population

The demographics of these settlements shape social relations and interactions within the communities. Most families residing in Kampung Sayong and Kampung Duyong are Malay, and as a result, they have a tight-knit community and culture. On the other hand, Kampung Morten has a more diverse culture due to its interactions with tourism. Meanwhile, it has positively impacted the

community's experience. There is a need to regulate the aspects of Malay Culture to ensure they do not get lost. The majority of the population in the area comprises Malay agricultural families, and this heterogeneity strengthens the unity and solidarity of the people in Kampung Balik Pulau.

Social Structure

The social organization of these settlements is characterized by close-knit communities and engagement in cultural activities (Lynch, 1960). Kampung Sayong demonstrates this through the communal activities that promote togetherness and cohesiveness among the community members (Mohamed, 2022). The participation of people in festivals and traditional activities promotes the culture and unity of the community. Kampung Morten empowers residents to participate in tourism activities, making them active stakeholders in their community's story. This engagement not only enhances the people's capacity but also fosters ownership and stewardship of their cultural resources. Kampung Balik Pulau exemplifies a model in which communal effort is reflected in farming practices and collective endeavours, thereby improving social capital and communities' capacity to adapt to economic shifts (Dhar, 2019). Kampung Duyong, a predominantly fishing village, utilizes a conventional organizational structure that relies on communal support. These social relationships are essential for community stability, especially regarding environmental and economic challenges.

Pace of Urbanization

Urbanization has adverse effects on all the Malay settlements all over the country, including the seizure of their land, cultural assimilation, and economic strains. Threats to Kampung Sayong are illustrated by development pressures in Kuala Kangsar, which challenge traditional territories and cultures (Sharma *et al.*, 2022). If not well addressed, this encroachment may result in community displacement and in the inability to express their cultural identities. This is an area of concern in Kampung Morten, as the growing pressure from urbanization and tourism activities seeks to infringe on the traditional practices and structures of the settlement. Hence, the main challenge is to maximize the economic benefits of tourism while minimizing negative impacts on cultural resources (Abdullah, 2022). On the other hand, Kampung Balik Pulau faces the challenge of urban encroachment on agricultural land, underscoring the importance of appropriate land-use planning for the sustenance of local farming practices and food security. Kampung Duyong is also at risk of similar threats, as coastal areas are being developed and occupied by the growing urban population; this underscores the need to incorporate communal needs into city planning, as ekistics (Doxiadis, 1968) emphasizes. The four settlements thus also retain significant levels of exposure and sensitivity to environmental hazards, including floods and climate

change. Of the two regions, Kampung Sayong and Kampung Duyong's structures are highly vulnerable to flooding due to their locations near rivers and coastal areas (Sharma *et al.*, 2022). These vulnerabilities require effective disaster risk management and the ability to take measures to protect livelihoods. Given the issues of urban flooding and tourism infrastructure development, especially in Kampung Morten, there is a need for an integrated planning approach that accounts for environmental conditions. Due to stagnant agricultural production and climate variability as a core concern in Kampung Balik Pulau, the need to develop strategies to ensure food security and build resistance among vulnerable agricultural-based societies is emphasized (Pratiwi *et al.*, 2020). Consequently, the identified strategies demonstrate that each settlement can adapt to various challenges. Kampung Sayong aims to address the cultural and communal aspects of life while maintaining cultural heritage to meet modern lifestyle demands (Mohamed, 2022). Kampung Morten illustrates how tourism and culture can coexist. Kampung Balik Pulau has turned to organic farming and eco-tourism as examples of new ways, suggesting the adoption of proper stewardship (Dhar, 2019). Fishing activities in Kampung Duyong involve local people's techniques that do not harm the natural resource base and provide a source of income for the community. These adaptive strategies demonstrate the need for local knowledge and community engagement to improve resilience in the face of modern challenges. Based on the principles of ekistics proposed by Doxiadis (1968), it is evident that local practices should be incorporated into development.

Infrastructure

Infrastructures differ across settlement types, affecting aspects of the inhabitants' lives (Rapoport, 1990). Kampung Morten enjoys developed infrastructure due to tourism, which gives residents access to services and employment opportunities (Koh, 2023). On the other hand, Kampung Sayong and Kampung Duyong need basic facilities, utilities, and infrastructure. This means that measures should be taken to enhance residents' quality of life by improving flood management systems and transport networks in these areas, which are critical to economic sustainability. The infrastructure in Kampung Balik Pulau is relatively sufficient for agriculture. However, there is still scope to invest in climate adaptation and response to future environmental changes. Good governance and community participation are the key ingredients in the development of the said settlements. Kampung Sayong is an example of engaged local stewardship, in which those involved in preserving cultural assets and managing resources make decisions (Hassan & Othman, 2024). To foster community involvement in tourism endeavours, Kampung Morten encourages residents to determine their roles in the local economy. In Kampung Balik Pulau, practice techniques involve people's empowerment system through the collaboration of farming practices (Mohamed, 2022). Kampung Duyong is endowed with political systems that encourage

community-based fishing approaches, thereby improving residents' advocacy for their rights and promoting better fishing practices. The comparative study of Kampung Sayong, Kampung Morten, Kampung Balik Pulau, and Kampung Duyong offers a contextual understanding of the characteristics, issues, and measures of Malay settlements. By analysing areas such as geographic location, cultural affiliations, economic endeavours, and community engagement, stakeholders can better understand these communities' operations. This analysis highlights the importance of combining the planning method with community relationships, while also focusing on the cultural backgrounds of the societies as they address modern problems. According to Doxiadis (1968), the principles of ekistics call for interaction, interdependence, organisation, and integration between human settlements and their environments. Formulating and implementing sustainable operational initiatives that harness local endowments and promote resilience will not only benefit the inhabitants of such settlements but also ensure the continuity of Malaysian society's cultural and traditional values in the future.

FINDINGS

The interesting dynamics of Kampung Sayong, Kampung Morten, Kampung Balik Pulau, and Kampung Duyong in addressing issues of urbanization and cultural preservation, economic development, and environmental concerns as aspiring settlements are worth noting. An effort is made in all four settlements to protect the cultural heritage. For example, Kampung Sayong and Kampung Morten practice community construction and customary practices that reflect the Malay culture. Such regard for culture helps promote social integration and resilience, enabling residents to feel a sense of attachment, even when modernization beckons. This aligns with SDG 11: Sustainable Cities and Communities, which addresses safeguarding cultural and natural heritage. The idea of community conservation is important among the Malay people, as it reflects their responsibility for caring for the natural and cultural resources. In Kampung Balik Pulau, the focus is on organic, environmentally friendly farming practices and on respect for traditional farming methods. In Kampung Duyong, there are also community initiatives to manage coastal sea resources, demonstrating local people's capacity to manage and utilize them. These conservation initiatives also promote cultural preservation and strengthen the local community's well-being, which relates to SDG 15: Life on Land and SDG 14: Life Below Water. Economic activities differ in degree from one settlement to another, depending on each settlement's location and available resources. Kampung Sayong and Kampung Duyong are largely focused on agriculture and fishing, while tourism is a driving force of economic development in Kampung Morten. Kampung Balik Pulau has successfully blended agricultural activities with eco-tourism, demonstrating its economic diversity. This diversification of

the economy improves its resilience to external shocks and thus aligns with SDG 8: Decent Work and Economic Growth. Rapid urbanization brings many challenges, especially in Kampung Sayong and Kampung Morten, where land invasions affect people's way of life and even their cultural practices. The situated context claims that urban nuisance is greatest in areas with a high concentration of tourists, leading to the dilution of community practices and identity. It stresses the need to pursue economic development without losing cultural practices, in line with SDG 16: Peace, Justice, and Strong Institutions, which supports holistic, people-centred decision-making. Flooding and climate change-related losses are impacts of various forms of environmental hazards on settlements. Kampung Sayong and Kampung Duyong are at great risk due to their proximity to water. They need an urgent remedy in the form of collaboration in disasters and infrastructural development. Increased, well-defined flood management requirements would protect the community's livelihoods, align with those used for protection, and meet SDG 13: Climate Action. The strong social fabric mitigates the impact of floods on settlements' resources, and flood events increase attendance at cultural events. In Kampung Sayong, the community participates in festivals and ceremonies that promote unity. Initiatives such as Kampung Morten and Kampung Balik Pulau enabled people to rewrite their economic and cultural story. The forms of participation and the level of involvement are imperative towards achieving most targets under urbanization challenges, thus meeting SDG 17: Partnerships for the Goals. There are differences in infrastructure that tend to influence residents' quality of life and the availability of necessary services. Given the presence of tourism, Kampung Morten is said to have used tourism's availability to improve its already developed infrastructure, thereby expanding its economic opportunities. On the other hand, Kampung Sayong and Kampung Duyong need enhancements of basic utility services and flood control systems. There is a need to bridge these gaps to promote balanced community growth and development in the context of SDG 9: Industry, Innovation, and Infrastructure. Good governance and community participation are vital in the sustainable development of these settlement areas. In Kampung Sayong, such governance is evident in locals' participation in relevant decisions on cultural and resource management (Hassan & Othman, 2024). In the case of Kampung Morten, the local community is motivated to participate in tourism development, the extent of which is defined by residents' desire to engage in the local economy. In Kampung Balik Pulau, such practices are turning farmers into partners with the community, enabling them to own the resources in common (Mohamed, 2022). Kampung Duyong is privileged to have strong local management systems that assist fishing communities in improving their capacity to voice their needs and support the adoption of sustainable practices. The concept of community resilience is important for understanding the processes that shape these settlements' ability to address challenges stemming from urbanization and other

environmental factors. Malay culture and economy, social support, and participation in the political process and bureaucracy are among the ways the Malay community can be seen to have gotten back on its feet. These resilience contributions are produced by the kind of community conservation practised in the two cases of Kampung Balik Pulau and Kampung Duyong. With these developments taking place within these settlements, it is clear that the future of Malay identity squarely rests on their capacity to assimilate into modern urban civilization while preserving their culture as a people. Educational activities that familiarise younger generations with their culture will include intergenerational knowledge transmission, which will entail workshops and other related community activities. In addition, incorporating Malay identity into sustainable development programs will go a long way toward building a strong cultural identity. Stressing the role of identity in planning will help to sustain the longevity of such communities.

SUMMARY AND CONCLUSION

The story of Malay settlements in Kampung Sayong, Kampung Morten, Kampung Balik Pulau, and Kampung Duyong is a testament to remarkable resilience. These communities are not just suffering the effects of the rapid pace of urbanization and environmental change; they are actually prospering, which shows that their cultural individuality and community unity are robust. There is nothing that defines this resilience more than a close association with their culture. The people of these settlements are very proud of their culture, which helps them to stay grounded in today's world. It can therefore be seen that festivals, communal gatherings, and traditional practices, more than events, constitute the rich identity of Malays, providing people with a sense of togetherness. This cultural richness helps residents unite and fight for their rights to maintain their culture, reaffirming their commitment to the community's culture. Moreover, the roles these communities can play in diversifying their local economies are important to their resilience. By practising eco-tourism and sustainable agricultural practices, they create new opportunities to improve their welfare standards without forgetting their origins. Such flexibility underpins their economic base but also demonstrates their resolve to walk the fine line between preserving tradition and modernization. Another one is the residents' engagement in governance and decision-making processes, which is also a good sign of their resistance. When people in the community are involved in the process, they are likely to be more responsible in its development. The participatory spirit enhances the development of their needs and visions, leading to sustainable development as people invest genuine effort. There is a general sense of optimism about the prospects for future development in Malay settlements. The continuity of the Malays in these communities will be relevant to future generations. Projects that enable the youths to learn more about their cultural practices through inspirational

music, dance, drama, and storytelling will go a long way in keeping the culture alive. By cultivating this bond, the community can protect its history and values and build a bright, sustainable future for the city's inhabitants, despite the difficulties associated with the urbanization process. This hope is, of course, further reinforced by the tenacity of these communities, as seen in their ability to survive and even thrive. The commitment to build sustainable practices, protect and promote cultural identity, and foster more participative and democratic forms of management is a positive example for similar contexts. Thus, the fact that Malay settlements and the communities in them took so long to be threatened is a testament to cultural strength, resourcefulness and togetherness. These communities are not only iniquities; they are also creatively and actively responding to the challenges. Malay settlements' experience should help people around the globe, as it shows how valuable cultural persistence is and how communities should stand together for a better, more effective future. Unlike many informal settlements globally that struggle primarily with basic service deficits and socio-economic marginalization, Malay settlements reveal a distinctive resilience shaped by cultural identity, governance participation, and heritage-based adaptation. By situating these findings within the SDG framework, this study contributes new understanding of how culturally anchored communities can inform more inclusive and context-sensitive approaches to sustainable Malay settlement planning. The commitment to build sustainable practices, protect and promote cultural identity, and foster more participative and democratic forms of management is a positive example for similar contexts. Thus, the fact that Malay settlements and the communities in them took so long to be threatened is a testament to cultural strength, resourcefulness and togetherness. These communities are not only iniquities; they are also creatively and actively responding to the challenges. Malay settlements' experience should help people around the globe, as it shows how valuable cultural persistence is and how communities should stand together for a better, more effective future. Unlike many informal settlements globally, which primarily struggle with basic service deficits and socio-economic marginalization, Malay settlements exhibit distinctive resilience shaped by cultural identity, governance participation, and heritage-based adaptation. By situating these findings within the SDG framework, this study offers a new understanding of how culturally anchored communities can inform more inclusive, context-sensitive approaches to sustainable Malay settlement planning.

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DISCLOSURE STATEMENT

The authors declare no competing interests. All fieldworks were conducted with community consent, cultural sensitivity, and respect for local norms. Only non-intrusive observations and voluntary conversations were carried out, with no personal or identifiable information collected. The research involved no procedures requiring formal institutional review, and all engagements ensured the dignity and autonomy of community members.

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