

IMPLEMENTATION AND WORKSHOP OF GEOGRAPHIC INFORMATION SYSTEM FOR MANGROVE PLANTING PLANNING IN PARI CITY VILLAGE

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Keywords:

GIS, Mangrove Conservation,
Web-based, Pari City Village

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Abstract: The Community Partnership Program for national cooperation with Kota Pari Village is a PKM result of research on national cooperation with Kota Pari Village entitled Geological Information System (GIS) for Mangrove Planting Planning in Kota Pari Village. This community service aims to improve the understanding and skills of the people of Kota Pari Village in planning mangrove planting through the implementation of the Geographic Information System (GIS). This activity was carried out by involving the community in training and workshops related to the use of GIS to map the potential location of mangrove planting. The methods used include mapping coastal areas, analyzing environmental data, and group discussions to identify challenges and opportunities in mangrove planting. The results of this activity show that the community is able to use GIS to identify suitable locations based on factors such as salinity, water depth, and accessibility. In addition, the active participation of the community in the planning process increases their awareness of the importance of mangroves for the environment and daily life.

INTRODUCTION

Kota Pari Village is a coastal area that has the potential for mangrove forests that are very important for the coastal ecosystem (Hermansyah et al., 2024). Mangrove forests in this region have a vital function as coastal protection from abrasion, the habitat of various marine life (Supiyandi et al., 2024; Wahyuni et al., 2024). Carbon sink and source of livelihood for local communities (Akbar et al., 2022; Sumartono et al., 2022; Wadly & Fitriani, 2023; Wahyuni, Sari, et al., 2022; Wahyuni et al., 2024). The problems faced are faced in various aspects, namely

1. The environmental side is the degradation of mangrove forests due to land conversion. Lack of periodic monitoring of mangrove conditions, lack of data on mangrove growth and health and the threat of coastal abrasion.
2. The social aspects are the low public awareness of the importance of mangrove ecosystems, limited knowledge in mangrove planting and maintenance techniques,

and the suboptimal participation of the community in mangrove conservation.

3. The technological aspect is the absence of a structured monitoring system, limited access to modern technology for mangrove management, lack of documentation and digital recording of mangrove data.

In addition to the problems faced, there are also potentials and opportunities that are possessed from the analysis of the situation in the city of pari as follows: Natural resources, namely the availability of land suitable for mangrove planting, geographical conditions that support mangrove growth, the diversity of mangrove species that can be developed (Hasanah et al., 2022a, 2022b; Sari et al., 2023).

Kota Pari Village is a coastal area that has a vital mangrove ecosystem. However, the condition of mangroves in this region has decreased due to environmental factors and human activities (Lubis et al., 2022). Mangrove planting is an important solution for ecosystem rehabilitation, but proper planning is needed to ensure the success of the program (Sebayang et al., 2021; Wahyuni, Hariyanto, et al., 2022). Geographic Information Systems (GIS) can be an effective tool to support this planning.

Most of the residents of Kota Pari Village depend on natural resources, such as fisheries and agriculture. However, the lack of knowledge about the benefits of mangroves and their planting techniques is a challenge. The community's economic activities are still traditional, and there are opportunities to increase income through good mangrove management (Wahyuni, 2018; Wahyuni & Mesra, 2022; Wahyuni & Wadly, 2023). Community involvement in planting programs can create new jobs. Mangroves in Kota Pari Village are in an endangered condition. Illegal logging, pollution, and climate change contribute to ecosystem damage. Mangrove restoration is essential to maintain biodiversity and ecological function. There is an urgent need to collect and analyze accurate environmental data, including salinity, water depth, and current patterns, to support planting planning. The opportunity obtained is that there is an opportunity to increase public awareness about the importance of mangroves through education and training. Programs that involve the community in planting will strengthen a sense of ownership and responsibility. Cooperation between the government, NGOs, and local communities can increase the effectiveness of mangrove planting and management programs.



Figure 1. Mangrove forest in Kota Pari Village

RESEARCH METHODS

Method of Approach

The Community Service Team discussed and determined the location of the socialization, namely at the Pari City Village Office, workshops and assistance to village officials who will disseminate the knowledge that has been obtained to other communities, especially village officials and mangrove conservation activists on Mydarling beach in Pari City Village. The team uses the following PKM program approach method, namely:

1. Lectures and Discussions, Lectures and discussions are carried out as an initial stage to motivate village officials and the community in maintaining and preserving mangrove debts in Kota Pari Village. HR motivation is carried out as the initial capital in running the application that has been built. The material on the importance of the role of quality human resources was delivered by Dr. Sri Wahyuni, S.Kom., M.Kom. Discussion and question and answer sessions were also carried out while analyzing the situation and capturing in the field and analyzing the obstacles that occurred in the field. The application that is run later must have human resources that are in accordance with the technology used.
2. Workshop and demonstration of the website-based Geographic information system program for planning and planting mangroves in Kota Pari Village with the PKM team resource person and accompanied by one student from Panca Budi Development University.

Stages of Work Procedure

All of these stages must be carried out systematically and coordinated so that the project or program implemented can achieve the desired goals. The work procedures carried out in service are as follows:

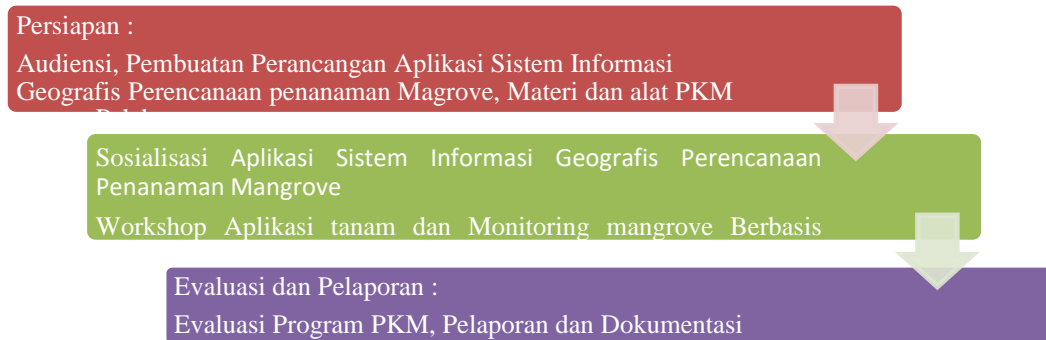


Figure 1. Work Procedure Diagram

RESULTS AND DISCUSSION

Result

The results of the service activity entitled "Implementation of Geographic Information System (GIS) for Mangrove Planting Planning in Pari City Village" include:

1. Increasing public awareness about the importance of maintaining and preserving mangrove forests in Kota Pari Village.
2. Improve skills and knowledge about the use of Geographic Information System (GIS) Applications for Mangrove Planting Planning in Kota Pari Village to maintain the sustainability of mangrove forests in Kota Pari Village.
3. Increasing visits to the mangrove forest tourism area in Pari City village.
4. Strengthening partnerships between universities and the community in the development of web-based information technology.

With the results achieved, it is hoped that this service activity can provide benefits for the people of Pari City village, especially the farmers of Kota Pari Village and the surrounding community, and can be an example of the implementation of information technology at the village level.

Discussion

Geographic Information System (GIS) Training Mangrove Planting Planning Mangrove to maintain the sustainability of mangrove forests in Kota Pari Village is one of the activities carried out in the service program with the title "Implementation of Geographic

Information System (GIS) Applications for Mangrove Planting Planning". The following is an explanation of PKM training activities:

1. Training Preparation

At this stage, several activities were carried out, such as the preparation of training materials, the determination of material materials, the preparation of the Geographic Information System (GIS) Application guidebook for Mangrove Planting Planning by Pari City Village.

2. Implementation of Socialization and Application Simulation

The training activity began with socialization and simulation of the application to the participants. At this stage, participants were given an understanding of what the Geographic Information System (GIS) Application for Mangrove Planning and Planting is and how to use it.



3. Application Training

After socialization and simulation, it was followed by direct application training.

Participants will be taught how to use the Geographic Information System (GIS) application that has been prepared.

4. Assistance

After the training is completed, assistance or monitoring of the use of the Geographic Information System (GIS) Application is carried out by the participants. This aims to ensure that participants really understand how to use the Geographic Information System (GIS) Application for Sipemang Mangrove planting planning and can make the most of it.

5. Evaluation and Reporting

The last stage is evaluation and reporting. At this stage, an evaluation was carried out on the results of the Geographic Information System (GIS) Application training for mangrove planting planning and its utilization by participants. The results of the evaluation will be used as material to prepare a service report and evaluate the success of the program.

CONCLUSION

The conclusion of the PKM is that the Geographic Information System (GIS) Application for Mangrove Planting Planning in Kota Pari Village has been successfully implemented, running smoothly and successfully. The PKM program has succeeded in increasing the awareness and involvement of the community, based on the website of Kota Pari village, as well as the effectiveness and efficiency of the promotion and management of the Geographic Information System (GIS) Application, mangrove planting and tourism planning in Kota Pari Village. Through this service program, mangrove volunteers are given training and assistance in the use of the Geographic Information System (GIS) Application for mangrove planting planning, as well as trials and implementation at the village level. In the implementation of this program, there is also active participation from the local community and the use of local resources, such as local experts and support from the village government, especially the Pari City Village apparatus. The results of the evaluation show that this program has succeeded in providing benefits for mangrove conservation volunteers and tourism communities and village communities, as well as improving the quality of services in the organization. This program also has a conformity with learning outcomes through Key

Performance Indicators (KPIs) 5, which is to improve the ability and knowledge of community members in managing mangrove planters in the community, and KPI 2, which is to increase community participation in the development and utilization of local resources. In conclusion, this service program has succeeded in increasing awareness of mangrove forest conservation in Kota Pari Village as well as, as well as increasing community participation and the use of local resources in the development of the program.

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