MEGA-LED URBANIZATION AND THE TRANSFORMATION OF PERI-URBAN TISSUE: THE CASE OF KHULNA, BANGLADESH.

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Abstract: The recent push for urbanization in Bangladesh has placed a strong emphasis on accelerating economic growth through mega-scale infrastructure projects. However, there has been a lack of research conducted on how this trend of urbanization impacts the local morphology and socio-economic structure of cities, particularly in Bangladesh. This study delves into the effects of mega-led urbanization on the transformation of peri-urban tissue in Khulna, a significant coastal city in Bangladesh. Using a qualitative research approach, the study argues that the peri-urban tissues of Khulna possessed an inherent pro-migrant morphological character that supported the lives and livelihoods of migrants from nearby coastal regions. Nevertheless, the recent urban transformations led by mega-infrastructure, while promising development, are changing the peri-urban morphology into more rigid and standardized spatial forms. This shift poses potential challenges for the future of the marginalized rural population dependent on Khulna City to survive the crises of climate change.

Keywords: *Mega-led urbanization; Peri-urban tissue; Khulna*

1. Introduction

Khulna is the third largest metropolitan area in Bangladesh with a history of being a declined industrial city (Parvin & Mostafa 2010; Hakim & Lim 2013). The city is surrounded by rich agricultural hinterlands. Strategically located, Khulna connects to other regional towns and growth centres both by road and water. Migration and organic urban growth have played a key role in shaping the city's urban morphology, with 48.45% of the population being comprised of migrants (Sowgat et al., 2017). These migrants have come to Khulna due to natural disasters in Bangladesh's southwest coastal region, a lack of economic opportunities, and a loss of livelihood in rural and small urban regions (Alam & Miller 2019).

Recent infrastructure projects such as the Khan Jahan Ali (Rupsha) Bridge and the Padma mega-multipurpose Bridge have made Khulna a potential city for rapid urbanization (Alam et al., 2023). These projects have established direct connections with Mongla and the capital Dhaka, bringing ample opportunities for expanding regional connections and flourishing economic activities. Khulna has experienced continuous urban growth (Sowgat & Roy, 2020), and it is predicted that the opening of the Padma Multipurpose Bridge will result in a huge acceleration of economic activities in the southwestern region of Bangladesh.

However, this rapid urbanization and urban transformation may have a negative impact on Khulna's inherent morphological characteristics and socio-economic cohesions. The peri-urban zones are thought to be the most critical zone to absorb the influx of people and economy. Yet, there has hardly been any research to investigate whether the impact of rapid urbanization on its morphology would affect the present and future sustainability of Khulna's adaptive peri-urban landscape.

The core objective of this study is to critically examine the transformation and potential loss of Khulna's inherent morphological characteristics and socio-economic cohesions due to rapid urbanization. The research should help formulate urban design and planning guidelines that adopt inclusiveness and sustainability for the sustainable growth of similar cities in the Global South.

2. Methodology

The investigation follows an exploratory approach, utilizing ethnography as a qualitative research strategy. To

identify and explain the trend of urbanization in peri-urban regions, the study employs the concept of urban tissue as a morphological analysis framework. Urban tissue refers to a consistent form and function in the study of urban morphology. The study selected three sample urban tissues adjacent to Nirala Residential area, a planned neighbourhood built by the Khulna Development Authority in the 1980s, [Figure 2a & 2b].

The study focuses on the southern region of the peri-urban zone due to significant changes in land use between 2005 and 2022 [Figure 8a, 8b, 8c, and 8d]. Two major transportation infrastructures: the Khan Jahan Ali Bridge (Rupsha Bridge) and the Padma Multipurpose Bridge were built during this time. To observe the morphological transformations, the study examined three urban tissues from this zone in detail: (i) Tissue 1: Nirala *Dighi*[1] and the surroundings [Figure 2b], (ii) Tissue 2: Abdul Jalil Lane [Figure 2b], and (iii) Tissue 3: Bagmara Main Road, Ria Bazaar, and surroundings [Figure 2b]. The research collected data on the tissues through site visits and examinations. Interviews, walkthrough analyses, map analyses, and physical feature surveys were conducted in the selected urban tissues and their zones of influence throughout both phases.
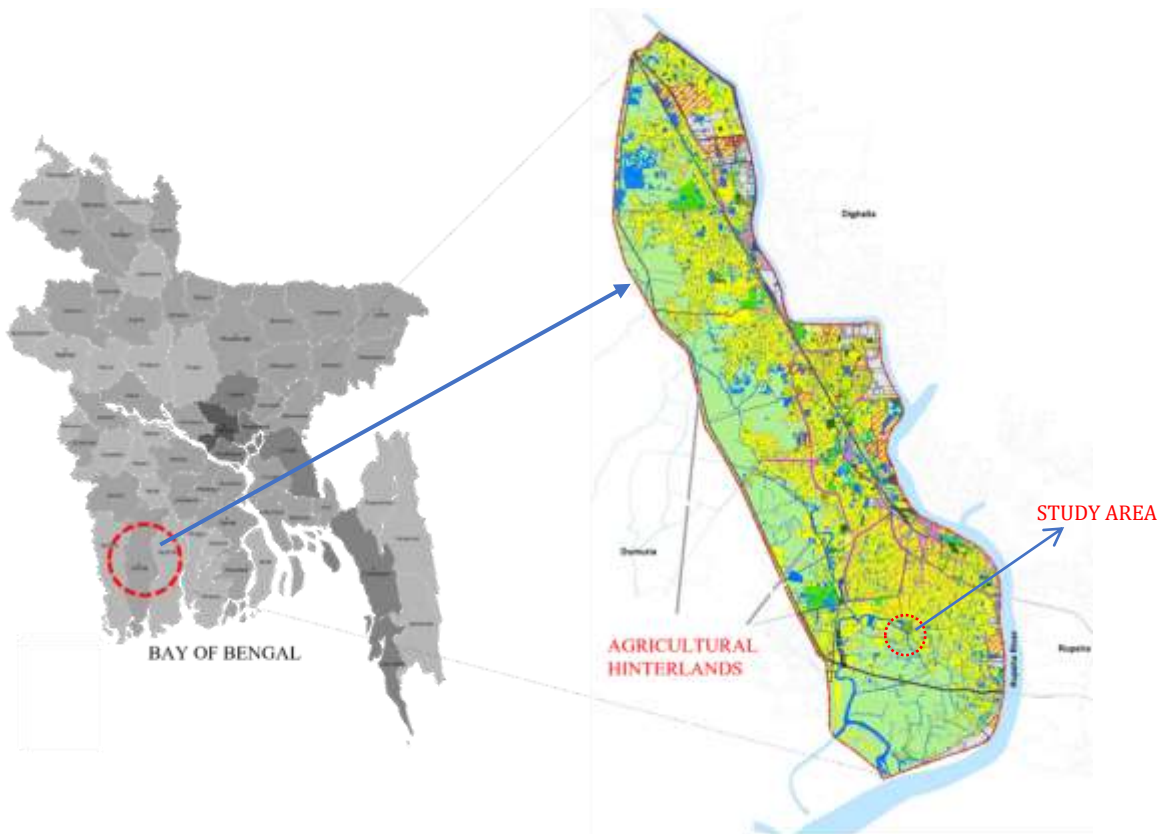

Figure 1: The location of Khulna city in Bangladesh (*Source: Google,2022)*

The study collected visual data by taking photographs, videos, and on-site sketches. In addition to examining maps, the research also looked at photographs, videos, satellite images, and land-use maps for the selected sites covering the years 2005 to 2022. Finally, to triangulate the data sets, in-depth interviews and focus group discussions were conducted. It conducted semi-structured interviews to evaluate the geographical traits of the selected peri-urban issues and associated socio-economic activities.

3. Observations and Findings

The description of the study area and the observations and findings of the field survey are described in the following sections.

3.1 THE STUDY AREA
Khulna city covers 45.65 sq. km of land area and has a population of 751,000. The city corporation area is spread across 31 administrative wards and 184 neighbourhoods. The city has continued to expand through unplanned urbanisation despite facing economic decline and a lack of employment opportunities (Sowgat & Roy, 2020; Roy et al., 2018).

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[1] Large pond in Bangla

The neighbourhoods of Khulna have evolved by spontaneous process over the last three decades, leading to urban sprawl (Alam & Miller, 2019). As a result, there are distinct internal changes in city morphology. It is remarkably interesting that the human settlements have increased by 96% in the city and by 468% in the periphery within the last thirty years. These transformations have great impact on reshaping the future of this city (Sowgat & Roy, 2020; Roy et al., 2018).

Scholars researching the cities in the Global South have highlighted the importance of peri-urban regions in providing spatial justice and access to urban economy (Hossain & Rahman, 2021). The peri-urban regions of Khulna serve as transitional zones that play a crucial role in connecting urban and rural areas. This area is unique and heterogeneous, with a hybrid character that blends agricultural fields and water bodies. It is also home to numerous informal commercial activities. The periphery of this area is an affordable option for migrants to reside and provide services to the core city.

Figure 2a & 2b : Satellite image showing the study area and blow-up showing Nirala *Dighi*, Nirala *Koborstan*, Abdul Jalil Lane and Bagmara Main Road (*Source: Google Earth, 2023*).

The study area, located in the southern part of the Nirala *Abashik*[2] area of Khulna, has developed spontaneously mostly by the migrants over the years [Figure2b]. Nirala *Dighi* and Nirala *Koborsthan*[3] are two significant landmarks occupying a larger area within the zone [Figure2b]. Bagmara main road is a significant street that connects Khulna city with the southern part of the site towards the city bypass road [Figure 2a & 2b]. Ria bazaar is a significant local bazaar in the southern part of Bagmara street [Figure 2a]. These spontaneously grown areas have been selected for the study as they are undergoing spatial and functional transformations due to the recent connection with Khulna City Bypass Road. The road links Khulna with Mongla and Padma mega-multipurpose bridge through the Rupsha Bridge, situated in the south part of the study area. The following sections will shed light on how the zones are rapidly transforming spatially towards standard land use from their previous spontaneously grown heterogeneous morphology.

3.2 FIELD SURVEY
The field survey was conducted in two phases. The first phase was conducted in October 2021 and the second phase was in October 2022. The study used interviews, walkthrough analyses, map analyses, and physical feature surveys in the chosen urban tissues and their zones of influence during the field surveys. However, the spatial characteristics of the selected peri-urban tissues, associated socio-economic activities and recent socio-spatial transformations were mapped and assessed through semi-structured interviews. The interviewees were chosen using the 'Judgmental Sampling' technique in order to get crucial data that cannot be discovered from random selections.

In addition to analysing the maps, the research also examined photos, videos, satellite images, and land-use maps for the chosen study area encompassing the years 2005 to 2022. Finally, data gathered from in-depth interviews and focus group discussions were analysed to triangulate the information from field observation and map analysis. Significant observations and findings from the study area are explained in the following sections.

3.2.1 Nirala Dighi, Nirala Koborstan and the surroundings
Nirala *Dighi* and Nirala *Koborstan* occupies a significant part within the study area. The street around the *dighi* and the koborstan acts as a socio-economic hub for the people living in the surrounding area. It was a 'backward' zone of the city due to the poor vehicular connectedness. The street around the *dighi* was narrow and unsuitable for regular vehicular movement. Some peoples are observed to buy and sell vegetables on mats within the streets creating this space as the hub of socio-economic activities of the locals [Figure 4a, 4b & 4c]. The surrounding houses are single storied which the poor migrants and locals can afford to rent with a comparatively cheaper price. Some of the

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[2] Residential area in Bangla
[3] Graveyard in Bangla

inhabitants are engaged in driving easy-bikes[4] in the city area, hence providing services to the core. While interviewing, a local resident of around 55 years of age informed that he has migrated from another district about a year ago, where he was a farmer. Now, he is selling vegetables at the street beside the *dighi* for his livelihood and resides nearby along with his family with an affordable rent. He also has a family connection in Khulna, that helps him to migrate here. Another man of around 70 years of age, who worked in the nearby *mardasa[5]* for a long period, informed that he spends his leisure times roaming in the street and gossiping in nearby tea stalls and informal restaurants. A number of rickshaw pullers were found to have their meal in the local restaurants. Within the street, moving paddle vans and temporary shops selling fishes and vegetables were found.

Figure 3a & 3b: The transformations at the entry point to the Nirala Dighi from Nirala Abashik within 2021 to 2022 (*Source: Field Survey 2021& 2022*)

Figure 4a, 4b & 4c: Socio-economic activities around Nirala *Dighi* (*Source: Field Survey 2021 & 2022*)

A local man of around 32 years of age informed us that the local authority is planning to make wider streets through this zone connecting the Nirala *Abashik* area with the city bypass road. He was concerned that because certain measures had already been taken, the cost of land and housing would rise, and they would no longer be able to afford the area. While observing in 2022, which is almost one year after the first survey in 2021, significant transformations were found. A new construction of a high-rise building was seen at the entry point of the zone uprooting some local shanty shops. There were gatherings of local public transports like rickshaws and easy-bikes at this point but some of the local shops were vanished within one year. A public tube-well for fetching water were functioning for the common use of local people, rickshaw pullers and the drivers of easy-bikes.

A significant socio-spatial transformation has already been started due to the incorporation of new constructions for the urban elites replacing the 'shanty' infrastructures for the poor locals. Such shops worked as an attractor for gathering and resting for the 'poor' service providers of the city, but now they are replaced by new high-rise buildings [Figure 3b].

3.2.2 Abdul Jalil Lane
Abdul Jalil lane is a curved lane that connects 'backword' Nirala Dighi with Bagmara Main Road near Bagmara Bridge. The spatial configuration of this lane is quite different than the nearby zones. This lane is very calm and quiet, shaded with large trees and paved with concrete paving blocks that resembles like a pedestrian way [Figure 6a].

A tiny water channel runs parallel with this curved street segregating the Nirala *Koborstan*. A few numbers of easy-bikes, motorbikes, paddle vans and pedestrians were observed crossing through this lane during the field survey. While surveying a local man around 70 years of age informed that this lane was made five to six years ago for creating a shortcut route to Bagmara Main Road. Several houses like village huts surrounding a courtyard with ponds

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[4] Local name of battery driven three-wheeler.
[5] Islamic religious school

and large trees were observed along the northern part this this lane. The majority of the adjacent houses are made up of temporary materials. Ducks were found roaming in the ponds; chickens were wandering within the house premises and even in the streets, which seemed like a patch of rural living style. Although this lane was not particularly long, its curvature prevented one end from being seen from the other.

Figure 5a, 5b & 5c: Some local spaces around Bagmara Main Road that resembles the previous bottom-up development model (*Source: Field Survey 2021 & 2022*).

Figure 6a & 6b: Abdul Jalil Lane & Street side shops at Bagmara Main Road (*Source: Field Survey 2022*)

3.2.3 Bagmara Main Road and Ria Bazaar
Bagmara Main Road was a significant street within the study area that connected the southern part of Khulna with the core city. The street was an informal commercial spine, where varied single-story shops (metal shops, tea stalls, grocery stores, etc.) were arranged along the street [Figure 6b]. With more traffic (mostly easy bikes) than the adjacent streets, this road serves as a shortcut from the city to the Khulna city bypass road. The majority of the buildings along the street were single-story, but several recently constructed multi-story buildings were also visible. Along the street, where the ground level is being prepped for commercial use, a number of multi-story buildings could be seen under construction. Large agricultural fields were seen just behind the narrow commercial strip, and this route connects a number of narrow residential alleys. Ria Bazar, a well-known local bazaar for fish and vegetables, was situated at the southern end of this road [Figure 5c]. A 32-year-old proprietor of a local tea stall near Ria Bazar said during an interview that he supported his family's expenses through his little tea shop here because the rent was less expensive. Along this road, some large blocks of land were observed to be converted into small residential plots from agricultural fields and even from natural waterbodies with sand filling [Figure 7a & 7c].

Figure 7a, 7b & 7c: Different state of recent developments along Bagmara Main Road (*Source: Field Survey 2022 2022*).

4. Analysis

Figure 8a, 8b, 8c & 8d: - Clockwise] Morphological transformation within the study area from 2005 to 2022.
(Source: Google Earth 2023)

Over the span of 2005 to 2022, the transformation of Khulna City, situated in the Global South, has been starkly evident through satellite imagery. These visual records offer a clear picture of how the landscape has evolved, highlighting a series of drastic changes, especially in the peri-urban areas of Khulna. Analysis of the imageries and the observations delve into the profound implications of these changes, focusing on the loss of local morphological attributes.

4.1 DISAPPEARING AGRICULTURAL LAND
Between 2005 and 2010, the region witnessed a gradual yet steady decline in its agricultural land. During this time, the emergence of the another (known as Prottasha) Residential area at the southern end of the Moyur River was a noteworthy transformation. Agricultural landscapes gave way to planned residential neighbourhoods. However, a significant shift occurred after 2015, with residential development expanding even further into the agricultural domains. This accelerated land conversion not only led to the drastic reduction of agricultural areas but also posed a severe challenge to the local population's scope to utilize their livelihood skill sets and achieve self-sufficiency.

The attractiveness of this area for migrants and locals was threefold - its affordability, scope of utilizing their skillset and easy access to diverse job opportunities in the city. As such, a unique dynamic emerged as the incoming population brought with them diverse livelihood strategies, including agricultural skills. This symbiotic relationship between the peri-urban landscape and its inhabitants became evident, benefiting both the migrants and the core urban region. The availability of affordable labour and goods produced in the peri-urban area proved to be advantageous for the city.

4.2 THREAT TO LOCAL LIVELIHOODS
The construction of the Khulna City bypass in the southernmost part of the study area marked a pivotal shift in the landscape's development trajectory. The bypass prompted a sudden surge in commercial activities encroaching upon agricultural zones, severely shrinking agricultural fields. The consequence was not only a significant loss of agricultural land but also a transformation of the population's livelihoods.

The unique lifestyles that had developed over time, revolving around agriculture, were now under threat as these lands transitioned to commercial use. The very livelihood of those who had relied on farming became at risk, pushing them toward becoming cheap labour in the city's economy. The pace of these developments, sudden and unfamiliar, poses a looming threat of further displacement for both locals and migrants in the near future.

4.3 EROSION OF PRO-POOR PLANNING

The rapid changes in the studied regions have largely been spontaneous and unplanned, primarily driven by the needs of migrants and the disadvantaged. This bottom-up approach led to the emergence of distinctive behavioural patterns, socializations, and economic structures, fostering micro-scale enterprises and inclusive communities.

These spaces were thoughtfully designed to support creative diversity and create a sense of place. In this environment, urban development and design were flexible and continually negotiated to meet the needs and challenges of the local population. It is worth noting that these changes occurred gradually and inclusively.

However, as the paper illustrates that the recent infrastructure projects have disrupted this cohesion. Multi-story buildings have encroached upon agricultural lands and have even filled natural water bodies with sand. These new developments stand out as isolated islands in the landscape, disrupting the cohesiveness of the surroundings and threatening the unique socio-spatial morphology of Khulna.

5. Discussion

The analysis of Khulna City's peripheral transformation led by mega infrastructure development holds profound implications for the existing literature on urbanization, peri-urbanization, and urban planning, particularly in the context of the Global South. The findings shed light on how these real-world observations align with and contribute to the broader discourse on urban development and its social, economic, and environmental impacts.

As the literature, exemplified by the United Nations Sustainable Development Report of 2019, has long foreseen the sweeping changes underway, it predicts that by 2050, an unprecedented 66% of the global population will call metropolitan areas home. This momentous shift towards urban living is well underway and has far-reaching consequences. Since the Industrial Revolution, the transformation of society has been characterized by three closely intertwined factors: industrialization, urbanization, and globalization (Chen, Zhang, Liu & Zhang, 2014). Urbanization, driven in part by industrialization, is a catalyst for economic growth in both developed and developing countries.

The link between economic growth, industrial expansion, and the rise of urban populations has been well-documented in numerous studies (Aguilar et al., 2022; Woltjer 2014). However, the acceleration of global urbanization, especially in the Global South, has been a defining feature of the last few decades. Consequently, the focus of urbanization has shifted from the Global North to the Global South (Parnell & Robinson, 2012). Khulna City's peri-urban transformation exemplifies this shift, as it reflects the broader trends of rapid urbanization in the Global South. It serves as a tangible case study illustrating the complexities and consequences of this shift, making it a valuable addition to the literature in understanding how the transformation affects the regional population's scope of adaptability and their dependencies on cities.

Peri-urban areas, where urban and rural territories intersect, have thus become significant focal points for research and debate with respect to the mega-led infrastructure development and their planning. Peri-urbanization is a multifaceted process by which rural areas situated on the fringes of established cities progressively adopt urban characteristics in terms of spatial, social, and economic factors. Often, this transformation occurs in a piecemeal fashion. Peri-urban areas are actively contributing to economic growth and experiencing substantial urbanization and population growth. They are also subject to complex global pressures.

The findings from Khulna City's peripheral pervasive transformation echo the concerns of peri-urban development planning outlined in the literature. It illustrates the loss of employment structures, rapid urban growth, and the damage to regional adaptation systems. The increase in land values and homogenization of the real estate land uses, and growth of non-agricultural activities, align with the prevailing decrease in the migrant-friendly attributes of peri-urban areas. The UN Habitat's 2010 report predicts that urban population influx needs to be absorbed by the peripheral zones of cities in the Global South in the coming years. The recent developments in Khulna, marked by dynamic land conversion, high population growth, shifting economic activities, and real estate development, mark an unresponsive shift to the upcoming complex transformations that peri-urbanization in the Global South should foresee.

The notable aspect of peri-urbanization led by mega-infrastructure projects as highlighted in the literature is the impact of global growth imperatives, particularly neoliberal policies and capitalism. These global forces have effectively (re)shaped socio-political and socio-cultural formations, profoundly influencing (to some extent corrupting) the spontaneity of the peri-urbanization process (Marshall & Dolley 2019). The recent abrupt and non-inclusive transformations in Khulna City, driven by infrastructure development, are consistent with this literature.

The literature, including works by Ranganathan & Balazs (2015), Arabindoo (2009), Keivani & Mattingly (2007), and Mbiba & Huchzermeyer (2002), has documented how neoliberal global policies have (re)transformed the spatial and functional interface of peri-urban zones. The findings from Khulna City resonate with these insights, illustrating how such policies are leading to abrupt and non-inclusive changes in the peri-urban landscape.

The analysis of Khulna City's transformation underscores a recurring challenge in the literature - the unique and dynamic attributes of peri-urbanization. The literature has noted that traditional scholarship in urbanization and planning, primarily originating in the Global North, for their emphasis on economic growth, often falls short in capturing the intricate dynamics of peri-urbanization and its pro-poor narrative in the Global South (Sowgat et al., 2017).

The findings from Khulna City offer a real-world illustration of the complexities and nuances of peri-urbanization. The rapid and spontaneous changes occurring in the peri-urban areas of Khulna City, driven by infrastructure development, exemplify the dynamic nature of these regions. The inability of traditional scholarship to fully grasp these dynamics underscores the need for more localized and context-sensitive research, as well as a re-evaluation of the existing urbanization and planning models in the Global South before planning exclusive mega-infrastructure development.

In summary, the findings from Khulna City contribute significantly to the literature on urbanization, peri-urbanization, and mega-infrastructure led urban planning, particularly in the Global South. They provide a concrete example of the complexities and challenges of growth oriented peri-urbanization models, aligning with the neoliberal and capitalist policies and expanding upon the prevailing scholarship. Khulna City's case serves as a valuable illustration of that global trends in urbanization, the unique characteristics of peri-urban areas, the impact of such global imperatives on regional sustainability, and the need for context-sensitive approaches in understanding and managing peri-urbanization in the Global South.

6. Conclusion

The analysis that has been presented in the paper on Khulna City's peri-urban transformation through mega-infrastructure development offers valuable insights into urbanization, peri-urbanization, and contemporary urban planning models, especially in the Global South. This real-world case aligns with and enriches the broader discourse on mega-infrastructure led urban development and its socioeconomic and environmental consequences.

Peri-urban areas, where urban and rural meet, have become crucial research areas in Global south, particularly in the context of mega-infrastructure development. As the paper has shown how peri-urbanization as a multifaceted process in Khulna, by progressively adopting urban characteristics, contributes to economic sustenance of regional population while facing complex global pressures. The findings from Khulna City align with the literature, illustrating the loss of traditional employment structures, homogenous urbanization, and diminishing migrant-friendly attributes. The impact of global imperatives, including neoliberal policies, on peri-urbanization is consistent with literature, highlighting abrupt and non-inclusive changes brought by the growth accelerating planning policies.

In that context, Khulna City's case emphasizes the necessity to retain unique dynamics of peri-urbanization, often overlooked in traditional urbanization and planning models primarily rooted in the Global North. The rapid and spontaneous changes underscore the need for context-sensitive approaches to peri-urbanization in the Global South. Khulna City's transformation is a critical case showing how mega-led planning modifications have a significant negative impact on the morphological flexibility of such vulnerable places and progressively eliminate functional inclusivity. The historically formed pro-migrant character might disappear if such infrastructure expansion is not thoroughly investigated such towns' peri-urban formation. This is not to imply that the peri-urban areas of similar cities do not need infrastructure development; rather, the paper makes the case that this development needs to be accompanied by thoughtful urban design policies to prevent future urban growth in cities like Khulna from eradicating the most resilient or humane aspects of its urban morphology.

However, the prior bottom-up peri-urban model has a unique set of connections with the landscape that preserves the skill-set and can support the city's service oriented demands in a comparable way. These transitional zones served as service zones for the core region and were spatially and functionally interdependent with the existing city. It is quite improbable that the peri-urban tissues of the future will be developed with such inclusivity both within them and with the urban core.

Therefore, the paper stresses that before implementing the mega-infrastructure led planning paradigm, it is essential to comprehend cities like Khulna's distinctive characteristics. Although its peri-urban can be comprehended as an 'un-orderly' or 'messy' described as an underdeveloped area, mixing of rural and urban, and is not yet a city (Follmann, 2022), but in order to maintain the city's pro-migrant character, it is necessary to analyse the morphological pattern and its embedded flexibility/adaptability before interfering in such socio-spatially sensitive peri-urban areas.

7. Citations and References

Aguilar, A. G., Flores, M. A., & Lara, L. F. 2022. *Peri-Urbanization and Land Use Fragmentation in Mexico City*. Informality, Environmental Deterioration, and Ineffective Urban Policy. Cities, 4, 1-19.

Alam, A., & Miller, F. 2019. *Slow, small and shared voluntary relocations: Learning from the experience of migrants living on the urban fringes of Khulna, Bangladesh*. Asia Pacific Viewpoint, 60(3), 325-338.

Alam, I., Nahar, K. and Morshed, M.M., 2023. *Measuring urban expansion pattern using spatial matrices in Khulna City*, Bangladesh. Heliyon, *9*(2).

Arabindoo, P. 2009. *Falling apart at the margins? Neighbourhood transformations in peri-urban Chennai*. Development and Change, 40(5), 879-901.

Butsch, C., & Heinkel, S. B. 2020. *Periurban transformations in the global south and their impact on water-based livelihoods.* Water, 12(2), 458.

Chen, M., Zhang, H., Liu, W., & Zhang, W. 2014. *The global pattern of urbanization and economic growth: evidence from the last three decades*. PloS one, 9(8), e103799.

Follmann, A. 2022. *Geographies of peri-urbanization in the global south.* Geography Compass, 16(7), e12650.

Habitat, U. N. 2010. *State of the world's cities 2010/2011–cities for all: bridging the urban divide.* UN Habitat, Nairobi.

Hakim, S. S., & Lim, E. M. J. 2013. *Scarcity, control and a 'third world' urban form.* In PhD Conference: Scarcity and Creativity in the Built Environment.

Hossain, M. Z., & Rahman, M. M. 2021. *Climate change vulnerability and resilience of urban poor in Khulna, Bangladesh: the role of asset-based community development approach.* International Journal of Urban Sustainable Development, 13(2), 131-147.

Keivani, R., & Mattingly, M. 2007. *The interface of globalization and peripheral land in the cities of the south: implications for urban governance and local economic development*. International Journal of Urban and Regional Research, 31(2), 459-474.

Marshall, F., & Dolley, J. 2019. *Transformative innovation in peri-urban Asia.* Research Policy, 48(4), 983-992.

Mbiba, B., & Huchzermeyer, M. 2002. *Contentious development: peri-urban studies in sub-Saharan Africa.* Progress in Development Studies, 2(2), 113-131.

Parnell, S., & Robinson, J. 2012. *(Re) theorizing cities from the Global South: Looking beyond neoliberalism.* Urban Geography, 33(4`), 593-617.

Parvin, A., & Mostafa, A. 2010. *Sustainable re-invention of the industrial areas of Khulna: Strategic Planning Implications.* In The 16thAnnual International Sustainable Development Research Conference, 30 May-01June.

Ranganathan, M., & Balazs, C. 2015. *Water marginalization at the urban fringe: environmental justice and urban political ecology across the North–South divide.* Urban Geography, 36(3), 403-423.

Roy, S., Sowgat, T., Ahmed, M. U., Islam, S. T., Anjum, N., Mondal, J., & Rahman, M. M. 2018. *Bangladesh: National urban policies and city profiles for Dhaka and Khulna.* GCRF Centre for Sustainable, Healthy and Learning Cities and Neighborhood (SHLC).

Sowgat, T., Wang, Y. P., & McWilliams, C. 2017. *Pro-poorness of planning policies in Bangladesh: the case of Khulna city.* International Planning Studies, 22(2), 145-160.

Sowgat,T., & Roy, S. 2020. *Khulna: the diversity and disparity of neighbourhoods from organic growth.* SHLC research summary 09, Khulna University.

Woltjer, J. 2014*. A global review on peri-urban development and planning*. Jurnal Perencanaan Wilayah dan Kota, 25(1), 1-16.