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SUSTAINABLE MANAGEMENT MODEL OF PASIR PENGARAIAN URBAN FOREST

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Abstract. Urban forests have a vital role in supporting the sustainability of urban development. This study aims to formulate a sustainable management model for Pasir Pengaraian Urban Forest using a mixed method approach. This study includes institutional analysis, identification of appropriate plant species, and development zoning mapping. A qualitative approach is used to examine institutional management and stakeholder participation, while a quantitative approach is used to evaluate ecological, social, and economic factors. The results of the study indicate that the management of Pasir Pengaraian Urban Forest requires integrated planning and development as well as strengthening of community participation-based management policies. In addition, optimization of the ecological, social, and economic functions of urban forests can be achieved through vegetation maintenance, management zoning, and periodic monitoring. This management model is expected to contribute to creating a better balance of urban ecosystems and strengthening the sustainability of regional development in Rokan Hulu Regency.

Keywords: urban forest; sustainable management; zoning; community participation; urban ecosystem.

I. INTRODUCTION

Environmental problems in urban areas are complex issues and continue to grow along with increasing human activities. Phenomena such as air pollution, water pollution, declining soil quality, and increasing air temperatures are some of the main problems faced by urban communities (Sundari, 2010). Along with increasing population and human activities, the need for land for settlements, industry, and urban infrastructure is increasing. This causes a reduction in Green Open Space (RTH) and urban forests, which in turn worsens the quality of the environment in urban areas (Martika & Suryawati, 2021) . Therefore, the existence of urban forests is an important solution in overcoming these problems.

Urban forests function as the lungs of the city that can improve air quality, reduce noise, lower air temperature, and become a habitat for urban flora and fauna (Grey & Deneke, 1978). In addition, urban forests also play an important role in improving ecosystem balance, providing recreational space, and strengthening the social and aesthetic aspects of the city (Dahlan, 1992). The existence of urban forests has been regulated in national regulations that require each city to have green open space of 30% of the total urban area (Sundari, 2010).

In Rokan Hulu Regency, urban forest management efforts have been realized through the Decree of the Regent of Rokan Hulu Number Kpts.660/DLH/360/2019 concerning the Designation of Urban Forest Areas. Through this policy, the area of urban forest in the Rokan Hulu Regency Government Office Complex has increased to 32.80 hectares. This urban forest area is expected to be able to carry out ecological, economic, and socio-cultural functions. The ecological functions of urban forests include controlling air pollution, protecting against erosion, and providing space for flora and fauna (Zoer'aini, 2008). Meanwhile, from an economic perspective, urban forests can support the tourism sector and increase the value of surrounding properties. Meanwhile, the socio-cultural function is reflected in the use of urban forests as a space for social interaction, recreation, and education for the surrounding community (Dahlan, 1992).

Although the role of urban forests has been widely recognized, their management still faces major challenges. These challenges include low community participation, lack of coordination between management institutions, and limited human resources and budget. Therefore, an urban forest management model is needed that can answer these challenges effectively and sustainably. This management model is expected to strengthen collaboration between the government, community, and private sector in maintaining and managing urban forests optimally (Mubarak et al., 2019).

This study has novelty in terms of methodological approach and focus of study. Methodologically, this study uses a mixed method that combines qualitative and quantitative approaches. The qualitative approach is carried

out by analyzing policies, community participation, and interviews with stakeholders. While the quantitative approach is used to evaluate the ecological, social, and economic factors of urban forests. Spatial analysis is also applied in this study to map the zoning of urban forest management (Prahasta, 2009).

II. RESEARCH METHODS

This study uses a mixed method approach that combines quantitative and qualitative approaches simultaneously. The quantitative approach is used to collect and analyze numerical data related to the ecological, social, and economic conditions of Pasir Pengaraian Urban Forest. Meanwhile, the qualitative approach is used to explore and understand policies, institutions, and community participation in urban forest management. The use of mixed methods aims to produce richer data, strengthen the validity of the findings, and reduce the potential for bias (Sugiyono, 2010).

III. RESULTS AND DISCUSSION

This study aims to formulate a sustainable management model for Pasir Pengaraian Urban Forest. The results of the study were obtained from field observations, interviews, questionnaires, and spatial analysis using geospatial data. The data obtained were then analyzed descriptively qualitatively, quantitatively, and spatially. The results of the study are presented in the following subsections.

Existing Condition of Pasir Pengaraian Urban Forest

Pasir Pengaraian Urban Forest has an area of approximately 32.80 hectares, in accordance with the Decree of the Regent of Rokan Hulu Number Kpts.660/DLH/360/2019. This area is located in the Rokan Hulu Regency Government Office Complex and functions as a green open space (RTH) that supports the urban ecosystem.

1. Ecological Aspects

From the observation results, it is known that Pasir Pengaraian Urban Forest has quite high vegetation diversity. Some dominant tree species are mahogany (Swietenia macrophylla), rain tree (Samanea saman), and ketapang tree (Terminalia catappa). The existence of this vegetation plays a role in absorbing carbon dioxide (CO_2), lowering air temperature, and improving the quality of the surrounding air. Vegetation also functions as an absorber of rainwater, thus reducing the risk of local puddles or flooding (Zoer'aini, 2008).

2. Social Aspects

From interviews with the surrounding community, it is known that Pasir Pengaraian Urban Forest is used by the community as a recreation area, sports, and other social activities. As many as 85% of respondents consider that the existence of the urban forest has a positive impact on their health and quality of life. In addition, the surrounding community has a fairly good awareness of protecting the urban forest, although active participation in maintenance activities is still relatively low.

3. Economic Aspects

Pasir Pengaraian Urban Forest also has significant economic value. The existence of a urban forest can increase the value of surrounding properties, encourage local economic activities such as ecotourism, and has the potential to be a source of income through educational tourism programs. Based on interviews with managers, the tourism potential of this urban forest has not been optimized to its full potential, but there are plans to develop community-based ecotourism.

Implementation of Urban Forest Management Policy

The management of Pasir Pengaraian Urban Forest is carried out by the Environmental Service (DLH) of Rokan Hulu Regency . Based on interviews, it is known that this management includes planning, maintenance, protection, and periodic evaluation activities. Some of the main policies implemented include:

1. Urban Forest Zoning : Urban forest areas are divided into several zones, such as conservation zones, recreation zones, and protection zones. This zoning aims to maximize the utilization and protection of the area.
2. Prohibitions and Sanctions : There is a prohibition on damaging vegetation, cutting down trees, and dumping waste in the urban forest area. Administrative sanctions and fines are applied to violators of this policy.
3. Community Participation : Although community participation is not yet optimal, the DLH is trying to involve local communities through education and outreach programs.

Factors Affecting Urban Forest Management

Based on the analysis results, several factors were found that influence the sustainability of the management of Pasir Pengaraian Urban Forest, namely:

1. Ecological Factors : Climate change and extreme weather conditions can affect vegetation growth and tree resistance to pests and diseases.
2. Social Factors : The level of public awareness and participation is still low. Although the community recognizes the importance of urban forests, participation in management programs is still minimal.
3. Economic Factors : Limited government budget for urban forest maintenance and management is the main obstacle.
4. Institutional Factors : Coordination between stakeholders, such as the Environmental Service, the community, and the private sector, still requires strengthening.

Sustainable Management Model of Pasir Pengaraian Urban Forest

The proposed urban forest management model adopts the concept of sustainability-based management. This model includes five main elements, namely:

1. Vegetation Management : Maintenance, tree rejuvenation, and pest and disease control.
2. Area Zoning : Dividing urban forests into conservation zones, recreation zones, and education zones.
3. Community Participation : Involving the community in urban forest maintenance and monitoring activities through mutual cooperation programs and community-based management.

4. Policy Strengthening : Preparation of regional regulations (Perda) that support the sustainability of urban forest management.

Urban forests play a very important role in supporting the balance of urban ecosystems. The existence of urban forests can improve air quality through the process of photosynthesis, which effectively absorbs carbon dioxide (CO_2) and produces oxygen (O_2) (Grey & Deneke, 1978). In addition, urban forest vegetation can also reduce air pollution and reduce noise (Dahlan, 1992). In the Pasir Pengaraian Urban Forest, zoning-based management implemented by the Environmental Service has made a positive contribution. This zoning allows optimization of the use of urban forests according to their functions, for example conservation zones that focus on preserving flora and fauna, and recreational zones that are used as spaces for social interaction among the community. The results of the study showed that community participation in the management of the Pasir Pengaraian Urban Forest still needs to be improved. As many as 60% of respondents stated that they only participated passively, such as maintaining cleanliness and not damaging urban forest facilities. Active participation, such as mutual cooperation activities and vegetation maintenance, is still low. There needs to be a community education program so that they care more and are actively involved in managing urban forests (Mubarak et al., 2019).

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IV. CONCLUSION

This study reveals that the management of Pasir Pengaraian Urban Forest plays an important role in maintaining the balance of the urban ecosystem. With an area of 32.80 hectares, this urban forest functions as the city's lungs, absorbs carbon dioxide, and controls air pollution. Dominant vegetation, such as mahogany, rain tree, and ketapang, play a role in improving air quality, reducing noise, and providing habitat for flora and fauna. From a social aspect, the urban forest is used as a recreation and social interaction space, while from an economic aspect, this area has the potential to support the development of community-based ecotourism and increase the value of surrounding properties. However, the management of the urban forest still faces challenges in terms of community participation, budget support, and limited human resources.

REFERENCES

[1] Dahlan, R. (1992). Concept and Implementation of Urban Forests in Indonesia. Jakarta: Forestry Library.
[2] Fakuara, T. (1986). Urban Forest Management: An Urban Environmental Conservation Approach. Surabaya: Indonesian Environmental Publisher.
[3] Gray, G. W., & Deneke, F. J. (1978). Urban Forestry. New York: John Wiley & Sons.
[4] Hernowo, JB, & Prasetyo, R. (1989). The Role of Birds in Urban Forest Ecosystem Management. Journal of Environmental Ecology, 12(2), 25–36.
[5] Kriedemann, P. E. (1977). Photosynthesis: Fundamental Processes in Horticultural Crops. Amsterdam: Elsevier.
[6] Martika, DS, & Suryawati, N. (2021). Fulfillment of Urban Forest Area as a Preventative Measure against Environmental Problems in Surabaya. Journal of Legal Studies, 17(1), 45–60.
[7] Moleong, LJ (2010). Qualitative Research Methodology. Bandung: PT Remaja Rosdakarya.
[8] Mubarak, A., Dt. Maani, K., & Frinaldi, A. (2019). Urban Forest Management Policy Model (Case Study at Great Forest Park Dr. Muhammad Hatta, Padang City). International Conference on Public Administration, Policy and Governance, 125, 110–123.
[9] Prahasta, E. (2009). Spatial Analysis with Geographic Information System (GIS). Bandung: Informatika Publisher.
[10] Sugiyono. (2010). Quantitative, Qualitative, and R&D Research Methods. Bandung: Alfabeta.
[11] Sundari, ES (2010). Study to Determine the Function of Urban Forests in Urban Environmental Problems. Journal of Urban and Regional Planning, 15(2), 75–88.
[12] Zoer'aini, D. (2008). Urban Forest Management in Indonesia: Principles, Concepts, and Implementation. Yogyakarta: Gadjah Mada University Press.