

Chapter 9

Movement, Memory, and Micro-Function

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Introduction

Historically, urban streets have been considered as transportation corridors, having mostly been conceived as a means for moving goods and people. In modern times, however, urban design theory is becoming more aware of the role of the streets as important public spaces for socializing, cultural expression, economic activity, and urban identity (Jacobs 1961; Gehl 2011). Streets serve not only as transportation corridors but also as sites where every day urban life unfolds, social networks, and spatial sense. Lynch (1960) has explained that movement corridors are essential components of the city's imageability and a factor in the ways people perceive, remember, and move through urban environments. This shift has led urban planners to focus on the quality of the street environment occupying a key focus of modern urban planning and regeneration work.

The recent focus on urban regeneration has led to a focus on human-centred and pedestrian friendly street design that emphasises inclusivity, environmental sustainability and placemaking (Banister, 2008; Ewing & Cervero, 2010). They pay attention to the creation of streets that are safe for social interaction, accessible, create a sense of place and climate change resilient. This is particularly significant in the cities of the Global South, where there is limited and disempowered focus on the social and environmental functions of urban streets, as a result of the unchecked commercialisation, motorization and quality of public space provision (Biddulph, 2012; Pojani & Stead, 2015). Researchers have increasingly understood the transformation of streets into a more vibrant, accessible and open civic space as crucial for improving urban liveability and inclusive urban development.

The urban design literature has begun to focus more on the significance of pedestrian infrastructure, public space quality, informal economic activity and environmental adaptation. Research suggests that smart streetscapes – streets and public spaces that are responsive to climate conditions to encourage pedestrian use can enhance civic life and strengthen urban identity (Rahman et al., 2023). In addition, context-sensitive and small-scale measures such as shaded seating areas, structured vending options, public plazas, landscape improvements and flexible community space have proven to have great potential in revitalizing underused urban streets, while maintaining local socio-cultural features (Gehl, 2011; Whyte, 1980). Researchers also consider informal urban elements such as tea stalls, street vendors, gathering areas, social interaction as an essential element in place attachment and social life in the urban setting (Mehta, 2014; Hasan & Islam, 2023).

Pedestrianization of the cities is an emerging trend all over the world, but there is limited literature to reflect the relationships between the systems of movements, spatial memory and micro-scale urban functions. The existing studies mainly focus on the metropolitan domain or on specific domains such as traffic control, environmental quality or transportation efficiency (Zhao et al., 2019; Knowles et al., 2020). This is due to insufficient understanding of how context-sensitive urban regeneration strategies can enhance civic life in cities where urbanisation processes are rapidly taking place, informal commercial activities in the city are on the rise, and the city's pedestrian realm is underdeveloped.

Researchers observe a more visible gap in Bangladesh, where medium-sized cities undergo significant physical and socio-economic changes. Rajshahi is one such city that deserves special attention to study the role of urban corridors in building civic life and the urban identity. The Railgate–Ghora Chottor corridor serves as one of the key urban spines of the city, linking the transportation junctions, business centres, settlements, institutional buildings, and public places. The corridor plays a vital role, but it experiences traffic congestion and disjointed

pedestrian facilities, over-encroaching roadside businesses, a lack of public meeting places, and a lack of a sense of place. These difficulties worsen accessibility, decrease comfort in the environment, and limit social interaction opportunities to interact socially and be involved in the community.

In this context, this chapter explores opportunities to bridge the movement systems, spatial memory and micro-functions within the Railgate-Ghora Chottor corridor to create an active civic axis. Drawing off urban imageability, sustainable mobility, climate-responsive design and public space regeneration theory (Lynch, 1960; Banister, 2008; Cervero, 2013; Erell et al., 2011; UN-Habitat, 2013; Litman, 2021), the chapter suggests a holistic approach to corridor regeneration, which should include a socially inclusive, environmentally responsive and culturally responsive component. This chapter explains how historical associations and everyday experiences create place through spatial memory and how local identity helps shape place, and micro-functions describe the small-scale functions and spatial interventions that enhance the pedestrian journey and promote civic life.

The overall goal of this chapter is to create a context-specific approach to reimagining the Railgate-Ghora Chottor corridor in a way that will establish it as a “human-scale urban space” that will reconcile movement and social interaction, environmental quality, and cultural continuity (Gehl, 2011; Jacobs, 1961). In particular, the chapter will explore the physical, social, environmental and behavioural conditions of the corridor; analyse the main challenges that impact pedestrian experience and public life; investigate the links between movement systems and spatial memory and between the corridor and the micro-scale urban functions; and develop design proposals to improve accessibility, safety, environmental comfort and social inclusion while maintaining the local character of the corridor. In addition, the chapter recommends coordinated vending areas, streetscape improvements, pocket public spaces, transit reconfiguration, and landscape enhancement strategies that enhance the corridor's civic presence and purpose. Based on three major research questions, the study focuses on answering the following questions:

What is the potential of movement, memory, and micro-functions to bring the corridor to a space that is inclusive and civic, what are the current spatial and behavioural conditions at each of the sites along the corridor that affect the public experience and what are the possibilities for context-specific urban design interventions to enhance the accessibility, safety, environmental comfort and cultural continuity in the study area; the chapter responds to the questions and helps to continue the conversation about sustainable streetscapes, public space design and urban regeneration in developing city situations. It also provides a theoretically informed approach to the empirical understanding of how movement systems, spatial memory and micro-scale urban functions can be combined to create vibrant, inclusive and resilient urban corridors in medium-sized South Asian cities.

Methodology

This research work adopts an urban research design approach with design emphasis. It is an integration of spatial analysis, urban form evaluation and designing urban interventions to scrutinize the regeneration potential of the Railgate-Ghora Chottor corridor in Rajshahi City. The research methodology adopted is a step-by-step approach comprising of selection of study area, literature review & precedents, existing condition analysis, mapping the problems & opportunities, concept development and design proposals.

The Railgate-Ghora Chottor corridor was selected as the area due to connecting the key civic, commercial, residential and transport hubs. It is an important connectivity with the Rajshahi-Naogaon Highway. Being a city of diverse land use, its bustling commercial areas, public spaces and emerging mobility requirements make it well-suited for research on urban regeneration in a rapidly expanding secondary city. Initial field surveys were conducted and identified the main issues including traffic congestion, pedestrian vs vehicle access, poor public spaces, commercial encroachment and environmental decline. The results are consistent with the literature regarding street connectivity, walkability, public space design, urban regeneration and imageability (Boeing, 2017; Ewing & Cervero, 2010; Jacobs, 1961; Gehl, 2011; Lynch, 1960). Both primary and secondary data collection was done in the study. Primary data consisted of field surveys, photographs, behavioural observations and tracking movements. The secondary data was derived from planning documents, published literature, maps and satellite images.

Three dimensions of analysis were physical, socio-cultural and environmental conditions. It evaluated street-network connectivity, land use, frontage features, pedestrian infrastructure, street quality, and public spaces. Informal urban activities, conflict points and behavioural patterns were also taken into account. The analysis identified serious mobility and pedestrian safety problems, poor public space quality and poor commercial activity management. Through opportunity mapping, unused space, vital locations and civic hubs were identified as having significant potential of regeneration. The findings were the foundation for design interventions that address the context and take advantage of urban assets and space opportunities. The results contributed to the concept called Urban Weave: Stitching Movement, Memory, and Micro-Function. A concept is introduced with three supporting layers. The Movement Layer is about circulation, access and pedestrian connections. The Memory Layer enhances civic identity by protecting and enriching key places and cultural spaces. The Micro-Function Layer encourages activities more basic and smaller in scale, such as organized vending stations, public seating, landscape elements

and community gathering locations to facilitate everyday life in the city. It can be seen as a reflection of the current urban fine-grained interventions in the development of a more responsive and liveable urban environment (Gehl, 2011).

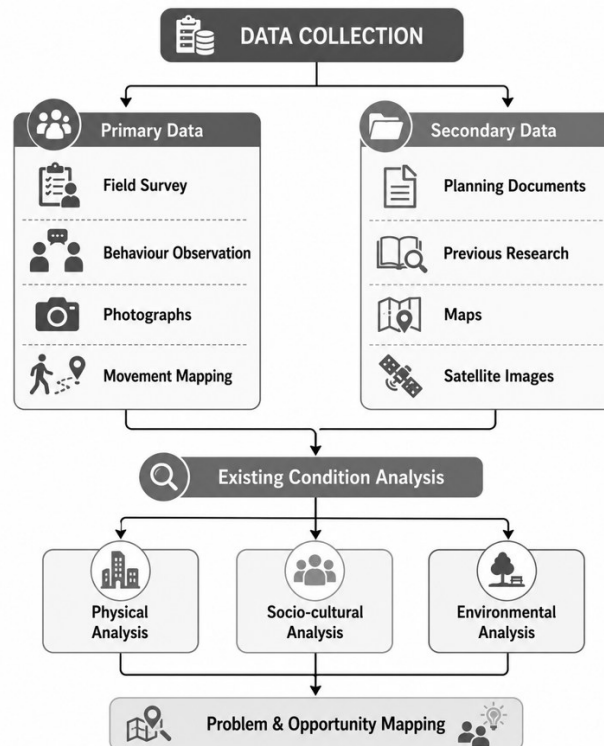


Figure 1. Data Collection and Analysis Framework.

The results were fed into the idea for the concept Urban Weave: Stitching Movement, Memory and Micro-Function. It introduces three complementary layers in the framework. The Movement Layer concentrates on circulation, access and pedestrian connectivity. The Memory Layer enhances civic identity by preserving and enhancing significant places and cultural spaces. The Micro-Function Layer provides for small-scale interventions like organized vending spaces, public seating, landscape elements, and community gathering places to serve everyday urban life. It represents current trends in urban design thinking of giving a high priority to the interventions with fine grain, leading to a more liveable and socially responsive urban environment (Gehl, 2011).

From the conceptual framework, a series of design strategies was devised to enhance mobility, public space quality, and civic identity in the corridor. Street hierarchy restructuring, traffic redistribution via the Rajshahi–Naogaon Highway, improving transit nodes, pedestrianising, organising vending zones, establishing civic plazas and streetscape improvements are proposed interventions. These proposals were developed into a master plan; sectional studies and visualisations of urban design were developed and evaluated on connectivity, pedestrian comfort, usability of public space, commercial vitality, and environmental responsiveness.

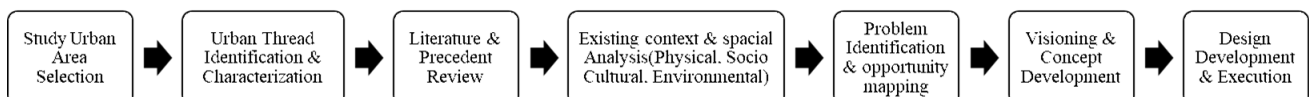


Figure 2. Flow Chart of Methodology.

Study Context and Findings

The Railgate–Ghora Chattar corridor is one of the most important urban spines in Rajshahi, connecting the railway gateway, institutional areas, commercial centres, and residential neighbourhoods. Stretching approximately 1.9 km, the corridor functions not only as a transportation route but also as an active civic space

where economic activities, pedestrian movement, informal interactions, and cultural memory intersect.

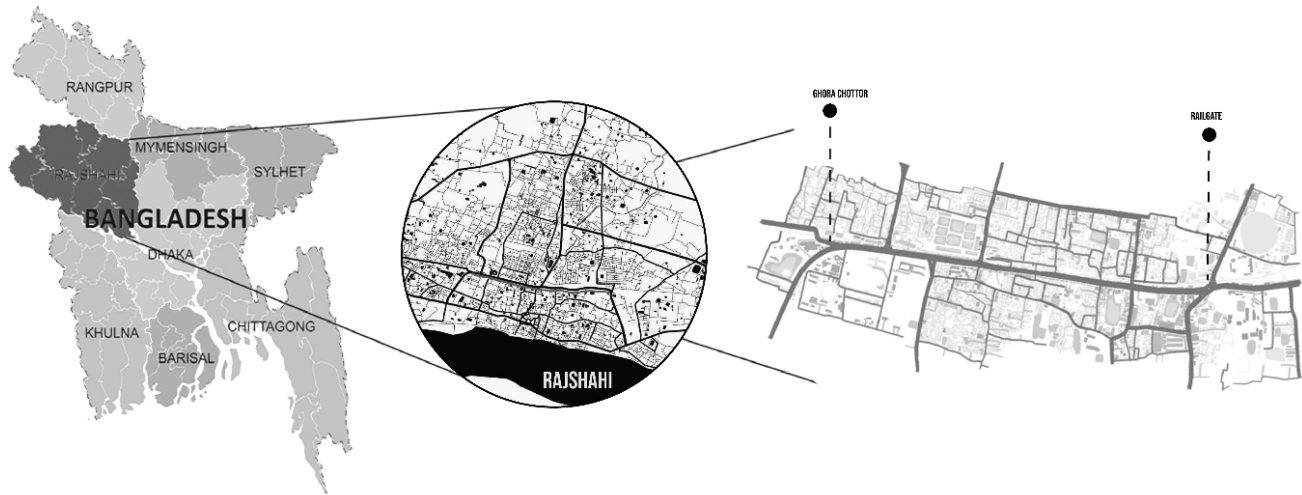


Figure 3. Location of the Site.

The area has seen uncoordinated growth, typical of an urban corridor in a rapidly growing South Asian city, that has led to traffic congestion, broken pedestrian spaces and diminishing civic quality (Carmona, 2019). Despite these obstacles, overall, the corridor has a strong sense of place, defined by key nodes and points of interest such as schools, churches, restaurants, and public spaces.

The study is based on the premise that a successful street is not just a means of transportation but a place for people to be (Gehl, 2010). Similarly, Jacobs (1961) calls attention to the need for active frontages, variety of uses, and pedestrian activity in fostering lively urban life. The current corridor, however, is poorly designed from a spatial, pedestrian and environmental comfort point of view for these functions.

The study aims to overcome these challenges by focusing on the concept of movement, memory and micro-functions as a tool for urban regeneration. Movement is about accessibility and circulation systems; memory about cultural identity and landmarks, and social continuity; and micro-functions about various aspects of everyday life such as tea stalls, roadside businesses, resting spaces and informal gathering points, all which support public life.

The study follows the contextual regeneration approach which prioritizes incremental improvement rather than complete replacement, following Carmona's (2019) principles. The dimensions of walkability, environmental comfort and social inclusion are seen as vital for urban liveability and are based on the work of Ewing and Handy (2009) on the importance of human-scale urban environments.

The corridor is also a reflection of the general problem of urban expansion in secondary cities of Bangladesh which are rapidly growing without sufficient civic space. Urban comfort is also impacted by environmental factors like heat exposure, lack of shade, green cover, poor drainage and noise pollution. The findings indicate that the role of green infrastructure and accessible public space in enhancing the environmental quality and social well-being is evident (Huang et al., 2022; Koohsari et al., 2015).

Although the corridor may be physically constrained, the behavioural mapping, the taking of photographs and the engagement with stakeholders shows that the corridor is a lively urban space, characterised by activity, diversity and cultural familiarity. Therefore, this study examines the Railgate–Ghora Chattar corridor as an evolving civic spine and seeks to develop strategies that enhance its connectivity, identity, and inclusiveness while preserving its existing urban character.

Existing Site Context

The current condition of the Railgate–Ghora Chattar corridor illustrates a highly dynamic but very disjointed urban space, with high levels of activity, mixed uses, and poor spatial management. The corridor serves as one of the most heavily trafficked movement networks in the town of Rajshahi, and is used by both pedestrians and vehicles, and for commercial activities. Though it is a very significant spine, there is no proper planning in the existing urban condition, which leads to the conflict between mobility, public life, and environmental quality.

From a special aspect, the corridor is an urban fabric with layers of institutional borders, informal commercial facades, transiting spots, residential pockets, religious centres and open spaces. The spatial identity of the corridor is strengthened by important civic landmarks like Railgate Node, Greater Mosque, Nagar Bhaban surroundings, educational institutions, Ghora Chattar, and for this reason, there is continuous public movement in the corridor. The sequence of urban experiences formed by these landmark nodes forms the collective memory of the city.

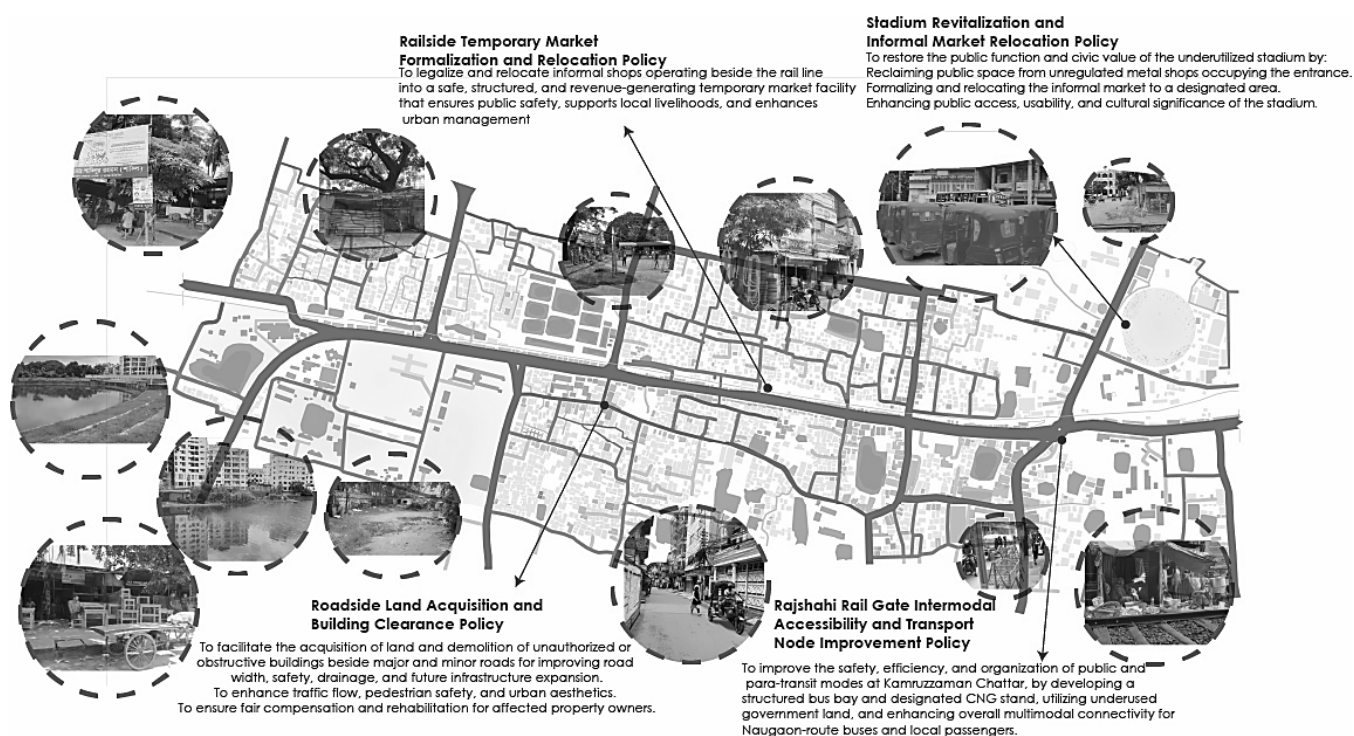


Figure 4. Existing Site Condition.

But the current street scene is still characterized by disorderly traffic and unrestrained commercial development. Street marketing takes place in pedestrian streets; transportation terminals are extending onto the road network, and disjointed frontage creates visual and functional disorder. Dovey and Pafka (2020) found that walkability is driven by the interplay between land use density, diversity, and ease of transportation networks. The corridor is compact and highly functional diverse, however there is no organized pedestrian facilities, this has a great impact on the overall urban experience. The commercial segment of the street along the corridor has developed over time and not been planned in any coordinated way. The combination of shop extensions and temporary stalls, hanging signage, exposed service lines, and roadside vending leads to a cluttered visual environment. No setback control or pedestrian buffers lead to direct conflict between pedestrian movement and commercial use. Sidewalks are also not accessible or used in several sections because of informal uses.

The lack of walking space was noted in field observations as a cause for pedestrians to cross over into the vehicular lanes. This condition makes driving more dangerous, especially during rush hour. Ewing and Handy (2009) observed that lack of street transparency, street edges that are discontinuous, and lack of pedestrian scale negatively impact user comfort and walkability. A similar spatial situation can clearly be seen from the corridor.

Another prominent aspect of the current site context is traffic. The congestion at the transportation nodes, due to informal parking around nodes, is very high. The corridor also provides a regional movement route for buses and heavy vehicles, which contribute to congestion and make the corridor less safe for pedestrians. Tertiary roads, which are narrow with limited road access to the main spine, often have unorganized loading, unloading, and roadside parking activities, resulting in frequent traffic conflict.

The corridor also suffers from environmental issues as well. Inadequate tree cover and shading infrastructure allow much of the streetscape to be exposed to direct solar radiation. This condition causes loss of thermal comfort for pedestrians, particularly at the time of day in hot climatic conditions of Rajshahi. Huang et al. (2022) have found that in hot weather, shaded urban areas can significantly enhance the comfort for the user and promote public recreational use. Noise pollution is especially high around transport intersections and commercial nodes where vehicles are constantly moving, and informal markets are also taking place. The environmental comfort of the area is further decreased by air quality degradation due to traffic emissions. Poorly maintained drainage and, in a few areas, open drains are still exposed causing visual pollution, unpleasant odours, and public health issues.

The corridor does have significant opportunities for urban regeneration, however. There are a few underutilized open spaces, waterbodies, vacant setbacks, and other disconnected public spaces that have the capacity to serve as civic spaces and serve the community. Current social practices show a high level of public participation in activities along the road, including tea stalls, benches and other places to sit, local businesses and community areas. The activities suggest that there is already a significant social interconnection developed within the corridor, which could be enhanced further in a contextual redevelopment.

Vitality of the corridor is also positively attributed to mixed-use functions. According to Jacobs (1961), mixed-use cities are more socially, economically, and safely engaged in human activity. The Railgate–Ghora Chattar corridor has commercial uses, schools, public facilities, and residential areas, which all make it an active street. In addition, elements of urban memory and civic familiarity are still evident in the corridor. The identity of this area is a testament to the old tea stalls, meeting places, religious buildings, and market activities. The socio-cultural layers add to the emotional bondage of people and place and make the corridor an important feature of the cityscape of Rajshahi. As a result, the current site context shows both aspects of congestion, disorder, environmental discomfort, and infrastructural deficiency in this corridor, while it also shows some remarkable civic potential that comes from the highly active nature of the spine, its strategic location, and socio-cultural context. The corridor is thus considered an excellent location for context-sensitive urban regeneration to create more pedestrian-friendly, inclusive, safe, and environmentally friendly areas.

Problem Findings

The detailed field surveys, behavioural observations, photographic mapping, discussions with stakeholders, and spatial analysis have identified several interconnected urban issues along the Railgate–Ghora Chattar corridor. All these problems contribute to decreasing accessibility, environmental comfort, social inclusivity, and civic quality of the street scene. **Unorganized Commercial Frontage and Encroachment:** The unchecked proliferation of informal commercial frontage is one of the key issues that has been brought to the fore in the corridor. Temporary vendors, shop extensions, hanging items, and irregular roadside stalls take up large sections of the pedestrian walkways and cause ongoing disruptions to pedestrian circulation. In many areas, there are no sidewalks, and pedestrians must walk directly on the road where they are traveling. Poorly managed frontage also contributes to a high degree of visual disorder. Building edges are not consistent, signage is not in place, and service utilities are still exposed. The design of public space must be coherent, which means there should be a clear hierarchy, a definition of the edges, and a coordinated visual language, highlighted by Carmona (2019). The current corridor lacks these characteristics, and public space identity is fragmented. Also, the informal commercial use of the space diminishes the legibility and visibility of the space. Lack of designated zoning of vending creates ongoing conflicts between pedestrian traffic and economic activity. In the study, however, the street vendors are not simply erased but rather seen as integral parts of local urban culture and economic survival. So, informal activity isn't necessarily a problem, it's the lack of regulation on the spatial arrangement of informal activity.

Traffic Congestion and Mobility Conflict: The corridor is very congested during the day, particularly at Railgate Node and other transport junctions. Poor circulation efficiency is caused by informal parking, public transport parking without permission, mixed traffic flow, and poor road hierarchy. The lack of space on the road is also occupied by the buses, CNGs, rickshaws, bicycles, vans, motorcycles and pedestrians and this results into a continuous conflict of modes. The current research on walkability indicates that streets for cars, not people, are correlated with reduced levels of urban liveability and safety (Strommer et al., 2025).

No separate bus bays and transport terminals, and a lot of passengers on sidewalks and along road edges. There are no separate bus bays and transport terminals, leaving passengers stranded on sidewalks and along road edges. This results in additional transportation use of pedestrian space, which adds to congestion. The presence of heavy vehicles in the corridor also places environmental stress on the corridor in terms of noise and air pollution. No separate non-motorized paths discourage safe bicycle and rickshaw use. Intersections do not have any effective traffic control measures in place, making crossing the streets unsafe and unruly.

Poor Pedestrian Environment: Roadway infrastructure along the corridor is very deficient. There is also some lack of continuity on the sidewalks, and many existing footpaths are inaccessible or impassable because they are overgrown, uneven, poorly drained, or lack shade. There is limited consideration for Universal Accessibility in the corridor. The streetscape is extremely difficult for elderly users, children, and those who are differently abled to navigate. There are no crosswalks, or they are not well marked, no restriction mark between the rail-line and public realm, very unsafe rail crossing nodes, and pedestrians often cross the road informally with no safety precautions. The research by Ewing and Handy (2009) indicates that the human scale, transparency, visual complexity, and continuity are key factors in a successful pedestrian environment. The corridor is the place that currently doesn't have these critical urban-design attributes. Moreover, lack of seating, resting spots and weather protection diminishes pedestrian comfort and the potential for longer social use of public space.

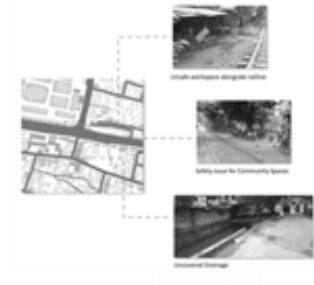
Environmental Degradation and Climatic Discomfort: There are several problems in the field of thermal comfort, noise pollution, drainage and ecological quality, which were identified through an environmental analysis. The corridor is overexposed to the sun due to low tree canopy and low shaded infrastructure. In summer, the heat can seriously diminish the comfort of pedestrians and the usability of public spaces. Transportation intersections and commercial nodes continue to be a source of high noise levels. The presence of traffic flow enhances the acoustic environment, but it also leads to stressful situations in the market due to the informal activities carried out by the people. Poorly maintained drainage systems in the corridor and open drains cause unpleasant odour, waterlogging and public health problems. The absence of green infrastructure also decreases environmental resilience. (Koochsari et al. 2015) found that convenient, environmentally appropriate public spaces have a direct impact on public health,

social interaction, and physical activity. The current state of the environment of the corridor is therefore not conducive to the civic potential of the corridor.

Underutilized Public and Open Spaces: A few open spaces, water body abutments, remnant land parcels and empty urban spaces are opportunistically located along the corridor but are underutilized. A lot of these areas serve as dumping grounds, parking areas, or abandoned remnant areas. Observation of resident behaviour showed that citizens still try to use these areas to perform informal social, rest, tea, and small-scale community activities. This reflects a high demand for public space that is more local. Lack of organized community infrastructure reduces opportunities for recreation, cultural activities, and socializing. Existing public spaces are also currently less attractive and safe, due to lack of seating, lighting and landscaping, and because there is no activity programming.

Lack of Civic Identity and Spatial Continuity: There are some important nodes and some interesting sites of culture in the corridor, however, the overall civic identity of the streetscape is lacking. The continuity of public space is compromised by the disjointed qualities of the architectural edges, the lack of consistency in signage, the visual clutter, and the lack of coordinated urban furniture. Theories of urban space have gained increasing attention in the past few decades, including the concept of imageability and spatial legibility, as developed by Lynch (1960) to produce memorable urban spaces. The current situation has no uniformity of design in the corridor that can assist with orientation, identity, and place attachment. These issues have therefore created an important civic backbone in a congested and divided urban space where the effectiveness of urban movement frequently supersedes public life, environmental comfort, and social inclusion.

Table 1. Spatial Diagnosis and Redevelopment Opportunities for the Study Corridor

 Railgate	 Nagar Bhaban	 Greater Road	 Bornali
Spatial Component	Existing Observation	Identified Limitation	Potential Opportunity
Road network	Primary and tertiary roads intersect frequently	Congestion and circulation conflict	Reorganisation of traffic hierarchy
Commercial edge	Dense mixed-use commercial frontage	Encroachment onto sidewalks	Modular commercial redevelopment
Pedestrian movement	High pedestrian activity throughout the corridor	Unsafe crossings and interrupted footpaths	Pedestrian-priority Street design
Open spaces	Presence of underused vacant land & water edges	Lack of recreational programming	Development of civic plazas and community parks
Transport nodes	Heavy concentration of buses, CNGs & rickshaws	Informal parking and bottlenecks	Dedicated transport terminals and bays
Green infrastructure	Limited tree coverage and shading	Poor thermal comfort	Introduction of landscape buffers & shaded walkways

Design Development

The design development process was directly derived from the results of the contextual analysis, behavioural studies, and stakeholder discussions noted during the survey. The design approach was not to call for massive demolition or to create single-scale beautification, but to design for contextual urban regeneration, where movement, memory, and micro-function are all combined into a unified civic framework. Human-scale urbanism, walkability, environmental responsiveness, and social inclusiveness were the main guiding principles in the design approach. As a key element in improving the life and user experience of a city, Gehl (2010) claimed that streets that enhance walking, interaction, and every day public life are the priority for successful cities. In the same way, Carmona (2019) pointed out that good public space regeneration should enhance the existing urban identity, making it easier, more comfortable, and functional. A set of interdependent spatial interventions was introduced during the design development process, based on these theoretical foundations.

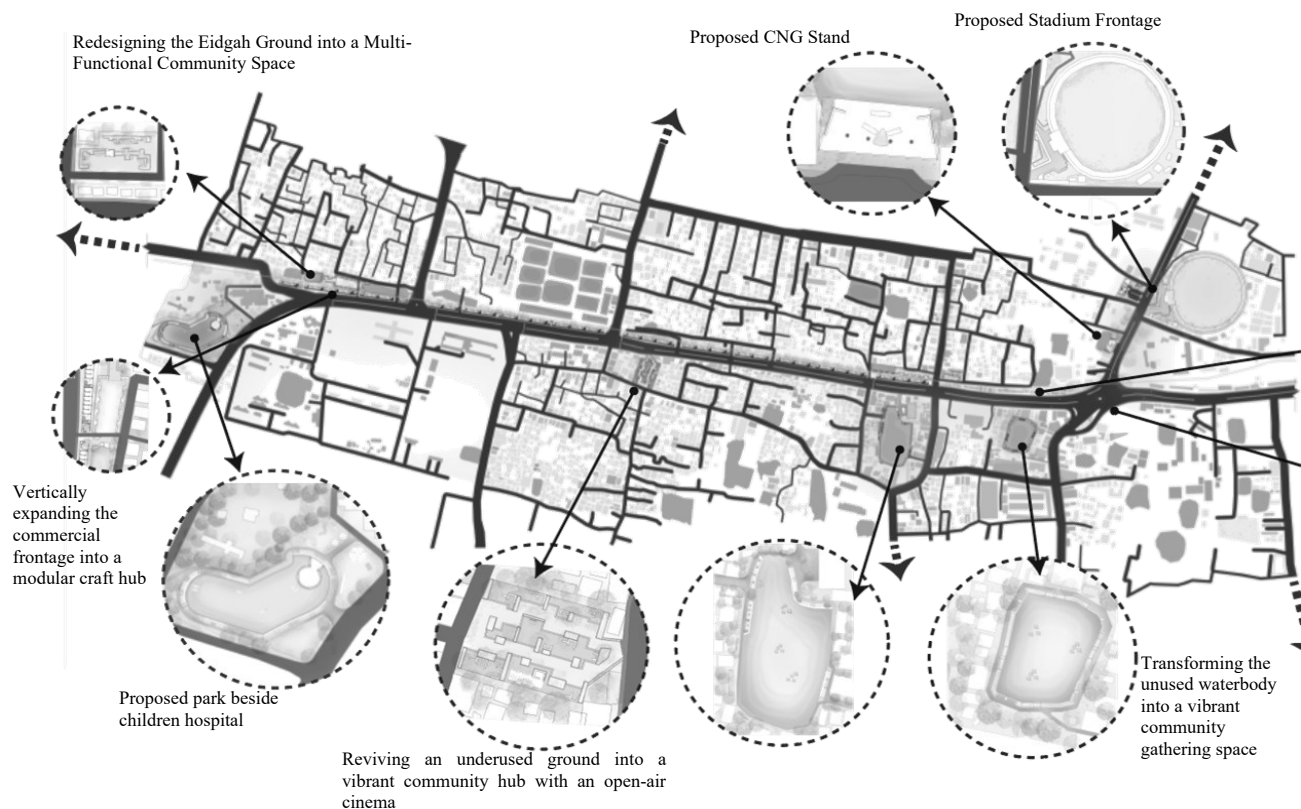


Figure 5. Proposed Site Condition

Table 2. Design Development Strategies and Expected Urban Outcomes

Design Strategy	Proposed Intervention	Expected Urban Outcome
Movement reorganization	Dedicated pedestrian lanes, non-motorized routes, bus bays	Improved mobility and reduced traffic conflict
Frontage redevelopment	Modular vendor units and organized commercial edges	Enhanced visual order and pedestrian accessibility
Micro-public space activation	Pocket parks, tea stalls, seating areas, open-air cinema	Increased social interaction and civic engagement
Environmental improvement	Tree plantation, shaded pathways, covered drainage	Improved thermal comfort and environmental quality
Safety enhancement	Signalized crossings, lighting upgrades, guardrails	Increased pedestrian safety and user confidence
Identity strengthening	Unified signage, landscape treatment and public furniture	Stronger civic character and place identity

Reorganization of Movement and Mobility: The first step in the design development process was to reorder the hierarchy of the corridor to solve the movement and potential conflicts problems. It distinguishes between main roads and secondary roads, pedestrian rights of way and non-motorized routes. To improve accessibility and walkability, pedestrian areas were added, railway setbacks were created, and shaded walkways were added. To enhance safety, signalized crossings, raised platforms and traffic calming measures were recommended at key institutional and commercial intersections and locations. Informal parking was minimized, and spill-over pedestrian space was avoided by installing organized bus bays, CNG stands, and loading zones. Also, the diversion of long-distance buses to the outlying terminals was recommended to alleviate congestion in the main corridor. Selected areas included non-motorized transport lanes to enable sustainable and multi-modal transport.

Re-interpret Commercial Frontage: The commercial frontage was not eliminated but reorganized to create a system of modules that allow informal commerce to be carried out in an organized way. Shaded rest areas and loading zones were added to vendor pockets as a compromise between pedestrian traffic and economic activity. Variations in the frontage were suggested by proposing modular commercial units. The pedestrian flow, social interaction and resting places are supported by the provision of transition areas with shade. Green buffers, lighting,

signage and urban furniture in the corridor help to strengthen the sense of being in an urban place, enhancing the quality of the environment.

Development of micro public spaces: Existing, unused space in the city was converted into small community spaces, such as empty lots, waterbody edges, and the remaining urban space. These include play spaces, tea spaces, performance spaces, shaded seating pockets and flexible spaces that align with social behaviour patterns. The micro-functions are the supports for interaction and social cohesion of the community and supports daily urban life making public spaces accessible and inclusive for all (Mantey & Kepkowicz, 2020).

Environmental and Climatic Improvements: Environment friendly measures such as tree plantation, shade walkways, permeable surfaces and green buffers that enhance ecological resilience and thermal comfort. The water body edges were added with seating, landscaping and recreational uses to provide for public use. Additional safety was provided by lights and hygiene and presentation by covered drains. The green buffer along the railway is a continuous structure that enhances environmental protection and is in line with the principles of designing urban environments in response to climate change.

Improvement of memory and civic identity: The social and cultural elements such as tea stalls, gathering places, movement flows etc. are preserved while a new urban design language is introduced. Materials, lighting, signage and street furnishings are all considered to ensure a sense of visual continuity and identity. Key spaces (Railgate, civic nodes and community intersections) were design reinforced to reflect Lynch's (1960) imageability concept, in order to create a sense of "spatial memory" and "urban legibility".

Integrated Human-Centred Urban Spine: The interventions are implemented as a continuous civic spine, which will gather mobility, public space, environment and culture. The focus is on small-scale, context-sensitive transformations, not on large-scale demolition. This creates a safer, more inclusive, more pedestrian-friendly, and sustainable corridor, with a replicable model for urban regeneration in the context of rapid urban growth and similar spatial and socio-economic stressors.

Table 3. Design Development Strategies and Expected Urban Outcomes

Design Strategy	Proposed Intervention	Expected Urban Outcome
Movement reorganization	Dedicated pedestrian lanes, non-motorized routes, bus bays	Improved mobility and reduced traffic conflict
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Discussion and Conclusion

The study pointed out the primary socio-spatial issues in the Railgate to Ghora Chottor section in Rajshahi, such as traffic congestion, lack of regular and continuous pedestrian connectivity, lack of proper control on commercial activities, and underutilization of open spaces (Ewing & Handy, 2009; Carmona, 2019). The interventions suggested for this project concentrated on the following aspects of mobility restructuring, frontage organization, public space revitalization, and transport management (Banister, 2008; Pojani & Stead, 2015). The results show that efficient urban circulation, pedestrian safety, accessibility, and social interaction can be achieved by integrating the context into the urban design and policy, while maintaining the urban character of the corridor (Gehl, 2010; Jacobs, 1961). This research also focuses on the crucial role of spatial planning as an integral part of governance and transport planning for a more inclusive, resilient and human-scaled city (UN-Habitat, 2013; Litman, 2021).

In this work, a sequence of integrated urban policy interventions is proposed that intertwines urban mobility and restructures it, formalisation of informal economy and enhances the urban functionality of key nodes in the Railgate to Ghora Chottor corridor in Rajshahi. The approach aligns with the current urban transport and resilience discussion, which highlights the importance of adopting land-use integration, restructuring the transport system, and developing public space governance as key elements of sustainable urban development (Banister, 2008; Cervero, 2013; Wang et al., 2020). The first policy is to formalize and move informal railway markets to market areas. This policy aims at enhancing urban safety, attractiveness and economic integration through the

implementation of the registration and relocation incentives and safety compliance requirements as per the national urban governance principles and railway land management regulations.

The second policy aims at improving the use of underutilised public facilities, such as spaces around stadiums, which currently sell unregulated food. The policy promotes the reclamation and re-use of these spaces to become controlled vending and public activity spaces. It thus promotes inclusiveness in urban renewal with active participation of stakeholders and sustainable maintenance plans. This is in line with recent urban governance approaches that emphasise the significance of adaptive reuse of public space for strengthening urban resilience and spatial justice (Biddulph, 2012; Yassin et al., 2020).

Thirdly, the policy is to spread intercity and long-distance bus operations around the outside part of town like to Noudapara, to reduce inner city bus congestion. This will enable to clear congestion on the main spine roads, enhance road flow and make the roads safer for pedestrians. Such approaches to decentralizing transport have been well known among the field of transportation and have been found to be effective in traffic congestion reduction in inner urban areas and enhancing the efficiency of transport networks (Poiani & Stead, 2015; Zhao et al., 2019). The fourth policy is related to the introduction of a city bus system from 8 AM to 10 PM, which will help to reduce the use of cars and improve accessibility, thereby cutting down on carbon emissions according to the principles of sustainable transport mentioned in national transport policy documents (Litman, 2021; Bangladesh National Land Transport Policy, 2004).

Table 4. Strategic Policy Framework for Improving the Study Area

Policy Area	Proposed Action	Expected Benefit
Informal market regulation	Relocation and formalization of roadside vendors	Improved streetscape management and economic stability
Public transport management	Rerouting buses and introducing city bus services	Reduced congestion and enhanced urban mobility
Pedestrian infrastructure policy	Development of walkable public corridors	Improved accessibility and public safety
Environmental policy	Expansion of urban greenery and drainage improvement	Enhanced climate responsiveness
Civic-space development	Activation of open spaces and public gathering areas	Strengthened social cohesion and public engagement

The fifth policy aims to make the Railgate transport node a public transport accessible hub by planning bus stands, compressed natural gas (CNG) stands, pedestrian walkways and non-motorized transport infrastructure. The move is based on the experience of international cities that have applied TOD and TID concepts, with a focus on seamless multi-modal transportation and effective integration of land use and transportation (Cervero & Murakami, 2009; JICA, 2010; Cities, 2020). All these policies strive to create a more effective, safer, and fairer urban corridor through harmonizing the mobility, socio-economic, and spatial aspects of the urban space and supporting sustainable urban development and resilient city-building practices (Banister, 2008; Cities, 2020; Transportation Research Part A, 2019).

The proposed interventions are used for the benefit of society by improving the quality, safety and everyday access of the space, in one of the major civic corridors of Rajshahi (Gehl, 2010; UN-Habitat, 2013). The institutionalization of informal trade and the transformation of the transportation system offer a more structured and inclusive urban setting for walkers, commuters, vendors and urban citizens (Carmona, 2019; Hasan & Islam, 2023). Accessible public spaces, pedestrian infrastructure, and improved transport connectivity encourages social interaction, increased walkability, and public comfort, as well as supports a local economy (Jacobs, 1961; Ewing & Handy, 2009). The study also helps to create sustainable and resilient cities by mitigating traffic jams, enhancing public transit services and optimizing urban space utilization (Banister, 2008; Poiani & Stead, 2015). Moreover, the study introduces a framework based on context responsiveness by combining mobility, socio-economic, and spatial parameters, which could be helpful for future urban regeneration processes (Litman, 2021; Lynch, 1960).

Rapid urbanization, traffic congestion, informal commercial growth and declining pedestrian environments have been seen in the civic corridor of the city, which has resulted in increasing socio-spatial pressure (Poiani & Stead, 2015; Carmona, 2019). This research shows how context-specific urban design interventions can enhance the circulation, accessibility, safety and social interaction, while retaining the existing cultural and spatial identity of the corridor (Gehl, 2010; Lynch, 1960). The strategies discussed here, such as frontage reclassification, reorganisation of traffic flows and the creation of micro public spaces, reflect the fact that human scale and adaptive urban regeneration approaches are vital to secondary cities (Jacobs, 1961; Ewing & Handy, 2009). The study also creates a transferable framework for the enhancement of other urban corridors in the city of Rajshahi and other similar socio-spatial fragmentation contexts (Banister, 2008; UN-Habitat, 2013).

Future studies can be conducted to test the long-term effects of these interventions on pedestrian behaviour, urban livability and public interaction by carrying out post-implementation studies (Mehta, 2014; Koohsari et al., 2015). Overall, the research has proved that more comprehensive and context-responsive urban planning can lead to a safer, more accessible, and socially rich and engaging civic spaces to fragmented urban corridors (Litman, 2021; Carmona, 2019).

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Conflicts of Interest

The authors report no conflicts of interest.

Data Availability Statement

The data in this work can be obtained from the corresponding author upon a reasonable request. The dataset comprises field survey records, measurement drawings, photographic documentation, and interview transcripts obtained from Rajshahi.

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