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Romancing the River Fringe and the Demise of Malay Settlement

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ABSTRACT

Urbanization is a defining trend of the 21st century, with villages and towns merging into larger urban areas at an accelerating pace. This global transformation is particularly evident in developing countries, where the demand for housing is growing amidst rapid urban expansion. Currently, more than half of the world's population resides in urban areas, and nearly 1,000 urban agglomerations with populations of over 500,000 exist, predominantly in developing nations. The world's population, currently at 7.6 billion, is projected to grow to between 8.4 and 8.7 billion by 2030, intensifying the need for shelter, especially in urbanizing regions. Traditionally, settlements in developing nations have been located along riverbanks, but these areas are increasingly vulnerable to natural disasters. This study focuses on the decline of Malay settlements, deeply connected to the river in both cultural and livelihood aspects. The research methodology involves analyzing the morphological changes of settlements over time through historical comparisons, archival research, visual documentation, and mapping tools such as Google Earth. Additionally, CADD drawings were employed to present a detailed visualization of the case study area. The findings suggest that urbanization, combined with natural disasters such as floods, has led to the disintegration of these riverfront communities. The younger generations no longer view the river as a symbol of prosperity, marking a shift in cultural and social dynamics.

Keywords: community, fringe, river, settlement, urbanization

1. Introduction

The phrase "I'm romancing the stone" evokes a sense of deep emotional attachment, reflecting humanity's profound connection with elements that hold personal significance. Just as people form lasting bonds with certain places, rivers have historically played an essential role in human settlement. Rivers provided abundant resources, such as fish, water for daily tasks, and served as routes for transportation and recreation. These factors made riversides ideal locations for the development of settlements, a pattern that has been repeated across cities worldwide.

Human settlements have existed for millennia, with cities evolving and adapting through various challenges. Over time, cities have been rebuilt in response to wars, natural disasters such as volcanic eruptions, earthquakes, and floods. More frequently, urban decay occurs due to human activities that exploit the environment over extended periods. Many once-thriving cities have been forgotten or abandoned, but some have been rediscovered through archaeological research. These forgotten cities often fall into two categories: those whose existence was entirely erased from memory, and those preserved through myths, legends, or

historical accounts. It is possible that the Malay settlements along the Kelantan River, now facing the pressures of urbanization and natural disasters, may eventually be lost to history. In the future, these settlements could become subjects of archaeological studies, similar to other ancient cities rediscovered centuries after their decline.

Natural Calamity and Settlement

In this study, four major types of disasters are explored. Typically, after a significant catastrophe, cities are often rebuilt on their original sites, though sometimes the inhabitants relocate permanently. Historical records suggest that Rome was one of the earliest cities to experience such a disaster when it was sacked by the Gauls, leading to the establishment of a new settlement in Veii as a sanctuary [1]. During World War II, many cities that were bombed and devastated were subsequently reconstructed in their original locations. For example, the Polish initially considered relocating to a new site, but ultimately chose to rebuild Warsaw, while Stalingrad remained in its original location despite Soviet proposals to move it [2][3][4]. Similarly, after the Great Fire of London in 1666 and the Lisbon earthquake, both cities were rebuilt on their original ground [5]. The idea of relocating Berlin was also rejected, as it would have resulted in massive traffic congestion due to the city's expansive transportation network, which stretches across 3,800 miles (over 6,000 km) of streets and railways. Despite the devastation of World War II, nearly 900,000 people returned to Hamburg after the war, demonstrating the human attachment to their homes and the places filled with memories, even in the face of destruction. This resilience in returning to their homes reflects the deeply rooted nature of human settlement-places where people raise their families, bury their loved ones, and mark life's milestones [6][7][8][9].

The Destruction of Fire

Fires have long been a major cause of widespread destruction, particularly in urban areas. As one of the most potent forces of destruction, fires have led to the loss of numerous structures throughout history, often devastating entire civilizations. Notable examples include the fires in Rome in A.D. 64, London in 1666, Moscow in 1812, and Chicago in 1871, with no city being spared from such catastrophic events [5]. Regions such as Russia and Finland, where timber was the primary construction material, experienced recurrent fires that repeatedly ravaged their towns [4][5]. It is estimated that towns in Finland were destroyed by fire approximately every 30 to 40 years. In the early 19th century, towns like Pori in 1801, Oulu in 1822, and Turku in 1827 were completely consumed by fire [5]. These recurring disasters led to significant changes in the urban design of Finnish towns, particularly in the so-called "wooden cities." The aftermath of these fires prompted the removal of historical high walls that once restricted streets, leading to the establishment of wider aisles between buildings. This change allowed for greater building density and more expansive roadways, ultimately reshaping the city's overall structure and reducing the city's original profile.

Volcanic Disaster

The devastation caused by volcanic eruptions has been a significant factor in the destruction of human settlements since ancient times. When a volcano erupts, it releases a mix of ash, lava, and other explosive materials that can severely impact the surrounding environment. Once a dormant volcano becomes active, the surrounding areas are often blanketed in thick ash, and the process of cleaning up these remnants can take centuries. Notably, the eruption of Mount Vesuvius in A.D. 79 led to the obliteration of Pompeii, Herculaneum, and Stabiae in the 18th century [6][7]. More recent examples include the eruptions of Krakatoa, Mount Sibayak, and Mount Sinabung, which are capable of triggering catastrophic shockwaves and devastating entire regions [7][8]. When a volcano that was thought to be extinct erupts, it generates a dense cloud of smoke and ash, darkening the sky and turning day into night within moments. The eruption of Mount St. Helens in Washington State, for example, killed many animals in its path due to the lava flow. In 1995, Montserrat's eruption buried the capital city of Plymouth with a thick layer of mud and ash, causing widespread destruction of the island's infrastructure [9]. Towns and cities affected by volcanic eruptions are often abandoned, and over the course of several centuries, the land may transform into a fertile area that new generations of settlers can inhabit [10][11][12].

Hurricanes

In the United States, the term "hurricane" is used to describe powerful tropical cyclones, while in Japan, these storms are referred to as "typhoons." Both terms describe the same kind of destructive weather system characterized by intense winds spiraling outward, accompanied by heavy rainfall and thunderstorms, which can devastate structures in a matter of minutes. During such events, it is common to witness debris, including floating buildings and scattered refuse, further contributing to the destruction of settlements. A striking example is Hurricane Katrina, which struck New Orleans in 2010. The storm caused widespread flooding, submerging approximately 80% of the city for weeks [13][14][15]. The city's levees, which were intended to protect it from floodwaters, broke, leading to the loss of both lives and homes. Additionally, the floodwaters severely damaged critical infrastructure, including transportation systems, sewage networks, and underground utilities. Due to the massive scale of the disaster, rescue teams were unable to evacuate people in time. By the time the waters receded, much of the city was left in ruins, and the recovery from the aftermath was overwhelming [13].

Floods

Flooding is a prevalent and significant disaster in tropical regions, often leading to substantial alterations in human settlements [14]. This occurs primarily due to prolonged heavy rainfall, which can last for days and result in rising water levels. In some areas, the strong currents can carry away almost anything in their path, including debris such as timber logs, building materials, and other waste, which intensify the force of the floodwaters. A notable example of such an impact can be observed in settlements located along riverbanks. Many cities in Asia, for instance, are positioned along rivers due to the fertile plains, abundant water for irrigation, and fish resources that attract settlers. A historical example is the region of Sudan and Aswan in Egypt, which lies near the Nile River. This location has been a hub of human activity for centuries, making it one of the oldest settled areas, with the Nile serving as a vital waterway for trade and communication. However, when the British took control of the area in 1900, they relocated several older settlements to new sites. This effort failed because the relocation overlooked the intricacies of the existing settlement systems. Ancient cities like Sinnar, Barbir, and Al-Damir, once prosperous, were abandoned due to flooding and other factors [16]. The materials used to construct these settlements were often not durable, and the floods destroyed many structures. In addition to the destruction, the floods left behind mud and debris, which altered the landscape, eroded riverbanks, and caused environmental issues such as air pollution from the dried mud and outbreaks of cholera. Furthermore, the floods devastated local agriculture and livelihoods, exacerbating the region's challenges [15].

Yellow Flood (Bah Kuning) in Kelantan

In Malaysia, Kelantan experienced one of its worst flooding events in 1927. A week-long, continuous downpour led to a devastating flood, referred to as the "Red Flood" (Bah Merah) by locals. The floodwaters were red, a result of the color of the mud they carried. This disaster caused significant loss of life and severely damaged human settlements. Forty years later, in 1967, the region was once again struck by the Red Flood, which claimed 38 lives and affected 84% of the population [19][20]. In December 2014, another catastrophic flood, known as the Yellow Flood (Bah Kuning), struck Kelantan. This flood caused dramatic changes in the water levels of the rivers, paralyzing much of the region's infrastructure. It is considered one of the most destructive floods in Kelantan's history, possibly even in Malaysia's history. The aftermath of the Yellow Flood resulted in numerous additional issues, including power outages, food shortages, widespread destruction of property, loss of settlements, and the erosion of riverfront land [17][18].

The Malay Community

Previous research on Malay settlements has often emphasized the influence of geographical factors. Urban planners and architects, in particular, have focused on the physical layout and structure of settlements in relation to their location by rivers. In this paper, we explore how the culture, traditions, and religious beliefs

have played pivotal roles in shaping the identity and worldview of the Malay community. Three case studies are presented to illustrate the factors that contribute to the possible decline of these settlements. The Malay community in Kelantan has existed for generations, with settlers bringing their history, cultural practices, crafts, and skills, along with a strong sense of hope. These foundational elements formed the basis for the Malay community's identity and are deeply intertwined with the characteristics and development of their settlements. The case studies of Kampong Masjid, Kampong Atas Paloh, and Kampong Haji Harun demonstrate not only how external influences have shaped these areas but also how the built environment and spatial planning reflect the values and needs of the people. These settlements offer a genuine reflection of the community's spirit, with the layout and daily life deeply connected to the social fabric of the neighborhood.

Identity of Early Malay Settlement in Kelantan

Following Malaysia's independence, the growth and transformation of established settlements in Kelantan have undergone significant changes. Today, many of these settlements have been inhabited for over four generations, with most residents being descendants of the original settlers. However, the process of urbanization has profoundly influenced the development of Malay communities. Atas Paloh Village, for instance, is composed of several small settlements. The village name reflects the influence of a notable person or significant activity in the area, as it is a common practice among locals to name settlements in honor of important figures or events linked to the place. Despite the small number of settlements, they are collectively referred to as a village, where daily activities take place. Menuang Village, for example, is known for its skilled craftsmen, many of whom were involved in copper smelting to produce pottery and other items. It was also in this area that gold coins, known as 'ufti,' were minted and traded with the Siamese Kingdom. Similarly, Haji Harun Village, situated near Tok Semian Road, derives its name from a revered religious leader, Tok Aki Haji Harun, who played a central role in the village's establishment. His relatives and close family members were among the first settlers. The village initially consisted of only three homes, with the close-knit community building small bridges, or 'titi,' in the kitchen areas to connect each settlement. Over time, the legacy of Haji Harun's leadership is reflected in various religious institutions, such as the Council School (Sekolah Majlis), which has since become the Muzium Majlis dan Adat Istiadat Agama Islam Kelantan (MAIK), and the religious establishment in Kubang Pasu Village, which has now been lost due to urban expansion.

2. Method

The research involves quantitative data collection through structured surveys and questionnaires distributed to a sample of 400 households across settlements like Masjid Village, Atas Paloh Village, and Haji Harun Village. These surveys capture residents' demographic profiles, their attachment to the river, perceptions of urbanization, and the impact of floods. Additionally, Geographic Information Systems (GIS) are utilized to assess historical and contemporary settlement patterns, examining land-use changes, flood zones, and urban expansion over time. This provides a clear visual representation of the relationship between urbanization, river dynamics, and settlement evolution. In parallel, qualitative data collection is conducted through in-depth semi-structured interviews with key stakeholders such as community leaders, long-time residents, and local authorities to explore cultural, historical, and social narratives shaping the Malay community's identity and their resilience to urban pressures and natural disasters. Participant observation also captures the day-to-day life and cultural practices within these communities, offering deeper insights into the residents' relationships with their environment. Document analysis of archival materials, historical maps, and government reports on land acquisition and flood responses provides a historical and policy-driven context for understanding settlement changes and the role of governmental actions.

For sampling, purposive sampling is employed to select specific settlements in Kelantan with significant historical and cultural relevance, while random sampling is used for the survey to ensure a representative data sample from the broader population. Data analysis is conducted using statistical software (e.g., SPSS) for quantitative data to perform descriptive statistics, correlation, and regression analysis, helping to identify patterns such as the relationship between urbanization and place attachment. Thematic analysis is applied to qualitative data collected from interviews and field notes to uncover key themes surrounding cultural identity,

community resilience, and adaptation strategies. GIS tools further support spatial analysis to visualize and understand the geographical shifts in settlements over time. Ethical considerations are crucial, ensuring informed consent from all participants while maintaining their anonymity and confidentiality throughout the research process. Local authorities and communities are consulted, and approval is sought before conducting interviews or using mapping technologies. This research contributes valuable insights into how urbanization and natural disasters shape cultural identity and resilience in riverine settlements, with policy recommendations to inform urban planning and disaster management. By offering both broad statistical patterns and in-depth qualitative perspectives, this methodology ensures a comprehensive approach to understanding the impact of urban transformation and environmental risks on the Malay settlements along the Kelantan River.

3. Results and Discussion

Case Study 1 (Masjid Village)

The Malay settlements in Atas Paloh Village, Kota Bharu, Kelantan, along with surrounding areas, were examined as part of this case study. A total of 350 questionnaires were distributed across the study area during fieldwork conducted in 2019 using a random sampling technique. Various methods, including direct participant observation, visual analysis, and random interviews, were employed to assess the current state of the local Malay community. Additional techniques such as face-to-face interviews, visual analysis, and mapping with tools like Google Maps, Google Earth, and AutoCAD 2018 were also utilized to support the research.

Despite the area's rich historical and multicultural background, the urbanization process has continued to impact the settlement. This transformation has not only diminished the strength of Malay cultural practices but also affected the physical infrastructure that had been in place for generations. Today, much of the original settlement and its structures have been cleared, including Masjid Village, Pengkalan Pasir Village, and Atas Paloh Village, all of which have faced similar fates. These areas were once known for their traditional architectural features, with many homes adorned with intricate carvings and decorative wooden elements, which are now scarcely found. In 2013, a large portion of the settlements in Masjid Village and Atas Paloh Village was demolished to create open spaces and landscaped areas for public use. The land where these villages stood was originally owned by the Islamic Religious and Malay Customs Council (MAIK), which had authorized the original settlers of Masjid Village to establish their homes there (Figure 1). As the population grew, the demand for space increased, and the mosque located within the village required more land to accommodate parking. In response, MAIK acquired the land and compensated the villagers during the land acquisition process (Figure 2).

Figure 1 The hatch area shows the location of the demolished settlement at Masjid Village

(Source: Abdullah, 2019)

Figure 2 The Masjid Village after the demolition works

(Fieldwork, 2019)

Case Study 2: Atas Paloh Village

Atas Paloh Village is situated very close to Masjid Village, separated only by Jalan Pos Office Lama (Figure 3). The village is unique as it contains another smaller settlement within it, namely Pengkalan Pasir Village. The demolition process affected both villages, though only a small portion of the residents are still living in Atas Paloh. This is largely because most of the land in the area is privately owned. To reduce the financial burden on the Kelantan Government, the land acquisition process is being carried out in phases. A local resident mentioned that the next phase of the land acquisition is anticipated soon, as the area is highly valued for its prime location, which makes it an attractive site for development. The first phase of the acquisition has already been completed, affecting a relatively small number of settlements. As a result, many residents have been forced to relocate. Although some of them moved to other parts of Kota Bharu, many left for more affordable areas with lower property prices. Once evicted and given minimal compensation, the displaced families were compelled to seek homes in more affordable locations, away from the high property values of the city (Figure 4). The impact of these changes is evident in the village, as seen in the transformation of Atas Paloh Village following the demolition works (Figure 5).

Figure 3 The demolished settlement area in Atas Paloh Village

(Drawing: Abdullah, 2019)

Figure 4 Signboard of new development in Masjid Village and Atas Paloh Village

(Fieldwork, 2019)

Figure 5 Atas Paloh Village after demolition works

(Fieldwork, 2019)

Case Study 3: Pengkalan Pasir Village

To better understand the context of urbanization and its impact on traditional settlements, Figure 6 offers a detailed illustration of the settlements located along the Budor River, near Kelantan, Malaysia. This area, particularly Pengkalan Pasir Village, is marked by its Temporary Occupation License (T.O.L.) status, which signifies that the residents do not have formal ownership of the land they occupy. As a result, this status introduces a level of uncertainty for the residents, making their settlements vulnerable to displacement, as highlighted in the manuscript's discussion of the demolition processes affecting these communities.

The following analysis, based on both the map and the document, delves deeper into several critical factors that contribute to the vulnerability of these settlements. Figure 6 illustrates that the settlements are located along the Budor River, near Kelantan, Malaysia. The Pengkalan Pasir Village is designated under the "Temporary Occupation License" (T.O.L.), indicating that the land has been temporarily assigned to the residents without formal ownership. This status often creates uncertainty for the residents, making their settlements vulnerable to potential displacement, as evidenced by the demolition processes outlined in the manuscript.

The analysis based on the map and the document highlights several key factors. Firstly, the proximity of these villages to the urban areas of Kota Bharu places them under significant urbanization pressure. The land surrounding these settlements is valuable due to its central location, making it prime for new development projects. The villages, particularly Pengkalan Pasir, which has been under T.O.L. status for decades, are at risk of being repurposed for commercial or residential developments that cater to the growing demands of urban expansion. Secondly, the settlements are located near the river, which makes them highly prone to flooding. Historical floods, such as the Red Flood (Bah Merah) and Yellow Flood (Bah Kuning), have directly impacted this region, further increasing their vulnerability. This susceptibility to flooding makes the area unsuitable for

permanent settlements, especially given the increasing urban sprawl and the lack of proper drainage systems in traditional Malay settlements.

Thirdly, the process of urbanization has led to the demolition of these villages, as discussed in the manuscript. The communities that have lived in these areas for generations are being displaced with minimal compensation, forcing them to relocate to more affordable and less-centralized areas like Wakaf Bharu. This displacement not only affects the residents' livelihoods but also disrupts their cultural continuity, as their traditional crafts, architectural forms, and connections to the river are being lost. Finally, the analysis suggests that given the displacement and vulnerability of these settlements, careful urban planning is necessary to address the growing need for housing while preserving cultural heritage. Redevelopment plans should prioritize flood management, infrastructure upgrades, and the integration of the riverfront into urban development to prevent the complete loss of these communities. The analysis of the settlements depicted on the map highlights a broader issue of urbanization encroaching upon historic Malay settlements. The combined impact of natural disasters and urbanization pressures emphasizes the importance of finding a balance between development and the preservation of cultural identity. Urban planning must consider the history, culture, and resilience of these villages while ensuring safer and more sustainable living conditions for future generations.
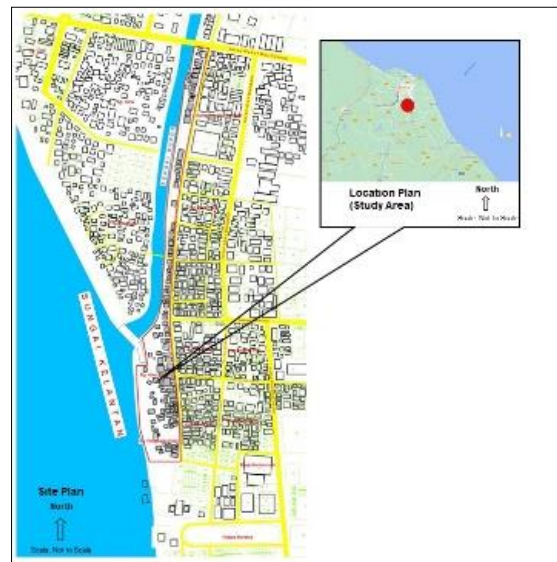

Figure 6 The hatched area shows the settlements of The Pengkalan Pasir Village and atas T.O.L. Village.

(Drawing by Abdullah, 2019)

To further explore the vulnerability of these settlements, Figure 7 provides a closer look at the specific locations of Pengkalan Pasir Village and Atas T.O.L. Village, both of which are situated on land with Temporary Occupation License (T.O.L.) status. This designation places these communities in a precarious position, as they occupy the land without formal ownership, which heightens the uncertainty of their long-term security. The following analysis examines how these challenges, combined with urbanization pressures and environmental risks, impact the residents of these villages. Figure 7 illustrates the settlements of Pengkalan Pasir Village and Atas T.O.L. Village, both located on land with Temporary Occupation License (T.O.L.) status. This means the residents are occupying the land without formal ownership, which creates a sense of insecurity regarding their long-term tenure. The land is situated along the river, with Atas Paloh Road running through the area. The proximity of these villages to the urban center of Kota Bharu places them under significant pressure from urbanization. The surrounding land is highly valuable, making it susceptible to being repurposed for commercial or residential developments to accommodate the growing demands of urban expansion. As a result, these settlements face the risk of displacement, as the government has the right to reclaim T.O.L. land at any time, especially when the land becomes more attractive for development.
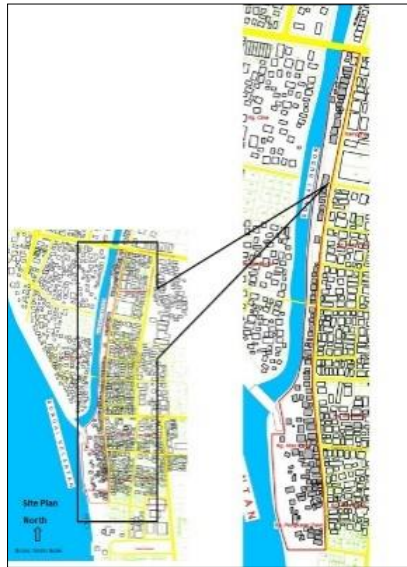
Figure 7 The hatched area shows the pengkalan pasir village and atas tol village settlements built on T.O.L land status. The road is the Atas Paloh Road

(Source: Abdullah, 2020)

Furthermore, being located along the river, the settlements are vulnerable to flooding, which has historically impacted the region, including floods like the Red Flood (Bah Merah) and Yellow Flood (Bah Kuning). These floods exacerbate the vulnerability of the settlements, making them less desirable for permanent living and complicating the challenges faced by the residents. Flooding not only damages infrastructure but also disrupts daily life, increasing the difficulty of sustaining the community in these areas. The uncertainty surrounding the T.O.L. status and the increasing pressures of urbanization create a significant threat to the residents' way of life. Many of the people living in these villages have done so for generations, with strong cultural ties to the river and its resources. Displacement due to urban development undermines these cultural connections, leading to the erosion of traditional crafts, architectural forms, and lifestyles that have been passed down through the generations. With these challenges in mind, there is an urgent need for urban planning that balances the pressures of urban development with the preservation of cultural heritage. Redevelopment should focus on flood management, infrastructure upgrades, and the integration of the riverfront into urban planning. This approach would ensure the safety of the residents while preserving the cultural identity of these historic settlements.

Building upon the challenges presented by the T.O.L. land status and the pressures of urbanization, Figure 8 further emphasizes the vulnerable state of Pengkalan Pasir Village. The image captures a settlement before the demolition work begins, highlighting the traditional characteristics of the area and the impending transformation. It serves as a visual representation of the gradual displacement of long-standing communities, illustrating how urban expansion is reshaping these areas and the deep tensions between preserving cultural heritage and meeting the demands of modern urban development. Figure 8 depicts a settlement in Pengkalan Pasir Village before the demolition work, showcasing the conditions of the area prior to its redevelopment. The image highlights a narrow, possibly deteriorating road surrounded by traditional wooden houses and overgrown vegetation. These structures reflect the traditional Malay architectural style, and the presence of cars indicates some level of modern development despite the rural setting. However, the area is marked by visible signs of neglect and urban decay, with unmanaged vegetation encroaching upon the road and infrastructure.

Figure 8 The picture shows a settlement in Pengkalan Pasir Village before the demolition work

(Source: Fieldwork, 2020)

The proximity of the settlement to the urban center of Kota Bharu, combined with its T.O.L. land status, makes it vulnerable to the pressures of urbanization. The image captures a moment before the planned demolition, emphasizing how such communities, which have lived in these areas for generations, are facing displacement due to redevelopment projects. The road and surrounding area appear to have been a part of the traditional settlement, with low-density housing that is characteristic of older Malay communities. The figure serves as a reminder of the vulnerability of settlements like Pengkalan Pasir, where rapid urban growth and infrastructure development are gradually replacing longstanding communities. This figure underscores the tension between preserving cultural heritage and accommodating the demands of modern urbanization. The displacement of these traditional settlements, as illustrated by the impending demolition, raises important questions about how cities manage growth while maintaining cultural continuity and addressing the needs of local populations.

Building on the examination of the vulnerabilities faced by settlements like Pengkalan Pasir Village, Figure 9 further illustrates the challenges experienced by Atas Paloh Village, another traditional Malay settlement located along the river. The image captures the close relationship between the settlement and the river, emphasizing the critical role the water plays in the daily lives of the community. However, similar to Pengkalan Pasir, this proximity to the river also highlights the risks posed by flooding and the ongoing pressures of urbanization, which threaten both the physical and cultural integrity of the community. Figure 9 illustrates the Malay settlements in Atas Paloh Village, showing a bird's-eye view of the area with a river running adjacent to the settlement. The image highlights the close relationship between the settlements and the river, which plays a vital role in the livelihood and daily activities of the community. The settlement is characterized by dense, low-rise housing with visible traditional Malay roofing materials, which suggest that the area retains its cultural and architectural heritage. However, the close proximity to the river also brings into focus the vulnerability of these communities to flooding, especially given the muddy water seen in the river.

The land surrounding the river appears to be encroaching upon the settlements, indicating potential risks of further urbanization. The settlements are tightly packed, with houses situated near or along the riverbank, which can make them prone to the impacts of floods, as the river may overflow during heavy rainfall or storms. This proximity to the river makes it clear that the residents rely on the water for various daily activities such as transportation, fishing, and possibly agriculture. The presence of greenery on the opposite bank of the river also suggests that the area might be susceptible to environmental degradation if urbanization continues to encroach on these natural buffers. The visual elements in the image highlight the vulnerability of Atas Paloh Village to both urbanization pressures and natural disasters, particularly floods. As urban areas expand, settlements like Atas Paloh, with its historical and cultural significance, face the risk of displacement and destruction due to their location and land status. The analysis points to the importance of integrating flood management, infrastructure improvements, and cultural heritage preservation into urban planning to mitigate the impacts of both natural hazards and urban growth. Figure 9 serves as a visual reminder of the complex relationship between the Malay community in Atas Paloh Village and the river that sustains them. The ongoing urbanization of the area, combined with flood risks, emphasizes the need for comprehensive planning that

safeguards both the physical environment and the cultural identity of the community. Proper urban planning is essential to ensure that these historic settlements are not lost as the city expands.

Figure 9. Malay settlements in Atas Paloh Village

(Source: Fieldwork, 2020)

Building on the exploration of the challenges faced by settlements like Atas Paloh Village, Figure 10 shifts the focus back to Pengkalan Pasir Village, offering a closer look at the atmosphere of a traditional Malay settlement. The image emphasizes the contrast between the modest, informal nature of these communities and the growing urban pressures, further highlighting the need for comprehensive urban planning that not only accommodates development but also safeguards the cultural heritage and well-being of these communities. Figure 10 depicts the atmosphere of a Malay settlement in Pengkalan Pasir Village, showing a narrow path between traditional houses with a mix of materials, such as brick and wood, highlighting the modest and utilitarian nature of the settlement. The image captures a sense of simplicity, with visible signs of wear and tear on the structures, indicating the age and history of these buildings. The presence of greenery along the path and the trees in the background suggests that the area still retains some natural elements, despite the urban pressures surrounding it.

Figure 10. The atmosphere of Malay Settlement in Pengkalan Pasir Village

(Source: Fieldwork, 2020)

The image also reflects the informal nature of the settlement, where construction materials are a mix of traditional and modern elements, which may suggest the gradual development of the area over time. The contrast between the brick construction on one side and the wooden structure on the other side underscores the ongoing process of adaptation within the community. The dirt path, while practical, indicates the lack of proper infrastructure and urban planning that is typically seen in more modernized urban areas. This situation is typical of settlements on T.O.L. land, where the government has not provided formal infrastructure improvements or support for upgrading the area. The narrowness of the pathway and the close proximity of the houses reflect the dense and compact nature of the settlement, which can often lead to issues related to sanitation, drainage, and accessibility. Additionally, the image highlights the vulnerability of such communities to urbanization pressures, as they face the risk of displacement due to their location on land with temporary occupation status. The surrounding area, which appears to be transitioning to more modern developments, indicates that these settlements are in the path of urban expansion, further increasing the likelihood of demolition and resettlement. This figure illustrates the stark contrast between traditional Malay settlements and the growing urban

landscape, highlighting the need for urban planning that can accommodate both the growth of the city and the preservation of these historic communities. Proper urban development strategies should include measures to improve infrastructure, provide secure land tenure, and protect the cultural heritage of these vulnerable communities.

Building on the understanding of the vulnerabilities faced by traditional settlements, Figure 11 shifts the focus to a settlement along Atas Paloh Road, providing a snapshot of urban decay and the transformation taking place in the area. The image emphasizes how the forces of urbanization and development are reshaping older communities, underscoring the need for urban planning that takes into account both the physical and cultural aspects of these long-standing settlements. Figure 11 shows a settlement along Atas Paloh Road, capturing a scene of urban decay and transformation. The image reveals traditional homes, many of which appear to be in a state of disrepair, with some houses constructed from a combination of brick and corrugated metal, indicating the informal and incremental nature of their construction. The presence of exposed wooden frames on one of the houses suggests ongoing renovation or perhaps the beginning of demolition, which further highlights the ongoing urban transformation in the area.

Figure 11 The settlement in Atas Paloh Road

(Source: Fieldwork, 2020)

The narrow road in the settlement and the visible lack of proper drainage or road infrastructure reflect the informal nature of the settlement. This narrowness can lead to challenges with accessibility and sanitation, which are often common in densely populated, underdeveloped urban areas. The image also highlights the contrast between these older, low-rise homes and the taller modern buildings in the background, signaling that this settlement is situated in an area experiencing rapid urbanization. The ongoing construction and repair work suggest that some residents may be trying to maintain or upgrade their homes in response to the pressures of urban growth and potential displacement. However, this also reveals the vulnerability of these settlements to gentrification and demolition as urban development spreads. The land on which these settlements are built, which may fall under temporary occupation licenses (T.O.L.), adds to the uncertainty, as the residents have no formal guarantee of land tenure, making them susceptible to forced relocation.

This image encapsulates the challenges faced by residents of Atas Paloh Road, as they navigate the intersection of traditional ways of life with the forces of urban development. It underscores the need for sustainable urban planning that not only addresses the physical infrastructure of growing cities but also ensures the preservation of communities that have lived in these areas for generations. Urbanization must be managed in a way that balances the demands for development with the needs of the residents and their cultural heritage.

Building on the analysis of the transformation and challenges faced by settlements along Atas Paloh Road, Figure 12 shifts the focus to the remaining settlements in Atas Paloh, depicting the ongoing process of partial demolition and abandonment. The image offers a poignant view of how urban development pressures are gradually dismantling these long-standing communities, further underscoring the need for urban planning that can manage change while preserving the cultural and historical significance of these areas. Figure 12 shows the remaining settlements on Atas Paloh, depicting a scene of partial demolition or abandonment. The image highlights a structure that seems to be in the process of being torn down or reconstructed, with parts of the building still standing while other sections are dismantled. The use of exposed concrete and incomplete framing suggests that this area is undergoing significant changes, likely driven by urban redevelopment efforts or displacement due to urban pressures.

Figure 12 The remaining settlements on Atas Paloh

(Source: Fieldwork, 2020)

The overgrown vegetation surrounding the area reflects neglect and the lack of maintenance in some parts of the settlement, highlighting the shift from a once-thriving community to one facing the uncertainty of displacement. The contrast between the deteriorating buildings and the tree canopy above indicates that the settlement is surrounded by a blend of urbanization and nature, with the encroaching vegetation symbolizing the gradual erosion of the traditional lifestyle in this community. The image suggests that the residents are either in the process of moving out or are experiencing interruptions to their lives as the area undergoes redevelopment. The remaining structures show the slow transition from an old settlement to an area that will likely be transformed for more modern, higher-density urban development. This situation is exacerbated by the land's likely status as Temporary Occupation License (T.O.L.) land, which leaves the residents vulnerable to forced relocation, especially in the face of increasing demand for land in the area.

The demolition and partial abandonment of these settlements illustrate the social and cultural impact of urbanization, as the historical identity of the area faces displacement. The scene captured in this figure reflects the ongoing conflict between preserving traditional settlements and accommodating the growing demands of urban development. The need for careful urban planning that respects the rights of these communities while managing growth and infrastructure development is evident in this image.

Building on the depiction of partial demolition and abandonment in Figure 12, Figure 13 continues to highlight the ongoing transformation of Atas Paloh Village, focusing on the complete demolition of structures. The image provides a stark visual of the destruction and displacement taking place, emphasizing the significant challenges faced by residents as they are forced to vacate their homes to accommodate new developments. This shift not only impacts the physical environment but also threatens the historical and cultural fabric of the community. The scene captured in Figure 13 further underscores the urgent need for urban planning that carefully navigates the balance between modernization and preserving the cultural identity of these long-standing communities. Figure 13 shows the demolished settlements in Atas Paloh Village, depicting a scene of ongoing disintegration and construction. The image highlights buildings in various stages of demolition, with some structures completely dismantled while others, like the blue house, show exposed frames and incomplete roofing. The building materials, such as wood and corrugated metal, suggest that the houses were constructed with traditional methods, which are now being replaced or removed due to urbanization pressures.

Figure 13 The demolished settlements in Atas Paloh Village

(Source: Fieldwork, 2020)

The presence of discarded construction materials and partially dismantled walls indicates that the demolition process is in progress, possibly in preparation for redevelopment or infrastructure projects. The house on the right, with its unfinished structure, illustrates the disruption caused by these changes, as residents may be

forced to leave their homes or face the uncertainty of living in partially completed buildings. The clear signs of decay and the mix of dismantled materials suggest that this area, once home to a tight-knit community, is now undergoing significant transformation. The image serves as a stark visual representation of the impacts of urban growth on the traditional settlements of Atas Paloh Village. The ongoing demolition reflects the challenges faced by these communities as they are displaced to make room for new developments. The land, likely under Temporary Occupation License (T.O.L.) status, provides little security for the residents, making them vulnerable to forced relocation without guaranteed compensation.

This figure emphasizes the tension between the preservation of cultural heritage and the demand for urban development. The demolition of these settlements not only disrupts the lives of those living there but also erases important historical and cultural elements associated with the village. It underscores the need for urban planning that balances the demands of modern infrastructure with the rights and history of traditional communities.

Building on the visual representation of the ongoing transformation in Atas Paloh Village shown in Figure 13, Figure 14 shifts focus to a more personal and emotional perspective by featuring an informal interview with Mr. Nik Mohd Bin Nik Jaafar, a long-time resident of the village. The image captures a moment of personal connection, offering insight into the challenges faced by the community and the impact of urbanization on the individual lives of residents. This transition emphasizes the human aspect of the displacement process, underlining how the growing pressures of urban expansion not only affect the physical environment but also disrupt the deep-rooted cultural and emotional ties of those who have lived in these areas for generations. Figure 14 shows an informal interview with Mr. Nik Mohd Bin Nik Jaafar, a resident of Atas Paloh Village, whose father was one of the earliest settlers of the area. The image depicts Mr. Nik sitting at a table with a beverage and mobile phone, while in the background, a figure (likely a family member) is seen standing near the lower level of the house. This setting reflects a daily, informal space, highlighting the personal connection and history Mr. Nik has with the area.

Figure 14 An informal interview with Mr Nik Mohd Bin Nik Jaafar his father was one of the earliest settlers of Atas Paloh Village

(Source: Fieldwork, 2020)

The interaction and environment provide a sense of community and the cultural continuity that remains in Atas Paloh Village, despite the pressures of urbanization and the ongoing transformation of the area. Mr. Nik's connection to the land and the historical significance of his family's settlement in Atas Paloh offers an important personal perspective on the challenges faced by the community. It illustrates how the residents' lives are intertwined with the history and traditions of the village, which may be threatened by modern development. This informal interview not only provides insight into the personal stories of residents like Mr. Nik, but also highlights the emotional and social implications of urban changes. The photograph captures the essence of a community that has deep historical roots but faces uncertainty due to the urban expansion and the potential loss of their ancestral homes. It is a poignant reminder of how urbanization impacts people's lives on both a physical and emotional level, especially for those who have lived in these areas for generations.

Building on the personal story of Mr. Nik Mohd Bin Nik Jaafar in Figure 14, Figure 15 shifts the focus to Mr. Zulfahmi Bin Omar, another resident of Atas Paloh Village, who has experienced the emotional and practical challenges of displacement. This image highlights the impact of urbanization on individuals, emphasizing how

the forced relocation of long-standing residents, such as Mr. Zulfahmi, reflects a broader trend of communities being displaced due to urban expansion. The image underscores the importance of understanding the human side of urban development, particularly the need to provide support for displaced communities to help them maintain their livelihoods and cultural identity. Figure 15 shows Mr. Zulfahmi Bin Omar, a resident of Atas Paloh Village, standing next to the staircase of his home. The setting appears to be a familiar, everyday space, yet the image highlights the personal impact of displacement as Mr. Zulfahmi explains that he had to move to Wakaf Bharu to continue his daily work. This move indicates the challenges faced by long-time residents of the area, whose lives are disrupted by urbanization and the forced relocation of communities.

Figure 15. Mr. Zulfahmi Bin Omar has to move to Wakaf Bharu to continue his daily job

(Source: Fieldwork, 2020)

The image, showing Mr. Zulfahmi in a casual pose, suggests that the displacement is a difficult yet necessary part of his daily life now. As the community faces ongoing demolition and displacement due to urban development, Mr. Zulfahmi's story represents many others who have had to leave their homes, not only for physical relocation but also for economic survival. His relocation to Wakaf Bharu reflects the larger trend of rural and traditional communities being pushed out of central urban areas, where land is often repurposed for commercial or residential developments. This figure emphasizes the human side of urbanization, highlighting the emotional and practical challenges faced by individuals who must adapt to new living situations. It also underscores the importance of addressing the needs of displaced communities, ensuring that they have the necessary support to continue their livelihoods and maintain a sense of identity even after relocation.

The ongoing process of urbanization, which has led to a global shift from rural to urban living, is a central theme in the transformation of settlements. As urbanization is closely tied to economic growth and development, cities like Kota Bharu provide a clear example of how this transformation reshapes local communities. Urbanization not only changes the physical landscape of cities but also introduces significant challenges, such as displacement caused by floods, as government policies may lead to the eviction of long-established communities. Many of these communities, particularly in the context of Kota Bharu, have lived for generations in settlements under Temporary Occupation License (T.O.L.) status, which exposes them to the risk of forced relocation without secure land tenure.

This issue reflects broader trends highlighted by Strupp (2006) in the context of urban reconstruction post-disaster, where rapid urbanization often disregards the cultural and historical significance of established communities [19]. The lack of formal land recognition and tenure, as seen with T.O.L. lands, further intensifies the vulnerability of residents, particularly in prime locations susceptible to redevelopment. The current urbanization strategy in many regions, including Kota Bharu, mirrors the challenges discussed by Williams et al. (2019), who explore how informal settlements are disproportionately affected by urban expansion and climate change [20]. Their work emphasizes how urban growth can exacerbate social inequalities and environmental vulnerabilities, leading to displacement and the erosion of community identity.

In response, the issue of managing urban expansion and development becomes critical. Urban planning must address these challenges by improving infrastructure and providing secure land tenure, as suggested by Bowman and Wilson (2011) in their analysis of settlements and urbanization [21]. Properly managed urban growth can mitigate environmental risks, improve living conditions, and foster economic prosperity. However,

if urbanization is poorly managed, it risks exacerbating the depletion of natural resources, increasing pollution, and heightening poverty, as seen in the context of Kota Bharu and similar urban areas. The need for sustainable urban development that balances economic, social, and environmental factors is therefore essential to ensuring that cities grow in a way that benefits all residents while preserving their cultural and historical heritage.

4. Conclusion

It's evident that the destruction of human settlement in Malay urban area will result in the decline of Malays population in the city. Since most of the settlement in Malaysia's old capital city was the origin of the habitual settlers starting from the river fringe. The inland development increased as the demand for more land to expand the cities started from these bases. Urbanization arrived at the existing city due to building agglomeration from the development of the business centre. The building of shophouse at the frontage of the new settlement and hundreds of housing units of different typologies located close to the existing old settlement tapped the present infrastructure and took advantage of human existence from the old settlement in business purposes. The old settlement was not structured to cater for extensive drainage, wider roads and sophisticated infrastructure. These are the typical remnants of the Malay settlements in the old cities of Malaysia. Once the disaster occurred, it destroyed the foundations of the Malay settlement. In the past the Malays dependent on the river for livelihood and the land along the river reserved are "almost free" however, today, the government utilizes the riverfront for development and planning for future demand. The modern housing scheme developed in the urban areas is unaffordable by the Malays because of their income or access to the bank loan. Slowly, it erodes the people's lives either due to calamity, the people cannot survive in the urban areas or due to the loss of livelihood. If this is not well planned, it will also result in the loss of the Malay community in the future. This destruction will eliminate traditional craft activities, architecture, and Malays's skills along the riverbank in terms of identity.

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6. Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this article. All findings, data, and interpretations are made independently and without any commercial or financial influence.

References

[1] Perkins, J. B. W. 1961. Veii: The Historical Topography of the Ancient City, British School at Rome:119.

[2] Anderson, H.D. et al. 1997. Urbanization in the Mediterranean in the 9th to 6th Centuries BC, Museum Tusculanum Press, Copenhagen, Denmark: 317.

[3] Adger, W., N. et,al. 2020. Urbanization, Migration, and Adaptation to Climate Change. One Earth. Volume 3, Issue 4. Pp. 396-399. ISSN 2590-3322. DOI: https://doi.org/10.1016/j.oneear.2020.09.016.

[4] Umanailo, M. 2019. The Urbanization and Diversification of Farmland Namlea Village. DOI: https://doi.org/10.31219/osf.io/5ybx3.

[5] Hanson, J. 1989. Order and structure in urban design: The plans for the rebuilding of London after the Great Fire of 1666, Vol. 56, No. 334/335, Space Syntax: Social implications of urban layouts (January/February–March/April 1989) Athens Center of Ekistics: 22

[6] C. A. Doxiadis and J. G. Papaionnou. 1974. Ecumenopolis: The Inevitable City of the Future, ISBN 0-393-08730-1, W.W Norton & Company Inc, New York.

[7] Doxiadis, C.A. 1972. The Formation of the Human Room. Vol. 33, No. 196, Housing and Houses: Policies and Plans for Better Living. Athens Center of Ekistics: 218-229. https://www.jstor.org/stable/43617948.

[8] Doxiadis, C.A. 1968. Ekistics: An Introduction to the Science of Human Settlements. ISBN-13: 978-0090803002. Oxford University Press, New York.

[9] Doxiadis, C. A. 1962. Ekistics. Journal Article Ekistics and Regional Science. Vol. 14, No. 84. Athens Center of Ekistics: 193-200. https://www.jstor.org/stable/43620937

[10] Bekasova, A. 2020. The Extractive Industries and Society: From common rocks to valuable industrial resources: Limestone in nineteenth-century Russia, https://doi.org/10.1016/j.exis.2019.11.014, 2019 Elsevier Ltd.

[11] Bradley. P. 2013. Cities of Vesuvius Second Edition, Cambridge University Press, London: 48.

[12] Fasolino, I. 2018. Rules for a New Town After a Disaster: The Gridded Schemes in the Plans: Designing Grid Cities for Optimized Urban Development and Planning.   DOI: 10.4018/978-1-5225-3613-0.ch009

[13] C.B Kaehlig, A. Wright and C. Smith. 2012. Volcanoes of Indonesia: Creators and Destroyers, ISBN: 978-981-4385-02-2, Times Editions Pte Ltd, Singapore: 48.

[14] Abia W.A., et.al. 2020. Food Security Concerns, Climate Change and Sea Level Rise in Coastal Cameroon. In: Leal Filho W., Ogugu N., Adelake L., Ayal D., da Silva I. (eds) African Handbook of Climate Change Adaptation. Springer, Cham. DOI: https://doi.org/10.1007/978-3-030-42091-8_21-1

[15] Palinkas, L.A. 2020. Hurricane Katrina and New Orleans. In: Global Climate Change, Population Displacement, and Public Health. Springer, Cham. DOI: https://doi.org/10.1007/978-3-030-41890-8_2

[16] Fussell, E., Sastry, N. and Van Landingham, M. 2009. Race, socioeconomic status, and return migration to New Orleans after Hurricane Katrina. Population and Environment, 31(1-3), 20–42. Springer Science+Business Media, LLC 2009.

[17] S. Doocy, A. Daniels, S. Murray and T. D. Kirsch. 2013. The Human Impact of Floods: a Historical Review of Events 1980-2009 and Systematic Literature Review, PMC Free Article: 2.

[18] Erlick, J. C. 2021. Natural Disasters in Latin America and the Caribbean: Coping with Calamity. ISBN 1000335186. Routledge. London.

[19] Strupp, C. 2006. Dealing with Disaster: The San Francisco Earthquake of 1906. Symposium "San Francisco Earthquake 1906: Urban Reconstruction, Insurance, and Implications for the Future". Institute of European Studies. University of California at Berkeley.

[20] Williams, D. S., et.al. 2019. Vulnerability of Informal Settlements in the Context of Rapid Urbanization and Climate Change. Environment and Urbanization. DOI:10.1177/0956247818819694.

[21] A.Bowman and A. Wilson. 2011. Settlement, Urbanization, and Population: Ptolemaic and Roman Egypt Population and Settlement, ISBN I- 978-0-19-960235-3, Oxford University Press, London: 317.