

Development initiatives for the Pitipana Urban Area: A Future "Techcity"

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Abstract

Pitipana, once a primarily residential enclave, has witnessed a transformative surge with the proliferation of modern higher education and research centers, specializing in technology and science. These establishments boast cutting-edge architectural designs and technical advancements, rendering the cityscape adorned with ultra-modern structures. However, this architectural evolution has led to the exclusive recognition of these buildings as the primary components of the built environment, overshadowing essential considerations such as current urban environment and accessibility, thereby neglecting walkability enhancements. This paper critically examines the architectural landscape of Pitipana, revealing a conspicuous absence of cohesive design principles within its educational and research institutions. Despite their shared focus on innovation, these establishments fail to coalesce into a unified district, characterized by divergent architectural styles and techniques. Consequently, Pitipana lacks a distinct architectural character, further exacerbated by the disparate features of residential, institutional, industrial, commercial, and religious structures, encompassing varied forms, scales, sizes, colors, materials, and textures, each narrating distinct stories. The methodology used in this study is based on primary and secondary data. It makes an effort to comprehend the prevailing patterns as well as possible future developments. Primary data were acquired by means of site visits, contextual analysis, in-depth observations, interviews, and area mapping. Publications and literature sources provided secondary data. Through a careful examination of the data, the study pinpoints problems and possible improvements for the Pitipana urban parcel. In conclusion, the study proposes a paradigm shift towards establishing a cohesive architectural identity in Pitipana, envisioning it as a 'Techcity' for the future. Through integrated urban planning strategies, including the incorporation of landscaping and accessibility improvements, this research seeks opportunities to foster a sense of unity among disparate architectural elements. It restates the pathways that could revitalize Pitipana's urban fabric, transforming it into a cohesive and vibrant 'Techcity' that embodies the ethos of innovation and progress directing urban development in a sustainable manner.

Keywords: Architectural cohesion, Techcity, urban planning, innovation, sustainable.

Introduction

Pitipana, which once was mainly a residential area, has undergone a significant transformation due to the emergence of modern higher education and research institutions that focus on technology and science. These new establishments feature cutting-edge architectural designs and technological advancements, contributing ultra-modern structures to the cityscape.

While these developments have undoubtedly enhanced the visual appeal and modernity of Pitipana, they have also led to a narrow focus on these buildings as the primary elements of the built environment. This emphasis on architecture and technological sophistication has overshadowed important aspects such as the existing urban environment and accessibility. Consequently, considerations for walkability improvements, which are crucial for creating a more inclusive and user-friendly urban space, have been largely ignored.

This ignorance is present due to;

Lack of Funding: Investment in pedestrian infrastructure often takes a backseat to funding for roadways and public transportation. Sidewalks, crosswalks, pedestrian signals, and other amenities are frequently underfunded.

Economic Pressures: Real estate and development interests often prioritize profitable ventures like high-rise buildings and commercial complexes over the creation of pedestrian-friendly spaces. This can result in less space and fewer resources allocated for walkable areas.

Maintenance Neglect: Even when pedestrian infrastructure exists, it may suffer from neglect and poor maintenance, making sidewalks, crossings, and pedestrian paths less usable and safe over time.

Research Problem

Research problem is under-utilization of human resources and contextual value. Existing resources in specific businesses are underutilized, and undervaluing the human resource skill element is a major concern.

Research Objectives

During the research period, six main elements have been identified, and the proposed vision is constructed through those elements. Green Areas, Agricultural Areas, Industrial zone, Military Presence, Technological Presence and Higher Educational Presence are such elements. The research objective generation has been done separately for each identified element. Each of these identified elements.

The green element

The Green Element is currently in a stable and healthy condition, with no existing issues affecting it. To maintain this positive state, it is essential to prioritize its protection and support during any development activities. This means ensuring that all future projects and construction efforts take into account the preservation and enhancement of the green spaces, ensuring that they continue to thrive without being compromised. By doing so, the balance between development and environmental sustainability can be maintained, benefiting both the natural ecosystem and the community.

Military (Underutilization of Human Resources) Current Time Period - October 2023.

The Panagoda army base establishes a significant military presence in the Pitipana area, serving as a key security provider for the region. Traditionally, the army's primary role is to ensure the nation's security and defense. However, at present, there are only minor security concerns, suggesting that the region is relatively stable and secure.

Given this context of minor security issues, the military personnel stationed at Panagoda represent a substantial yet underutilized resource. These trained individuals possess a wide range of skills and capabilities that could be redirected towards development projects within Pitipana. Engaging the military in such projects can harness their expertise in areas such as engineering, logistics, and project management, contributing to the community's growth and development.

By leveraging the military's capabilities in development initiatives, Pitipana can address various infrastructural and social needs while simultaneously providing meaningful engagement for military personnel during peacetime. This approach not only maximizes the use of available human resources but also fosters a collaborative effort between the military and the civilian community, ultimately enhancing the overall development and resilience of the area.

Institutions (Human Capital Flight) Current Time Period - October 2023

In the current context of Sri Lanka, there is a significant challenge related to the undervaluation of skills, leading to a phenomenon known as human capital flight. This issue is particularly evident among students studying in the Pitipana area and across the country. Despite receiving education and training from reputable institutions, many students find that their skills and qualifications are not adequately valued or rewarded within the local job market.

As a result, a considerable number of these students seek better work prospects abroad. The lure of higher salaries, better working conditions, and greater professional recognition in other countries drives this trend. This migration of educated and skilled individuals, often referred to as a "brain drain," poses several challenges for Sri Lanka.

Firstly, it results in a loss of valuable human capital that could have contributed to the country's economic growth and development. Secondly, it creates a gap in the local workforce, particularly in specialized fields that require the expertise these students possess. Thirdly, the continuous outflow of talent can impact the nation's ability to innovate and compete on a global scale.

Addressing human capital flight requires a multifaceted approach. It is essential to create an environment where skills are recognized, valued, and appropriately rewarded. This includes implementing policies that foster job creation, offering competitive salaries, and providing opportunities for professional growth and development within the country. Additionally, enhancing the overall quality of life, including factors such as work-life balance, healthcare, and social infrastructure, can make staying in Sri Lanka a more attractive option for its skilled workforce.

By taking these steps, Sri Lanka can work towards retaining its talented individuals, thereby strengthening its human capital and ensuring sustainable economic and social development.

Technological Presence (Underutilization of Resources) Current Time Period - October 2023

In the current landscape, Pitipana hosts large-scale, technologically advanced research facilities. These institutions have been established with the aim of fostering innovation and driving technological advancements. However, despite their state-of-the-art infrastructure and significant investments, the output from these facilities remains negligible. This underutilization of resources represents a missed opportunity for the region.

The reasons for this underperformance could be manifold, including inadequate funding, lack of collaboration between research institutions and industry, insufficient talent retention, or bureaucratic hurdles that impede efficient research and development processes. Addressing these issues is crucial to unlocking the full potential of these technological resources.

By effectively utilizing the existing facilities, Pitipana could witness substantial technical improvements and innovations. This involves:

1. **Enhancing Collaboration:** Fostering stronger partnerships between research institutions, universities, and industry can create a more dynamic and integrated ecosystem. Collaborative projects and knowledge sharing can accelerate the pace of technological advancements.
2. **Improving Funding and Resource Allocation:** Ensuring that adequate financial resources are allocated to key research areas can drive significant breakthroughs. Additionally, optimizing the allocation of existing resources to high-impact projects can improve overall efficiency and output.
3. **Attracting and Retaining Talent:** Creating an environment that attracts top talent, both locally and internationally, is vital. This can be achieved through competitive salaries, opportunities for professional growth, and a supportive research culture.

4. **Streamlining Processes:** Reducing bureaucratic red tape and improving administrative processes can facilitate smoother and faster research and development activities. This includes simplifying grant applications, procurement processes, and intellectual property management.
5. **Leveraging Technology Transfer:** Promoting technology transfer and commercialization of research outcomes can bridge the gap between laboratory research and real-world applications. This can involve creating incubation centers, providing support for startups, and encouraging entrepreneurship among researchers.

Agricultural Presence (Lack of Management and Maintenance) Current Time Period - October 2023

The Pitipana area is home to a substantial number of paddy fields and agriculturally rich zones, highlighting its potential as a key agricultural hub. Despite this, many of these paddy fields have been abandoned, and even the ones that remain are only sporadically utilized. This underutilization of agricultural land points to significant issues in management and maintenance.

The abandonment and infrequent use of these paddy fields could be attributed to several factors, including insufficient support for farmers, lack of modern agricultural practices, inadequate infrastructure, and perhaps unfavorable economic conditions for farming. Addressing these issues can unlock the enormous potential these lands hold, contributing significantly to both the local and national economies.

To revitalize and expand the agricultural presence in Pitipana, several steps can be taken:

1. **Improving Support for Farmers:** Providing financial aid, subsidies, and access to low-interest loans can encourage farmers to return to and maintain their fields. Additionally, offering training programs on modern farming techniques can help increase productivity and yield.
2. **Investing in Infrastructure:** Developing better irrigation systems, storage facilities, and transportation networks can greatly enhance the efficiency of agricultural operations. Reliable infrastructure ensures that produce can be cultivated, stored, and transported with minimal loss and maximum efficiency.
3. **Promoting Modern Agricultural Practices:** Introducing sustainable farming practices, advanced agricultural technologies, and high-yield crop varieties can help maximize the potential of the paddy fields. This includes the use of precision farming techniques, organic farming, and integrated pest management systems.
4. **Facilitating Market Access:** Creating better access to local and national markets for farmers can ensure that they get fair prices for their produce. Establishing cooperatives or farmers' markets can also help in reducing the influence of middlemen and increasing farmers' profits.
5. **Enhancing Land Management Policies:** Implementing policies that promote efficient land use and prevent the abandonment of fertile lands is essential. This could involve land reforms, better land tenure systems, and incentives for active land use.

6. **Community Engagement and Awareness:** Encouraging community involvement in agricultural activities can lead to better management and maintenance of the fields. Raising awareness about the economic and social benefits of agriculture can also foster a more supportive environment for farming activities.

Industrial Zone (Lack of Development) Current Time Period - October 2023

The Pitipana area hosts an industrial zone that holds significant potential for economic growth and development. However, this zone remains underutilized and has not seen substantial development since 2003. Despite its strategic location and inherent potential, the industrial zone has stagnated, failing to capitalize on opportunities that could transform it into one of the country's leading industrial hubs.

Several factors might contribute to this underdevelopment, such as lack of investment, inadequate infrastructure, limited access to markets, and possibly bureaucratic hurdles. To unlock the full potential of the Pitipana industrial zone, a comprehensive and strategic approach is needed.

Here are key steps to facilitate the development of the industrial zone:

1. **Attracting Investment:** Creating an attractive investment climate is crucial. This can be achieved by offering incentives such as tax breaks, subsidies, and simplified regulatory processes. Public-private partnerships can also play a vital role in bringing in the necessary capital and expertise.
2. **Developing Infrastructure:** Upgrading and expanding infrastructure is essential for the industrial zone's growth. This includes improving transportation networks, such as roads, railways, and ports, as well as enhancing utilities like power, water supply, and telecommunications. Efficient infrastructure will ensure seamless operations and logistics for industries.
3. **Promoting Technological Upgradation:** Encouraging the adoption of modern technologies and innovation within the industrial zone can significantly boost productivity and competitiveness. This can involve setting up technology parks, innovation hubs, and providing grants for research and development.
4. **Facilitating Market Access:** Ensuring that businesses within the industrial zone have access to both local and international markets is vital. Trade agreements, export incentives, and support for market research can help businesses expand their reach and grow their customer base.
5. **Streamlining Bureaucratic Processes:** Reducing red tape and simplifying administrative procedures can make it easier for businesses to set up and operate within the industrial zone. This includes speeding up the approval processes for permits, licenses, and other regulatory requirements.

6. Providing Skill Development and Training: Establishing training centers and partnerships with educational institutions can ensure a steady supply of skilled labor tailored to the needs of the industries in the zone. Continuous skill development programs will help maintain a competitive workforce.

Theoretical basis (Literature Survey)

The literature review contains Government approved future developments plans to aid with the “Tech-city” development plan.

Tech City Development Project – Pitipana

The Tech City development project in Pitipana introduces a new and ambitious concept to Sri Lanka's development strategies. Unlike traditional development projects focused solely on building universities, infrastructure, or research institutions, a Tech City aims to create an integrated ecosystem that fosters innovation, economic growth, and technological advancement. To ensure the success of the Tech City concept, it is essential to activate and integrate various components, including market dynamics, financial institutions, service organizations with robust financial assets, gross properties, Gross Domestic Product (GDP) contributions, employment opportunities, and technological equipment. Each of these elements plays a crucial role in creating a thriving tech-driven urban environment.

Key Elements for a Successful Technology City

Several critical spaces and components must be established to achieve the success of the Technology City:

1. Institutions of Higher Learning:

Establishing world-class universities and research institutions is fundamental. These institutions will serve as the backbone of innovation, providing advanced education, conducting cutting-edge research, and fostering a culture of creativity and problem-solving.

2. Venture Capital:

Encouraging the presence of venture capital firms is essential to support startups and innovative projects. Access to venture capital ensures that entrepreneurs have the necessary funding to develop, scale, and bring their technological solutions to market.

3. Tech Workers:

Attracting and retaining a highly skilled tech workforce is crucial. This includes software developers, engineers, data scientists, and other professionals with expertise in emerging technologies. A robust tech workforce drives innovation and supports the growth of tech enterprises.

4. Knowledge Workers:

Knowledge workers, including researchers, analysts, and consultants, are vital for generating and disseminating new ideas. They contribute to the knowledge economy by applying their expertise across various sectors, enhancing productivity and competitiveness.

5. Educated Workers:

A well-educated workforce forms the foundation of a Tech City. This involves not only higher education but also continuous learning and professional development opportunities. Ensuring access to quality education and training programs is essential for maintaining a skilled labor pool.

6. Growth Entrepreneurship:

Promoting a culture of entrepreneurship and supporting growth-oriented businesses is key to driving economic development. This involves creating an environment where startups can thrive, offering resources such as incubators, accelerators, and mentorship programs.

According to the concept, both present industry and the future technological city will operate in this zone. This zone already has 30 industries in operation. One of the industries is the Leyland Bus assembly sector, which is extremely substantial

Proposed Road Hierarchy - Pitipana

The proposed road hierarchy in the Homagama development zone is designed to accommodate the anticipated growth and urban density by 2030. This categorization is based on the density of buildings, intra-city roadway development, and transportation projects planned for the area.

'A' Class Roads

'A' Class roads are the major highways within the Homagama development zone, planned to have six lanes to accommodate high traffic volumes and facilitate smooth transportation. These roads are critical for regional connectivity and include:

- High-Level Road (A4 Colombo - Batticaloa Highway): This major arterial road connects Colombo with Batticaloa, playing a significant role in inter-city travel and transport of goods.
- Colombo - Horana Main Highway (B84): Another vital route that links Colombo with Horana, serving as a key conduit for economic and commercial activities.
- Low-Level (Avisawella) Road: This road provides an alternative route for traffic between Colombo and Avisawella, helping to distribute traffic load and reduce congestion.

'B' Class Roads

'B' Class roads are the four-lane highways scheduled for construction under the Homagama Development Plan. These roads are identified based on comprehensive research into connectivity, integration, and the overall development concept. They form the secondary network that supports the main 'A' Class roads, facilitating movement within high-density neighborhoods. They act as a grid, ensuring efficient traffic flow and access across the region.

'C' Class Roads

One of the key objectives of the Homagama Development Plan (2019-2030) is to enhance the network and density of 'C' Class roads. These roads are designed to support the development targets outlined in the plan and will be integral to the growth of towns such as Homagama, Godagama, Pitipana, and Kahathuduwa.

'C' Class roads are crucial for:

- **Connecting Smaller Towns and Suburbs:** These roads improve accessibility within the development zone, facilitating local traffic and supporting community growth.
- **Linking to 'A' and 'B' Class Roads:** Emphasis is placed on ensuring that 'C' Class roads provide efficient connections to the primary ('A' Class) and secondary ('B' Class) road networks. This connectivity ensures seamless travel across different parts of the region.
- **Supporting Peripheral Development:** By enhancing the road network in peripheral areas, the plan aims to leverage development activities, ensuring that benefits are distributed across the entire region.

Implementation Framework

The development of the road network within the Homagama development zone is seen as a crucial component of the overall planning framework. This network is not only intended to support current and future transportation needs but also to facilitate the implementation of proposed development concepts. The strategic improvement of roads is expected to drive economic growth, enhance accessibility, and improve the quality of life for residents by providing efficient and reliable transportation infrastructure.

In summary, the proposed road hierarchy, comprising 'A', 'B', and 'C' Class roads, is a comprehensive approach to managing the anticipated urban growth and development in the Homagama zone. By focusing on connectivity, integration, and support for high-density areas, this plan aims to create a robust and efficient transportation network that underpins the region's development objectives.

Methodology

This study utilizes a mixed-methods approach, incorporating both primary and secondary data to analyze the urban and architectural landscape of Pitipana. The primary data was collected through site visits, contextual analysis, in-depth observations, interviews, and area mapping. These visits allowed for a first-hand understanding of the architectural elements, infrastructure, and urban planning challenges in Pitipana. Secondary data was sourced from publications, literature, and government-approved development plans, which provided additional insights into the historical and planned developments in the area.

1. Site Visits and Observations:

Comprehensive site visits were conducted to assess the current state of architectural cohesion, infrastructure, and urban planning. Observations focused on the architectural styles, building materials, and the overall layout of the educational and research institutions, as well as residential, commercial, and industrial zones.

2. Contextual Analysis:

A detailed contextual analysis was performed to understand the broader urban environment and how the new developments integrate with or diverge from existing structures and landscapes. This involved studying the spatial relationships and functional connectivity between different areas.

3. Interviews:

Semi-structured interviews were conducted with key stakeholders, including urban planners, architects, local government officials, residents, and representatives from educational and research institutions. These interviews provided qualitative data on the perceived strengths and weaknesses of the current urban design and potential areas for improvement.

4. Area Mapping:

Detailed mapping of the Pitipana area was undertaken to document the physical layout, including the locations of various buildings, green spaces, transportation networks, and other significant features. This mapping was essential for identifying patterns and gaps in the urban fabric.

5. Literature Review:

Secondary data was gathered from a variety of sources, including academic journals, government reports, and other relevant publications. This review helped to contextualize the primary data within broader urban planning and architectural theories and practices.

Analysis-discussion

The findings underscore the need for a more integrated and holistic approach to urban planning in Pitipana. The current architectural diversity, while showcasing individual innovation, fails to create a coherent urban identity. This lack of cohesion is further exacerbated by the underutilization of technological resources and the outflow of skilled human capital.

To address these issues, several strategic interventions are proposed:

1. **Architectural Cohesion:** Establishing design guidelines and principles that promote architectural harmony while allowing for innovation is crucial. This could involve creating a unified aesthetic for educational and research institutions that reflects the area's technological focus.
2. **Resource Utilization:** Enhancing collaboration between research institutions and industry can maximize the potential of existing facilities. Streamlining administrative processes and improving funding mechanisms are essential steps in this direction.
3. **Walkability and Accessibility:** Investing in pedestrian infrastructure, including sidewalks, crosswalks, and public spaces, is vital for creating a more inclusive and user-friendly urban environment. These improvements can also foster a sense of community and improve the overall quality of life.
4. **Retaining Human Capital:** To mitigate human capital flight, it is necessary to create a supportive environment that values and rewards local talent. This includes offering competitive salaries, professional development opportunities, and a high quality of life.
5. **Revitalizing Agricultural and Industrial Zones:** Implementing modern agricultural practices and improving infrastructure can rejuvenate the agricultural sector. Similarly, attracting investment and promoting technological upgrades are essential for the development of the industrial zone.
6. **Engaging Military Resources:** Leveraging the skills and capabilities of military personnel in local development projects can enhance infrastructure and provide meaningful engagement for the military during peacetime.

Conclusion

Pitipana stands at a crossroads, with the potential to transform into a cohesive and vibrant "Techcity" that embodies innovation and progress. This study highlights the current challenges and opportunities in the area's urban and architectural landscape. By adopting integrated urban planning strategies, focusing on architectural cohesion, optimizing resource utilization, and improving walkability and accessibility, Pitipana can develop a distinct architectural identity and a sustainable urban environment.

The proposed paradigm shift involves not only physical transformations but also changes in policy and governance. By prioritizing the holistic development of Pitipana, it is possible to create an urban fabric that supports innovation, retains talent, and promotes sustainable growth. The envisioned "Techcity" will not only serve as a model for future urban developments but also contribute significantly to the economic and social advancement of the region. Through strategic planning and community engagement, Pitipana can become a beacon of technological and architectural excellence, reflecting the ethos of innovation and progress.

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