

REIMAGINING ‘AAM CHATTAR’ AS A 10-MINUTE CITY URBAN NEXUS OF RAJSHAHI

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ABSTRACT

The vision of the 10-Minute City is for dense, mixed neighborhoods in which local services—education, healthcare, leisure, commerce, transport, and culture—are just a short walk or bike ride away. The model is a response to urban ills of congestion, pollution, unequal access, and reduced social interaction. In the case of Rajshahi, a rapidly but unevenly developing city, Aam Chattar has the potential to be a prototype for human-centered transformation. Currently, Aam Chattar exists mainly as a traffic node, defined by high vehicular activity and limited amenity or public interaction. This single functional aspect detracts from its value as a civic space. The problems go beyond mobility inefficiencies; they include the lack of shaded public space, safe pedestrian routes, community facilities, and cultural-economic opportunities that enable daily living. This research-design project aims to envision Aam Chattar as Rajshahi's 10-Minute Urban Heart. The approach is rooted in proximity planning, compact urban form, and human-centered design. It involves: analysis of existing site and facilities, pedestrian and cycle accessibility mapping within a 10-minute radius, population analysis, program analysis, and function allocation of healthcare kiosks, markets, community spaces, and green infrastructure. Design solutions prioritize climate-responsive interventions, universal accessibility, and mixed-use zoning for inclusivity across age, gender, and ability. The design result imagines Aam Chattar as a multifunctional civic plaza: a climate-resilient and shaded public space, a multimodal mobility hub, and a cultural-economic platform celebrating Rajshahi's mango, silk, and river heritage. Through the incorporation of green-blue infrastructure, secure networks, and varied amenities, the project rebalances public life and mobility, transforming the node from a crossing into a destination. The anticipated outcomes include enhanced livability, improved equity in access to services, and strengthened cultural identity. Aam Chattar can potentially act as a model for the city-wide application of the 10-Minute City concept in the future, guiding Rajshahi towards a compact, resilient, and people-oriented urban future.

Keywords: Biodiversity, Green street scape, Urban corridor, Cultural Integration, Community centric neighbourhood.

1. INTRODUCTION:

Cities are our so-called living conditions which are ever-growing, shifting and responding as amusingly as they can- to the running stress of urbanization, city endeavor and human life. Last but not the least, the urge to urbanize, is causing the urban centers of Bangladesh to suffer a drastic urbanization, thus, comes with it's benefits, and so does creating some issues like traffic jam, inequality, and environmental devastation (World Bank, 2015).

This is a critical moment since the city of Rajshahi itself called 'Clean City' - is going through constantly uprising growth of population. This city has its own city center named as 'Saheb Bazar', bearing a heavy concentration of population and de-centralizing the focal point of Rajshahi. So, Aamchattar can be substitute center for Rajshahi as it is a uprising end of the metropolis. This life of people, space and movement in Rajshahi that had been a silence, with a slow and more harmonic rhythm is becoming wild and is also demanding new thinking about the urban places.

The concept of the 10-Minute City is an eye-opener that could be used to solve this change. The idea behind it is as simple as distance and envisions a city in which its citizens can walk or ride to their homes in ten minutes to most of their daily needs including marketplaces, workplaces, schools, healthcare facilities, and recreational centers (Moreno et al., 2021). It is a concept of a small and close, biodegradable urbanized metropolis that considers the community good against urban sprawl, and human experience against the speed of cars. The model has been subsequently occupied with quality of urban life more rather than the quantity of urban growth and that is based on walkability, mixed-use development, local economy and social fabrication (Cervero and Kockelman, 1997).

Aamchattar is one of the most violent locations in terms of its urban concentration, a miniature of worldview and the urban problems in that aspect. The most significant point in the infrastructural system of the city which is the Aamchattar, that is located near ending line of the metropolitan site of Rajshahi. It supports majority of the activities both formal and informal, it networked various forms of people and it connected local neighborhoods and institutions. Nonetheless, the problem has compromised as many developed metropolis areas are developing around the city but not as much in here, substandard land utilization, and disconnected spatial planning. The relatively small yet manageable urban size and the strong place-identity in comparison to a large urban centre such as Dhaka or Chattogram are the advantages that allow Rajshahi to experiment with the people-oriented approach to urban planning. Moreover, it is to redefine them in terms of references to the regional setting, climatic and cultural conditions. Overall, the paper outlines the manner in which Aamchattar can be developed into a pilot level destination and how it can represent the outlook of fair access and small-scale development and active mobility dependent city center.

A 10-Minute City is neither social in its nature, nor just the environmental one. It revives the way individuals respond to the environment. We are also promoting walking and cycling after taking short routes, which in addition to leading to a reduction in the purpose of carbon emission, also lead to better lives and socialization. The social services and facilities are distributed equally among the communities, which makes them stronger and able to be independent. As in the case of Rajshahi, such transformation may imply the re-invention of her past in the form of turning the city into a green breathable metropolis and making it ready to the demands of the modern city. The means by which the Aamchattar can apply the principles of the '10-Minute City' would appear to include; restructured roads that would give more emphasis on pedestrians, integrated open spaces that would facilitate interaction among humans, and multi-purpose land use that would enable people to both works, live and relax. The fact that they are small

and can be reached easily besides decreasing the burden on transit, infrastructure would make the city more alive. It is a regional modification which can be replicated by other cities in Bangladesh, who might wish to find the optimal balance between development and sustainability. The other factor that enables the 10-Minute City model to be extended further in Aamchattar is the application of the planning policy, communities and governance. It is therefore in this light that this paper will be applied in bridging the the vision and action by providing the strategies to ensure spatial design which is brought to both social and environmental aspirations.

The final objective of 10-Minute City concept by Aamchattar is to take time and space back to the cities in the mind of the citizens. It is a vision of Rajshahi as a place not so much as it appears to the outer world but the way it is created inside itself where human beings exist in the city in the interior of the network of reachable, connected and significant places where movement is noted in minutes, but not hours. It will demonstrate how Rajshahi can lead in the development of a new urban model of the mid-sized Bangladeshi cities that is descriptive, sustainable and full of human condition.

2. METHODOLOGY

The study uses a methodological approach to evaluate the use and application of 10-Minute City concept in Aamchattar area of Rajshahi. First, the literature review is carried out to investigate the global and local interpretations of the concept, which will provide a theoretical foundation and define the appropriate principles of urban planning (Bibri and Krogstie, 2020). The next step includes site selection and existing condition analysis in order to understand spatial, environmental, and socio-economic features of the area of study.

The second step determines the basic facilities needed to achieve the 10-minute accessibility objective. At the same time, a population projection and current amenities analysis is conducted to determine the differences in services by comparing current facilities with the projected population need (Mouratidis, 2019). On this basis, amenity requirements are calculated to provide fair access to the estimated population.

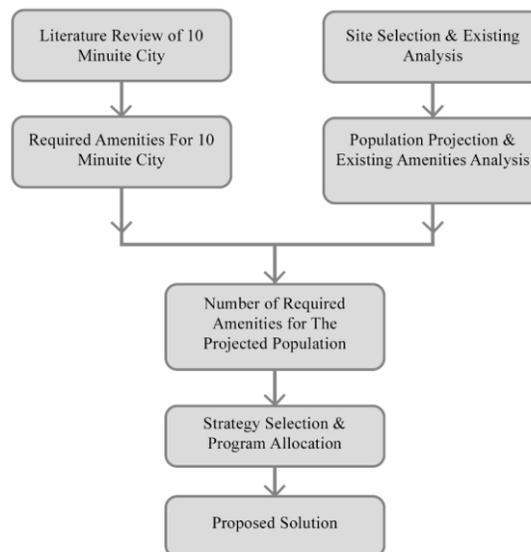


Figure 1: Methodology Flowchart

Strategies and program allocations are then developed focusing on land use allocation, pedestrian connectivity and mixed-use integration (Yigitcanlar and Kamruzzaman, 2015). Lastly, all the analytical

results are summarized into a recommended solution where they envision a sustainable and inclusive urban model where all residents can access the necessary amenities and services within comfortable 10-minute walking range (Newman and Kenworthy, 1999).

3. SITE SELECTION

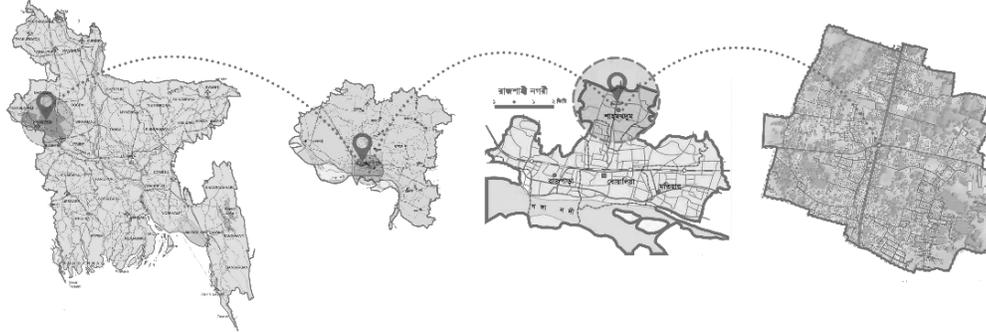


Figure 2: Site Map

Aamchattar is one of the busiest urban intersections in Rajshahi and, therefore, it was selected as the study location. As a key point of transit, it experiences significant traffic flow of cars and pedestrians, which transforms it into a major public space that influences the whole city. Its neighborhood remains largely vehicle-based and against pedestrian comfort, civic facilities, cultural programming or civic life, even though it remains the center of the mango capital landmark. Such imbalance attracts attention to an obvious opportunity to transform an extremely busy crossroad into a pedestrian-oriented city area.

The closeness to the commercial, institutional and mixed urban activity can turn Aamchattar into a walkable, multipurpose hub within ten minutes. This place is the ideal place to test small, easy to reach, and climate sensitive design methods when Rajshahi is expanding and being threatened with fragmented growth. Consequently, Aamchattar is a very suitable location to demonstrate the 10-Minute City concept of an urban environment in Bangladesh.

4.1. EXISTING ANALYSIS

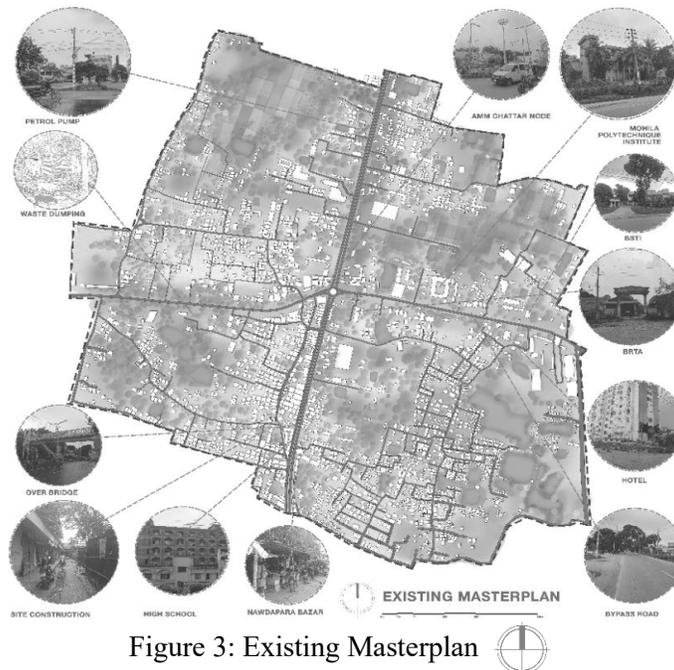


Figure 3: Existing Masterplan

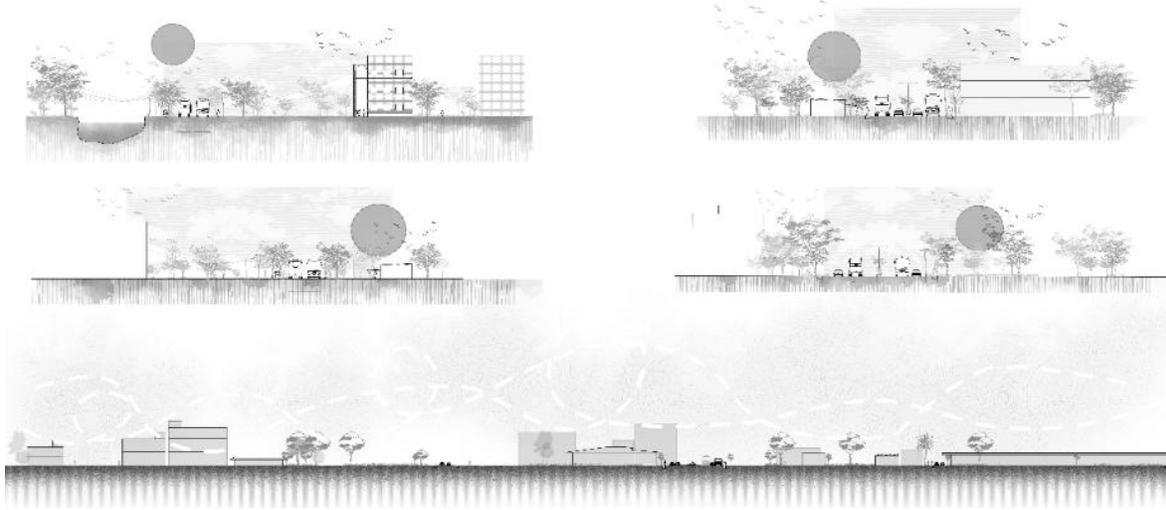


Figure 4: Existing Section

4.2. SITE-SPECIFIC PROBLEM IDENTIFICATION

- **Potential Civic Core:** This is an important space that is not fully utilized as a major public space.
- **Everyday Chaos:** The uncontrolled movement, overcrowded utilities and informal engagements are contributing elements to everyday chaos.
- **Poor Pedestrian Safety:** It is unsafe to walk due to the dangerous crossing, mixed traffic, and lack of walkways.
- **Dangerous Roads:** The competing vehicles, ill-defined lanes, and poor signs are also present, and they are all reasons for unfriendly mobility.
- **Unorganized Bazar:** The chaotic character of the informal vendors creates traffic, but is also a sign of a prosperous economy.
- **Scattered Settlement Pattern:** Land use is disorganized and marginalized thus weakening spatial clarity.

5.1 PROPOSED DESIGN SOLUTION

This is a proposal of Aam chattrar as a 10-minute city urban node to provide mobility, civic life, and local culture among a silent and climate-friendly civic plaza and multimodal node. It turns the aims and goals of the proximity planning and people-centered approach into measurable design behavior where the focus is on walkability, activation of mixed-use, green-blue infrastructure, and universal access.

Create a shaded, weatherproof civic square, which is the foundation of the life of the community and culture. Re-purpose the node as a safe and clean multimodal node that can host pedestrians, bicycles, transit, and managed micro-mobility. Include mixed use programming, including health kiosks, the local market stalls, and community rooms, within a 10-minute distance to promote fair access to daily services.

Introduce green-blue solutions to reduce urban heat islands, manage storm water and establish biodiversity corridors to the river and the mango-silk image of Rajshahi. It is best to bring the lanes of vehicles around a continuous raised plaza island so as to reduce conflict areas. This will transform it into a central node which will be a destination plaza with colonnaded walkways and stratified shades of trees and tensile canopies. That is where markets, performances, and temporary events will be organized on a daily basis and there will be sections where cultural displays will be performed. Make sure that the market layouts are created in such a way that they are modular stall platforms that have foldable seats in order to be dynamic and not to take permanent spaces on the streets.



Figure 5: Proposed Masterplan

Mobility and Accessibility

Making a “complete streets” cross-section with reduced vehicle lanes, cycle lane, separated bike lanes, elevated pedestrian crossings at desire lines, and bus bays off the plaza to decrease traffic problems. The designers of the signals and curbs will give priority to pedestrians in the 10-minute vicinity. Provide way finding and tactile direction, ramps, and level modifications to provide accessibility to all ages and abilities

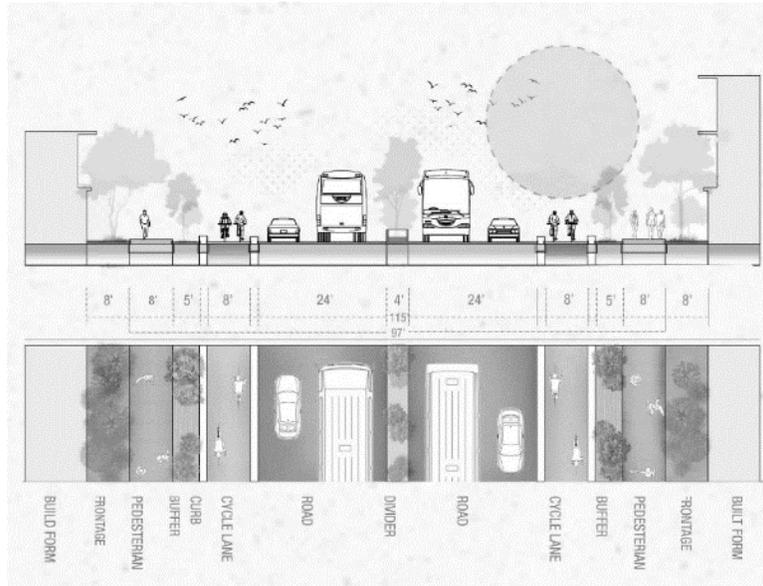


Figure 6: Primary Road Section (proposed)

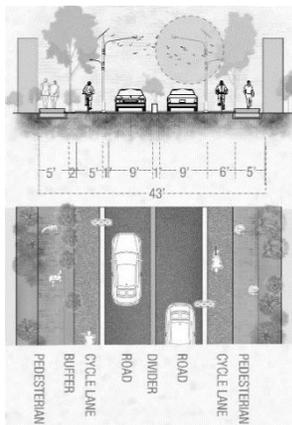


Figure 7: Secondary Road Section

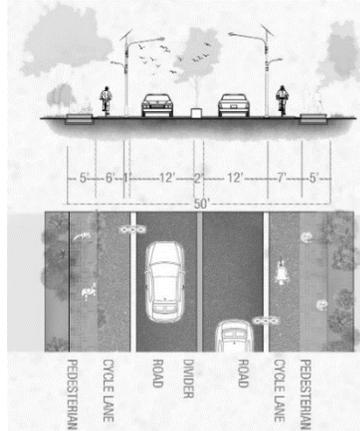


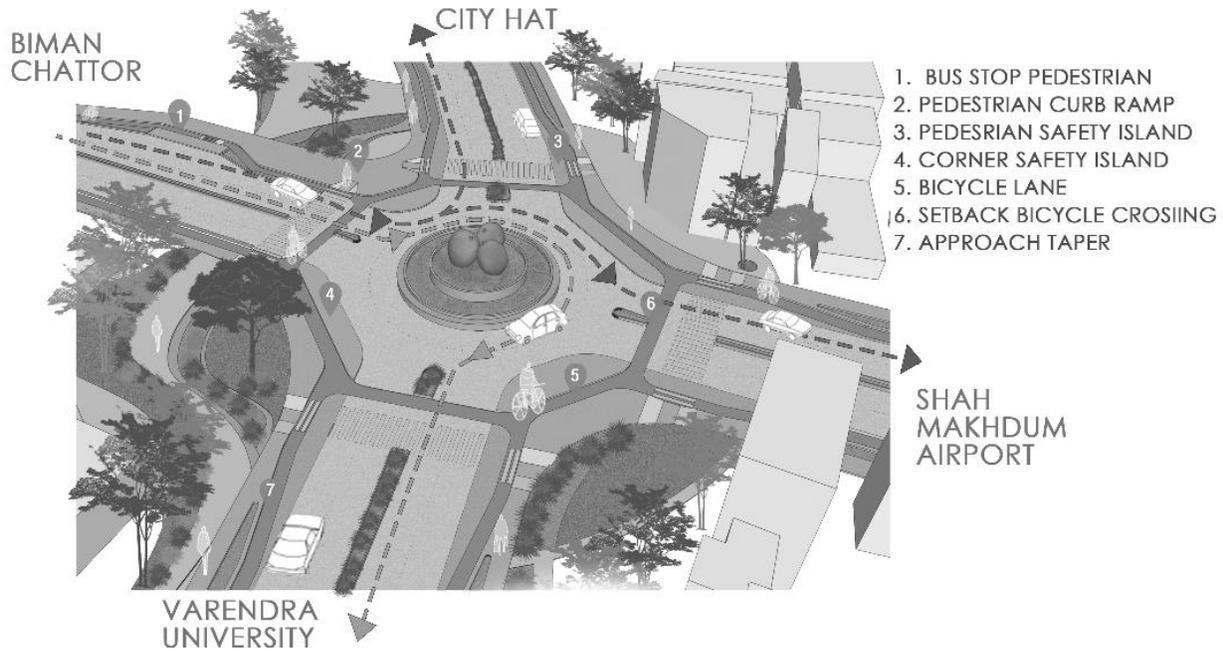
Figure 8: Tertiary Road

Section

Node Enhancement for Active Mobility:

Node analysis shows that the intersection functions as a vital urban connection which unites essential transportation paths with vital public facilities. The proposed design enhances safety and accessibility and space efficiency through its continuous pedestrian and cycling infrastructure. The design features raised pedestrian refuge islands and setback bicycle crossings and accessible curb ramps and solar-powered street lighting for enhanced visibility and comfort. A landscaped roundabout functions as a landmark while providing a small green space which enhances both the local climate and street environment quality. The

node receives a safer design transformation through organized vehicle and pedestrian and bicycle traffic which creates an energy-efficient climate-friendly urban junction that promotes walking and cycling and



simple connectivity.

Figure 9: Proposed Node Design Solutions

Programmatic Mix and Facilities

Designate ground-level spaces for small-scale businesses, short-term healthcare kiosks and civic services like a community noticeboard and information kiosk. Upper levels, where possible, will include co-working or flexible community rooms to encourage daytime activity and presence for safety. Integrate vendor licensing and micro-infrastructure such as water access, secure storage, and standardized stall sizes to support informal economies while protecting jobs.

Green-Blue Infrastructure and Climate Resilience

Incorporate vegetated swales, permeable paving, and underground rainwater harvesting beneath the plaza to capture runoff and irrigate plaza trees. Use native plants to support biodiversity. Use reflective pavements, green roofs on kiosks, and thoughtfully placed shade to lower surface temperatures and enhance thermal comfort.

Safety, Security, and Lighting

Create layered sightlines and active edges to encourage natural surveillance. Install programmable lighting to support evening economies while limiting light pollution. Include CCTV-ready poles with community oversight instead of punitive surveillance systems.

Performance Metrics and Monitoring

Walkability: increase the share of trips made on foot within the 10-minute area; track pedestrian counts and delays at crossings.

Accessibility: measure the percentage of public amenities accessible within a 10-minute walk; conduct audits for universal design compliance.

Environmental: record reductions in surface temperatures (°C) in the plaza area; measure stormwater captured (m³/year); track increases in tree canopy cover (%).

Socioeconomic: count the number of formalized vendor stalls; monitor usage rates of health kiosks and community rooms; assess nighttime economy activity. Regular monitoring, done quarterly for the first two years, will allow for adaptive management.

5.2 POLICY INTEGRATION

The proposed policy establishes a framework to create environmentally friendly roads that use energy-efficient technology. The roads function to enhance environmental sustainability while decreasing dependence on fossil fuels and creating better visual and ecological conditions in urban spaces. The plan establishes three essential components which include roadside greenery and solar street infrastructure and renewable energy integration to achieve sustainable long-term livability.

The green road policy promotes green façades and vertical gardens and climbing plants and modular green wall systems for installation along major roads and buildings that face streets. The initiative works to bring back urban vegetation while fighting heat accumulation and creating better conditions for microclimate comfort. The streetscape design requires a minimum of 30% of all visible building surfaces to feature green elements. The initiative enhances urban air quality while creating habitats for local wildlife in densely populated cities

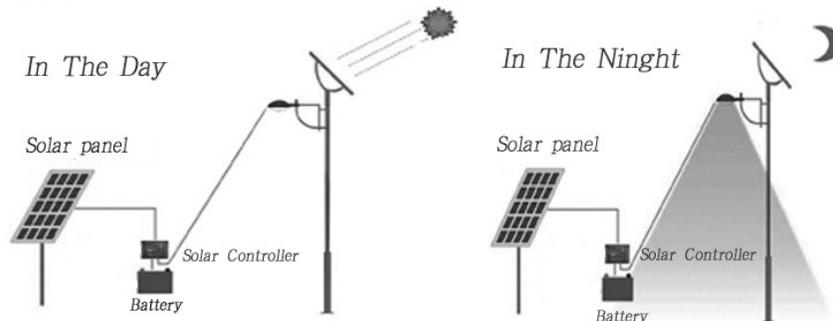


Figure 10: Solar Street Light Strategies

It is the policy of energy and lighting, which is intended to establish photovoltaic-powered lamp posts, shelters and solar-powered streetlights. Such renewable energy systems lessen the reliance on the power grid and reduce the cost of energy in the city and boost the safety levels at night. Stability is where the solar lighting units should be supplied in all new road infrastructures and enticement given to renew the old ones.

Another solar system that is promoted by the policy is rooftop solar systems on nearest buildings and canopies on the transit stations to further increase the sources of energy. The design principles emphasize that the streets and utility systems should be on renewable systems that are self-sustaining. The separation between the streetlights, the strength of light and the capacities of solar units must conform to the principles in general, in order to be efficient and effective.

The similar projects promote energy sensitive urban form such as shaded footways, reflective surfaces and landscape buffers which can control the temperature of the surface and make the walking more comfortable. The participation of the citizens and the corporate in the implementation of the systems and

financial incentive of utilizing renewable energy and tracking performance to determine the compliance are some of the measures of governance. Instead, the regular reviews will make sure that canopy cover, solar energy production and light reliability have been verified in order to support changes in the policies.

Table 1: Policies and Strategies

Problem Identify	Policy	Strategies	Design Guidelines	Expected Outcomes
Lack of green cover & poor visual quality of streetscape	Promote green façades for buildings to enhance urban greenery	Introduce vertical gardens, climbers, balcony planting, and green wall systems	Minimum 30% of commercial building façade surface to include greenery; Encourage modular green wall systems	Improved micro-climate, reduced heat, enhanced aesthetics & urban biodiversity
High energy consumption & dependence on non-renewable sources	Encourage solar energy integration in all buildings	Install rooftop solar panels in new buildings; Provide incentives for retrofitting existing buildings	New buildings must accommodate minimum 20% of roof area for solar panels; Encourage solar water heaters	Reduction in energy cost; shift towards renewable energy; sustainable neighborhood
Inefficient Street lighting & public utilities energy usage	Use renewable solar energy for urban street infrastructure	Solar-powered Street lights, lamp posts, and solar-panel-roofed bus stops	Streetlights powered by standalone solar units; Solar bus stands with 2–3 panels each	Reduced electricity load; safer streets at night; self-sufficient public utilities
Unmanaged waste dumping and pollution	Implement a systematic waste management and segregation system	Provide separate bins for Dry, Wet & Plastic waste; Community awareness & recycling programs	Three-bin system at 50–80m intervals; Waste collection points within 5-minute walking radius	Cleaner environment; reduced landfill waste; community participation in waste recycling

6. RESULT DISCUSSION

Amm Chattar functions as a quite gateway at the northern edge of Rajshahi, yet it’s potential remains underutilized. The proposed masterplan introduces the necessary facilities and spatial improvements needed to transform this transitional edge into a more functional, connected, people centered urban node.

- **The Civic Core:** The proposed masterplan reflects the Rajshahi’s identity as the “Green City” and provides the people a place to communicate, celebrate and simply exist comfortably in public. The transformation will make site into a prominent landmark of Rajshahi.
- **Integrated Urban Connectivity and Mobility:** Movement in this site designed for vehicles, not for people. By connecting all major roads through a continuous pedestrian network, the proposed plan ensures improved accessibility across the area. Established cycle lanes, organized parking will elevate safety standards.

- **Reimagined Public Space and User Comfort:** Throughout the green spine, shaded resting zones, landscape, pocket park, bus stop, public plaza enhances the user experience. Those underutilized areas will be transformed into connecting public spaces that strengthen spatial continuity.
- **Managing Urban Sprawl through Compact Growth:** The proposed approach will allow the city to grow inward rather than the outward by maintaining ecological balance, reuse the underutilized by the creation of mixed-use facilities within walking distance, highrise development along transit routes.
- **Resilient and Sustainable Urban Design:** By integrating green and blue networks, conserving open spaces, promoting compact development, proposed housing at the northern edge to control the unorganized settlement, the area can reduce the environmental impact while supporting everyday life.

7. CONCLUSION

It was the 10-Minute City, based on which the idea of a more compassionate, sustainable, and friendly city of Rajshahi was shaped. The proximity based planning used in the project to redesign the mobility and land-use patterns to foster social equality, resiliency and quality of life, through the management of issues such as unplanned development, inadequate infrastructure and facilities. Examples of the best advantages of the proposal are that it redesigns any mobility networks with a priority to pedestrian and cycle routes with minimal dependence on motorized travel. This will help in the development of small and walkable communities that are supported by the required infrastructures in a 10 minutes radius, and mixed use development to improve the density and efficiency. The thermal comfort and resource efficiency of the project is also provided by green-blue infrastructure (rainwater harvesting, permeable surfaces, and shade systems), which also makes the project sustainable. The future study should also take into account long-term consequences of the trend of mobility, economy, and the welfare of the community and what policies and governance practices should be put in place to ensure effective implementation. The study should also be furthered to determine how this mini city pattern could be restructured and applied to other growing cities in South Asia. Lastly, the redesigned Aamchattar demonstrates the anthropocentric design, sustainability, and inclusiveness values. The 10-Minute City concept is a drastic approach to the future of such mid-sized cities like Rajshahi due to its emphasis on proximity, accessibility and ecological sustainability.

DECLARATION OF AI

The authors used AI tools (ChatGPT by OpenAI, Grammarly) only for language improvement, grammar correction, and improvement of the clarity of the manuscript. All of the analysis, case studies, survey, design ideas conclusions were developed by the authors. The authors carefully revise, verified and edited the AI assisted passages to ensure clarity, accuracy, project objectives and maintaining academic integrity.

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