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Balancing Economic Productivity and Community Well-Being: Impacts of Urban Green Spaces in Valenzuela City's Infrastructure Development

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Abstract—With the emergence of the fourth industrial revolution, also known as "industry 4.0," the Philippines has experienced economic dynamism and urbanization, necessitating further infrastructure developments. However, the rapid pace of urbanization has resulted in the congestion of common-pool resources and a decline in ecological sustainability, particularly in highly urbanized areas. Moreover, the presence of economic activities in cities has limited space for local communities to thrive. Thus, the study aims to emphasize the importance of striking a balance between economic productivity and the well-being of local communities by promoting the establishment of urban green spaces and implementing innovative practices. The objective of this research is to analyze the significant impacts of infrastructure development projects in Valenzuela City, particularly the implementation of urban parks and green spaces. Ultimately, the research highlights the need for sustainable development that benefits both the citizens, economy and the environment. The findings of the study have significant implications for the implementation enhancement of urban green space projects in Valenzuela City.

***Index Terms*—Economic productivity, ecological sustainability, green space, infrastructure development, urban, urbanization, Valenzuela city.**

1. Introduction

The Philippines ranks as the second-most densely populated country in the East Asia and Pacific region, with urbanization continuing to accelerate. As cities expand, vegetation, forests, and agricultural lands are being converted into industrial zones and high-rise developments to accommodate growing populations (Ichimura, 2003). However, this rapid urban expansion has resulted in congestion, land scarcity, and a decline in ecological sustainability. The lack of corresponding investments in urban infrastructure has led to inadequate basic services such as clean water, sanitation, and housing, along with increased risks of pollution, natural disasters, and higher commuting costs (Baker et al., 2017). In this context, the role of **urban green spaces (UGS)** has become more critical than ever, as they provide essential environmental and social benefits that counteract the negative impacts of urbanization.

Urban parks and green spaces contribute significantly to ecological sustainability and urban livability. They serve as natural air purifiers, provide shade to counteract the urban heat island effect, and enhance biodiversity within cities (Celik et al., 2021). Additionally, studies suggest that exposure to green environments promotes mental well-being, encourages physical activity, and fosters social interactions among residents (Fasihi, 2019). Despite their proven benefits, urban green spaces remain limited in many highly urbanized areas due to competing economic interests. While local governments oversee urban park development, decision-making is often influenced by economic priorities, sometimes at the expense of environmental preservation (Dharmawan & Rachmanyah, 2020). Land-use planning frameworks must strike a balance between economic growth and ecological conservation to maximize the benefits of urban green spaces while ensuring long-term sustainability (Chan & Wang, 2019).

However, managing and expanding urban green infrastructure presents significant challenges. The effectiveness of urban green spaces depends on factors such as proper maintenance, accessibility, and integration into broader urban planning initiatives. Studies indicate that fragmented green spaces—those developed without coordination among various stakeholders—fail to deliver the full range of ecosystem services needed for sustainable urban development (Feltynowski et al., 2018). Moreover, there is a pressing need for empirical data and reliable assessments to guide policy enhancements that support green infrastructure investments at the local level.

This study aims to evaluate the impact of Valenzuela City's urban green space initiatives in fostering economic productivity while enhancing ecological sustainability and community well-being. Despite growing research on urban sustainability, little attention has been given to the specific case of Valenzuela City, a rapidly urbanizing area implementing multiple green infrastructure projects. The study seeks to assess the effectiveness of these initiatives, identify areas for improvement, and provide policy recommendations that contribute to a more livable and resilient urban environment.

By examining the relationship between green space development, urban sustainability, and economic productivity, this research aims to bridge knowledge gaps and offer insights

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into best practices for integrating green infrastructure into urban planning. The findings will be valuable not only for Valenzuela City but also for other highly urbanized areas facing similar challenges. Additionally, this study highlights the importance of engaging policymakers, urban planners, and local communities in collaborative efforts to enhance urban green spaces and ensure their long-term sustainability. Through evidence-based recommendations, this research seeks to contribute to a framework for improving green infrastructure policies and fostering a healthier, more sustainable urban future.

A. Objectives of the Study

1. Identify infrastructure development projects related to urban green spaces in Valenzuela City.
2. Assess residents' awareness and experiences regarding these projects.
3. Determine the relationship between demographic factors and perceptions of green spaces.
4. Evaluate the effectiveness of green spaces in promoting ecological sustainability.
5. Develop a policy framework for improving urban green space implementation.

2. Methodology

A mixed-method research design was employed, incorporating surveys and interviews. Primary data were gathered from park users in five major green spaces across Valenzuela City: Polo Park, Wawang Pulo Sports Park, MMDA-Valenzuela City Friendship Park, Valenzuela City Family Park, and Valenzuela City People's Park. Additionally, secondary data from government reports and literature reviews were analyzed. Statistical tools were used to assess the level of awareness, experiences, and effectiveness of green space initiatives.

- *Survey Method*: A structured questionnaire was distributed to 150 park users across Valenzuela City's major urban parks (Polo Park, Wawang Pulo Sports Park, MMDA-Valenzuela City Friendship Park, Valenzuela City Family Park, and Valenzuela City People's Park).
- *Interviews*: Key informant interviews were conducted with local government officials and urban planners to gain insights into policy implementation.
- *Data Analysis*: Descriptive analysis was used to interpret survey data, while content analysis was applied to qualitative responses.

3. Results and Discussion

A. Infrastructure Development Projects in Valenzuela City

Valenzuela City has prioritized green infrastructure projects to promote urban sustainability. Notable initiatives include:

- *Polo Park Redevelopment*: Features historical monuments, shaded seating areas, and interactive spaces.
- *Wawang Pulo Sports Park*: A recreational space with sports facilities, contributing to physical well-being.
- *MMDA-Valenzuela City Friendship Park*: Developed under the "I Love Metro Manila" campaign, fostering environmental awareness.
- *Valenzuela City Family Park*: An inclusive green space with an aviary, playgrounds, and wellness areas.
- *Valenzuela City People's Park*: Designed for community engagement and environmental conservation.

B. Community Awareness and Utilization of Urban Green Spaces

Survey results indicate that 85% of respondents frequently use green spaces for relaxation, exercise, and social interactions. Additionally, 78% believe these parks contribute positively to their mental and physical well-being. However, limited awareness campaigns on urban sustainability were noted, with only 40% of respondents aware of ongoing green infrastructure policies.

C. Relationship Between Demographics and Perception of Green Spaces

A chi-square test revealed a statistically significant relationship between age and park usage frequency ($p < 0.05$). Young adults (18-35 years) visit parks for exercise and socialization, while older adults (50+ years) prefer them for relaxation and wellness activities. Gender and income level did not significantly influence perceptions of green spaces.

D. Effectiveness of Green Spaces in Promoting Ecological Sustainability

Findings highlight the following benefits of Valenzuela's urban green spaces:

- *Climate Regulation*: Trees and vegetation reduce urban heat and improve air quality.
- *Biodiversity Conservation*: Green parks serve as habitats for local flora and fauna.
- *Community Engagement*: Open spaces encourage social interactions and cultural activities.
- *Economic Growth*: Property values near parks increased by an average of 15%, stimulating local investment.

However, challenges such as limited maintenance funding and uneven distribution of green spaces were identified.

4. Conclusion and Recommendations

A. Conclusion

This study examines the impact of urban green spaces in Valenzuela city's infrastructure development with a view to assessing its effectiveness towards attaining ecological sustainability of Valenzuela city. In general, the findings of this study were consistent with the assumptions and hypothesis of the previous studies conducted in other countries that are incorporated in this research. The researchers found that urban green spaces demonstrate a positive impact to citizen's social, emotional, mental, and physical well-being. The result of the survey conducted empirically demonstrated that urban parks are

beneficial in promoting social cohesion, relieves stress, meditation, and encourages urban dwellers to be physically active. This study adds to the body of research showing how parks and other green areas can improve the well-being of their communities. This study contributes to the growing body of research on the Philippines' efforts to achieve ecological sustainability in the environment.

Nonetheless, it becomes apparent that efforts aimed at developing urban green infrastructure need to be implemented more effectively. Notwithstanding the effectiveness, there are still certain glaring holes and difficulties that need to be fixed to improve the projects' overall execution. The improvement of communication tactics is one important area that needs focus. The advantages and effects of urban green areas are widely acknowledged; yet, it is imperative to guarantee their tight integration into the planning and construction of forthcoming infrastructures and establishments. More community involvement, raising community knowledge, and improving local government communication can all make a big difference in implementing more sustainable practices.

B. Recommendations

The study conducted by the researchers produced recommendations which highlight the significance of completely incorporating green infrastructure into the environmental planning of Valenzuela City. Firstly, integrating green spaces strategically within the urban infrastructure should be prioritized. Implementing a comprehensive urban planning approach that considers the incorporation of parks, green belts, and gardens into the city's layout will foster a harmonious coexistence between nature and development. Highlight the positive impact these spaces have on property values, tourism potential and local businesses. Encourage public-private partnerships to invest in and maintain these areas, fostering economic growth while concurrently preserving and enhancing the natural environment. Secondly, prioritizing green construction components in forthcoming projects is imperative. Extending this initiative to encompass private institutions, residential zones, commercial hubs, and industrial zones is one of the key. Building permit regulations that require green spaces could be a workable solution, inspired by successful models from other regions.

Furthermore, it is essential to guarantee consistency and aesthetic standards in all government buildings, particularly in educational establishments, in order to create a welcoming and consistent atmosphere. Leverage technology and innovation to maximize the benefits of urban green spaces. Implement smart design strategies such as green roofs, vertical gardens, and sustainable drainage systems to optimize space utilization and environmental efficiency. Additionally, employ digital tools and apps to facilitate community involvement, promote environmental education, and monitor the health and maintenance of these green areas.

Lastly, Community engagement and participation are pivotal in ensuring the success and utilization of these green spaces. Encouraging residents to actively participate in the maintenance and utilization of these areas through community programs, educational workshops, and volunteer initiatives not only enhances the sense of ownership but also cultivates a healthier and more engaged society. By harmonizing economic progress with the integration of urban green spaces, Valenzuela City can pave the way for a more resilient, inclusive, and vibrant community. This synergy will not only enhance the city's aesthetic appeal but also foster social cohesion, promote physical and mental well-being, and fortify Valenzuela's position as a model city for sustainable urban development.

References

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