This study explores the internal structures and differentiation of neighbourhoods in Khulna, a typical large city in Bangladesh.

Analysis of city – and neighbourhood-level information reveals the critical challenges that citizens face in terms of urban sustainability, health and education, and that require focus for future policy-making for the city.

**KEY FINDINGS**

- Khulna’s neighbourhoods have evolved spontaneously over the last 30 years, leading to urban sprawl and distinct internal changes. The rapid decline of farmland (by 49%) and water bodies (by 19%) in Khulna and the dramatic increase in human settlements (96% in the city and 468% in the periphery) have reshaped the future of this city.

- 91% of Khulna’s neighbourhoods have evolved organically and have been adaptive to the transformation process. Population growth, shifts in economic activities, and the development of roads, urban amenities and related infrastructure have influenced changes at the neighbourhood level.

- The old, organically transformed neighbourhoods accommodate a diverse mix of socioeconomic groups and have avoided significant social segregation. Yet, there are isolated clusters of slums, religious minority groups and certain ethnic classes.

- Poor coverage of urban amenities and limited formal economic activities have resulted in neighbourhood differentiation and a division between well- and under-served areas. Such divisions have severely affected the poor and working-class population, forcing them to live in low-cost communities with inadequate amenities.

- While neighbourhoods are responding to the city’s growing need for housing, the same cannot be said about urban amenities, and health and education facilities. The unplanned and organic nature of urbanisation in Khulna has resulted in unsustainable and unequal living environments across neighbourhoods.
About the study

Using a mixed-method approach, this study investigates the growth pattern and process, the internal social and spatial structures, and current inequalities in Khulna – the divisional headquarters of Khulna region and the third largest city in Bangladesh in terms of population and growth.²

The city of Khulna covers 45.65 km² and has a population of 751,000 spread across 31 administrative wards and 184 neighbourhoods. Despite the economic decline and lack of employment opportunities, the city has continued to grow in spatial terms, albeit through unplanned urbanisation.

The research has used multi-temporal image classification to detect land-use changes over time, while patterns of growth (and sprawl) have been analysed using land-cover and landscape metrics. Spatial logistic regression, direct visits to growth areas and interviews with residents have enabled us to identify the drivers of urban transformation. Entropy-based spatial information theory has been used along with isolation, spatial-isolation, and Moran’s I indices to reveal the current divisions and segregation in the city. The structure and typology of Khulna’s neighbourhoods have emerged through cluster analysis coupled with Principle Component Analysis. This has been followed by screening through direct field observations and the measurement of various qualitative indicators. To understand the neighbourhoods, we employed interviews, walkthrough analysis, institutional surveys and physical feature surveys in the selected communities and their zones of influence.

Research results

The patterns and process of urban transformation in Khulna

Our analysis of data from 1991–2019 shows that Khulna has experienced growth both within and outside the official city boundary towards its southeastern, southwestern, southern and northern sides.

The city expanded 17.74 km² outside the city boundary during this time. The availability of affordable land with promising transport and social networks has encouraged people to settle in peri-urban areas of the city.

While the city’s neighbourhoods have become denser through infill, leapfrog and fragmented transformation, suburban areas have hosted new settlements through leapfrog, ribbon, infill and low-density transformation. Because of this growth, Khulna’s built-up areas have increased by 14.67 km². This transformation has resulted in the loss of about 4.66 km² of water bodies, 1.84 km² of vegetation and 41.59 km² of cultivated land. With minimum planning regulations in place, Khulna has seen unprecedented growth and densification, with changes observed in 111 neighbourhoods or 60% of all neighbourhoods.

Khulna’s changing demographic profile and urban density

The built-up area of Khulna city has grown at an average rate of 4.87% between 1991 and 2020.

Migration and the organic nature of urbanisation in Khulna have transformed the city’s urban structure.
The city has accommodated a growing population, driven in large part by migrants from southern parts of Bangladesh moving to the city. Lack of work opportunities and health and education facilities in rural and small urban areas, combined with natural disasters in the southwestern coastal belt, has resulted in migration to Khulna.

Migration and the organic nature of urbanisation in Khulna have transformed the city’s urban structure. Neighbourhoods host a mix of different income groups within densely packed areas. While poor citizens have become marginalised in 1,134 slums, other income groups tend to co-exist and flourish in these organically evolving neighbourhoods. The exceptions are high-income groups that reside in specific unplanned and planned neighbourhoods due to the high land value in these areas. This trend has gradually created new upper-class regions over the last 20 years.

**Socio-spatial differentiation, segregation and spatial inequality**

Khulna does not have notable racial or religious segregation. Yet, in this Muslim-majority city (90%), Hindus (9%) and Christians (1%) choose to live in clusters within the city core and the southeast side of the city (see Figure 2). Here, neighbourhoods have a high concentration of Hindus (over 20%) and Christians (9%). There are small but isolated pockets of Bihari communities and Sweeper communities as well.

Poor people live in slums, which are isolated pockets spread around the whole city. In terms of access to services, there are distinct disparities – for example, 1% of all households in Khulna do not have access to tap water or tube well water and this percentage rises to 7% of households in poorly served, isolated neighbourhoods. Meanwhile, neighbourhoods in the city’s central part and planned neighbourhoods have access to much better basic urban services (see Figure 1). These disparities are a result of scarce funding in the city and growing demand for services.

**Figure 1: The social attributes of neighbourhood clusters in Khulna city**

Source: Authors (2020)
Neighbourhood characteristics

Five types of wealth-based neighbourhoods have emerged from our analysis: 1) wealthy, 2) upper-middle-income, 3) middle-income, 4) lower-middle-income, and 5) low-income (see Figure 2).

Throughout the city, there are low-income settlements and slums. With limited access to basic services, people within these neighbourhoods have low literacy rates (e.g., Jora Gate has a literacy rate of 41%) and are mostly engaged in the informal sector with irregular income patterns. Here, temporary housing and shacks are rented by the poor for a low and affordable charge. Another type of low-income settlement is evident in the industrial belt where dwellings were built for workers. These neighbourhoods have multi-storey buildings and some temporary structures, but the shelters are poorly maintained and have inadequate access to services.

Figure 2: Neighbourhood distribution of income groups

Lower-middle-income neighbourhoods have relatively low literacy rates and tend to comprise low-rise buildings (for example, in Dakshin Kashipur less than 1% of structures extend above four floors). These neighbourhoods have grown organically, host a mixed-income population and are moderately serviced with good access to water. Some of the lower-middle-income neighbourhoods located at the edge of the city have poor service conditions, but the settlements are less dense.

The middle-income neighbourhoods contain a mixture of different housing structures, dominated by rental houses of two to four floors. Most of the households have sanitation facilities with a water seal. These neighbourhoods have also grown organically, yet they have well-constructed drains and roads and have access to moderate services.
urban services and facilities. Middle-income neighbourhoods tend to be densely packed and accommodate people of different professions, albeit mostly from the service sector.

A high percentage of brick-built structures can be found in high – and higher-middle-income neighbourhoods (for example, 60% of structures in the Babu Khan Road neighbourhood are brick-built). Most of the neighbourhoods in this category are planned with good access to services and roads, and residents have decent literacy rates (e.g. a literacy rate of 69% in Purba). Residents of such neighbourhoods previously enjoyed sole ownership of their houses and preferred to build duplexes; in more recent years, these areas have become dominated by apartment blocks and the flats are sold to higher-income groups. There are few unplanned neighbourhoods in high – and higher-middle-income areas of the city.

Although income has influenced the formation of distinct neighbourhood typologies in Khulna, income-based categorisation is exceedingly difficult because of differences in income classes within neighbourhoods. Indeed, some of the slum areas co-exist side by side with planned residential areas within a neighbourhood, with mutual support between household types because the affluent employ slum dwellers as maids, drivers and other domestic staff. Without this economic relationship, the rich could not benefit from cheap labour, and the poor would struggle to find jobs.

Spatial inequalities: health and education

An insufficient number of public health care facilities and disparities in the cost and quality of public and private facilities affect service provision in the city. The distribution of public health care facilities is highly biased towards high-income and planned neighbourhoods in Khulna. For instance, the ratio of public, private and non-governmental organisation (NGO) health facilities in Purba Sonadanga (a planned high-income neighbourhood) is 14:79:7 versus a ratio in Lobonchora (a low-income organically established neighbourhood) of 0:75:25. A dependency on the private sector and the lack of specialised doctors and hospitals have made the health system expensive for middle – and low-income groups in the city.

The unequal spatial distribution of educational institutions has influenced access to education in Khulna. Primary schools and high schools are both distributed disproportionately without considering the current population density of neighbourhoods. The average literacy rate in the city is 72%, but some neighbourhoods, such as Jora Gate mentioned earlier, have literacy rates as low as 41%. In line with the low gross enrolment rate in higher education in Bangladesh (17%), a significant proportion of people in Khulna do not have access to higher education. Though the high-income neighbourhoods are relatively well served in terms of density of educational facilities (for example, Purba Sonadanga has 3.6 institutions per 1,000 population), the poor neighbourhoods such as Labanchara are neglected (only 0.7 institutions per 1,000 people).

Way forward

Khulna's neighbourhoods have expanded spontaneously in response to the growing population and the transformation of economic activities. Neighbourhoods have lost their open spaces, agricultural lands, vegetation and water bodies to make way for new settlements and people.

Although the old neighbourhoods accommodate residents from a diverse mix of socioeconomic backgrounds, without any inclusive development interventions inequality is rising in the city. Significantly, poor coverage of urban amenities and services and limited formal economic activities have resulted in a differentiation between poor and wealthy neighbourhoods, and social segregation.

Without well-guided planning policies and interventions, Khulna is unable to benefit from urban expansion. Attention needs to be paid to improving city planning and regulations, and prioritising the development of particular areas of the city to best deal with the inequalities and the lack of basic urban services. The city managers should work towards balanced provisioning of urban services. At the same time, the urbanisation process and transformation of land-use must be guided by realistic development control guidelines.
1 This paper summarises key findings of a report on the city as part of an international comparative study coordinated by the Centre for Sustainable, Healthy and Learning Cities and Neighbourhoods (SHLC). The wider study examines urbanisation and sustainable development in 14 cities in Africa and Asia and this part explores patterns of neighbourhood distribution and changing socio-spatial structures in response to recent urban expansion and migration. Geographic information system (GIS) data and remote sensing image analysis have been used to explore land-use changes and urban sprawl at city level and official statistics such as the population census and other secondary data have been used to map internal structural changes.
