

The Application of Waste and Sediment Trader Boat Designs in Reservoir: A Community Empowerment

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Abstract. The aims of this activity are 1) to clean the reservoir area from increasing waste and sediment; 2) to provide a design of the boat cleaning garbage and sediment in the reservoir using the SketchUp Pro 3D Design Program; 3) to make boat cleaning garbage and sediment using used plastic barrels. The community service activities are carried out with qualitative methods and descriptive-analytical approaches carried out in the Purwosekar Village, Tajinan District, Malang Regency. This community service activity has an output target in the form of product design and physical form of garbage and sediment boats using used plastic barrels. It is hoped that, in the end, it will be able to develop the reservoir area into a tourism vehicle so that it helps disseminate the promotion of products created by the village community and improve the economy of the residents.

Keywords: *boat, garbage, sediment, reservoir*

INTRODUCTION

Community empowerment is an approach that takes into account all aspects of potential in the life of the community. The target is all levels of society in the area, for example, in a village. The motive is independence, which can awaken the ability of self-help to improve the quality of people's lives (modernization), which refers to ways of thinking, behaving, or acting to move forward. The field of empowerment is a strategic point that must be renewed and expanded. The essence of community empowerment in rural areas is the utilization of village resources (potential) that can increase participation and foster the concern of all parties for community independence (self-reliance). Positive impacts are felt by the emergence of many new jobs, increased welfare, easy road access, and the mindset of advanced society[1].

Local governments are required to provide more excellent services and empower the community so

that the community is involved in development for the advancement of their regions because it is the people who know better what they need [2].

By following the Law Number 6 of 2014 concerning Villages, General Provisions Article 1 paragraph 12, Regulation on Empowerment of rural communities to develop the independence and welfare of the community by increasing knowledge, attitudes, skills, behavior, abilities, awareness, and utilizing resources through the establishment of policies, programs, activities, and assistance are by following the essence of the problems and priorities of the needs of the village community [3].

Law No. 12 of 2008 on Regional Government has provided an opportunity for local governments to manage and optimize the potential of their region independently, including the interests of the tourism sector[4]. The Village Law is implemented through community empowerment, and the village is expected to be able to bring real change so that their dignity is restored. Community empowerment is an approach that pays attention to all aspects of community life with the target of all layers of society, motivated by independence, to be able to awaken the ability of self-help. To improve the quality of life of people (modernization), which refers to ways of thinking, behaving, and acting to move forward [5].

Purwosekar Village, Tunjungan Subdistrict, Malang Regency has great natural potential, including having a good climate and soil type for plantations, having a large land area, and several public facilities. Besides, this village has tourism potential so that community empowerment can be maximized, and the existence of a river connected to a government-made reservoir is one of them.

The initial purpose of the artificial reservoir created by the government in the village of Purwosekar is a water reservoir that can also function as a medium to recharge groundwater and support the irrigation of agricultural areas. It is essential to the sustainability of food security, according to the government's latest issue of food security for the community. However, reservoirs in

the village of Purwosekar, Tunjungan subdistrict, Malang Regency, did not function again and even suffered damage, namely the failure of reservoir water flow to agricultural land due to the growing number of wild plants, garbage, and sediment. The function of reservoir irrigation is hampered, resulting in a decrease in yield due to drought. If the reservoir is properly fixed, it could increase the village economy. Abandoned reservoir conditions reduce the function of the reservoir and make the place look dirty. Furthermore, the potential of human resources in the village of Purwosekar includes various kinds of processed products of turmeric herbal tamarind, which have been sold outside the region; there are several abundant garden products such as cassava, breadfruit, and others.

Reservoir management efforts to maintain water quality can be made by controlling reservoir water pollution with several strategies[6]. This has potential when community empowerment can be maximized. So some potential that can be developed, it is necessary to promote a vehicle so that it can be known by the outside community so that later it can increase regional income[7].

Thus it is necessary to plan the processing of reservoirs owned by villages as a discourse to create tourist areas that sell superior products of the village. The first step is cleaning up the reservoir area, design and manufacture of water or boat transportation transport facilities so that it can be easier for residents to clean the reservoir from rubbish and sediments that are starting to expand as well as wild plants such as water hyacinth and others. Thus the next step can be considered to design a tourist vehicle that makes the promotion of superior village products, to increase the economy of the citizens.

METHOD

Community empowerment, in principle, is to apply the results of development science and technology, appropriate technology, and new findings for the economic and agricultural progress of rural communities. Improving the quality of government and village communities through training programs, counseling, and empowerment. The development of community-based tourism potential is a strategic effort to develop the community [8].

The activity was held in the village of Purwosekar, Tajinan district, Malang Regency, East Java. The site selection is made because this village has an abandoned reservoir, a lot of rubbish, and sediment that is starting to expand, and lots of wild plants. At the same time, the residents want to use the reservoirs to improve their quality of life, such as income. Community service activities are carried out with qualitative methods and descriptive-

analytical approaches. The source for the data that takes precedence in the qualitative model is word and action, and then additions such as field photographs, records, and similar works. The data then can describe the types of what is done, written sources, documentation, and shared results in words [9]. In this study, the data collection model used was in-depth interviews and interviews with informants in eight sample villages and direct observation of the research object [10].

The initial step of the activity is to design the concept of a boat with residents, and then design the framework with the 3-dimensional SketchUp Pro program. After that, boat making with materials that have been discussed to ensure robustness and strength. After that, a field trial with some predictable loads will be carried out for garbage and sediment storage.

RESULT & DISCUSSION

A. Village Potential

Regional development is a necessity, but regional development must also benefit local communities, both directly and indirectly[11]. Increased village funds evidence the government's support for village community empowerment activities. The purpose of this village funding is to fund governance, development, and empowerment of village communities. However, the implementation of the use of village funds is still felt to be ineffective because of inadequate capacity and capability of the village government and active involvement of the community[12].

Purwosekar Village, Tajinan district, Malang Regency, has several public facilities that are commonly used by residents, namely religious, health, education, agricultural land, and several other facilities[13]. In Purwosekar Village, there is also the existence of a reservoir made by the provincial government. The reservoir is an ecosystem that provides many benefits both directly and indirectly for human life and the environment [14]. The purpose of this artificial reservoir was previously for irrigating rice fields, but now the existence of the reservoir has begun to be neglected. The local residents do not take care of the cleanliness and the sustainability of the reservoir. This is indicated by the increasing number of water hyacinth growing on the surface of the reservoir, and also the increasing amount of mud in the bottom of the reservoir and sometimes some people throw garbage there. Planning for reservoir repairs can be found in village planning.

Sedimentation in waters occurs due to erosion on the banks of rivers or canals that carry water into reservoirs. Soil and other solid material enter the stream, which causes deposition at the bottom. This

happens because, at present, the vegetation on the banks of the river upstream is getting smaller due to forest degradation and concretization. As a result, the soil's ability to absorb rainwater decreases and results in erosion. Siltation of the river, which makes the river flow more swiftly downstream, happened. It results in an increase in river water discharge which could cause flooding.

Besides, the existence of water hyacinth plants makes the reservoir area look dirty and neglected. Water hyacinths grow in shallow ponds, wet and swampy soil, slow-flowing water, lakes, water reservoirs, and rivers[15]. Village potential, especially natural potential, should be explored and developed as a reliable tourism village. Village tourism will have a positive impact on the village economy. The development of rural tourism is believed to have a positive impact on village development. Like the reservoir in Purwosekar Village, it is a natural potential that can be developed as an ecotourism destination with several work plans that will be implemented for the development of integrated village potential. The activity aims to make the priority scale of work to be carried out. The initial step is to design a simple boat for cleaning garbage and sediment in the reservoir area.

B. Designing SketchUp Pro Trash Boat and Sediment

Based on the results of interviews and according to the method of implementation in this community service, a simple boat design concept for water transportation for cleaning sediment, garbage, and wild plants in the reservoir was obtained. With the SketchUp Pro 3D Design Program, the following design is obtained:

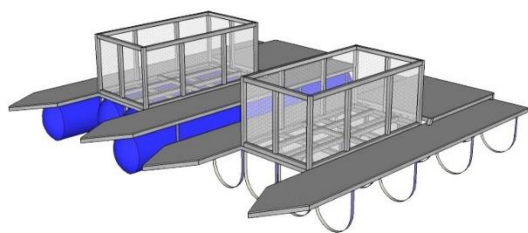


Figure 1. Simple garbage boat design SketchUp Pro 3D Design program

The concept of this boat is used as a means of water transportation to facilitate the cleaning of the reservoir area, to clean the reservoir from sediment and water hyacinth, rubbish, and mud. This boat will later be self-assembled by Karangtaruna, with some components using used materials such as used barrels and others. Besides, there is also the concept of reservoir tourism that will be developed. For the initial step, residents and Karangtaruna have started cleaning up the river basin flow areas.

C. Boat Making

Application design of the garbage and sediment boats have been planned by using sturdy and durable materials, namely holo iron as a base frame, borders plate at the footrest to make it not slippery, plastic barrels as the buoys by using 14 used drums and small drums, and 2 medium drums. At the bottom of the trash, wheels are attached to ease residents to move the trash and sediment from the water area to the mainland.



Figure 2. Construction of garbage scaffolding and sediment boats in reservoirs

Based on the results of trials, analysis, and calculation, the maximum weight of this boat derives from the burden of people who ride on the boat; if the average weight of people is 70 kg and there are seven people on the boat, then the burden is approximately 490 Kg. Thus, this boat is feasible and can reciprocally accommodate garbage and sediment, which can make it easier for residents to clean the reservoir area.

CONCLUSION

Based on the results, the community service made are (1) making the design of garbage and sediment storage boats using the SketchUp Pro 3D Design Program which resulted in positive responses from the local residents; (2) promoting community participation and self-help in planning and implementing community empowerment activities which gain a big success, and (3) designing the concept of a tourist village as a unique attraction to attract visitors. The developed tourist attractions can also be used as a place to sell products produced by the local community so they can improve the village economy.

REFERENCES

[1] Y. D. Rahmayanti and V. I. S. Pinasti, "Dampak Keberadaan Objek Wisata Waduk Sermo Terhadap Perubahan Sosial Ekonomi Masyarakat di Sremo, Kulon Progo, Daerah Istimewa Yogyakarta," *J. Pendidik. Sociol.*, 2018.

[2] S. Susanti, "Peranan Pemerintah Desa

- Dalam Pemberdayaan Masyarakat Di Desa Sukamaju Kecamatan Tenggarong Seberang,” *J. Ilmu Adm. Negara*, 2015.
- [3] Suharto, “Pemberdayaan Masyarakat Desa Dalam Implementasi UU Desa (Analisis Implementasi UU No.6 Tahun 2014 Tentang Desa),” in *Prosiding Senas POLHI ke-1*, 2018.
- [4] A. E. Trisnawati, H. Wahyono, and C. Wardoyo, “Pengembangan Desa Wisata dan Pemberdayaan Masyarakat Berbasis Potensi Lokal,” *J. Pendidik. Teor. Penelitian, dan Pengemb.*, 2018.
- [5] N. Fitriana, “Implementasi Desain ‘Name Board’ Desa Wisata Jambu Gondangmanis Kabupaten Jombang,” *J. Pengabd. Masy. Progresif Humanis Brainstorming*, 2019.
- [6] I. T. Susanti and S. B. Sasongko, “Trophic status of Balikpapan city manggar reservoir and its management strategy,” *J. PRESIPITASI*, 2012.
- [7] G. I. A. dan S. Yekti, “Pemberdayaan Masyarakat Dan Potensi Wilayah Di Sekitar Waduk Pitaloka Berbasis Teknologi Informasi Dan Umkm Menuju Desa Curah Cottok Yang Agro-Eko-Wisata.,” in *Seminar Nasional Hasil Pengabdian kepada Masyarakat 2017.*, 2017.
- [8] N. Komariah, E. Saepudin, and P. M. Yusup, “Pengembangan Desa Wisata Berbasis Kearifan Lokal,” *J. Pariwisata Pesona*, vol. 3, no. 2, Dec. 2018.
- [9] Subandi, “Deskripsi Kualitatif Sebagai Satu Metode Dalam Penelitian Pertunjukan,” *Harmon. - J. Arts Res. Educ.*, 2011.
- [10] F. Krippendorff, Klaus, Wajidi, *Analisis isi: pengantar teori dan metodologi (1st ed.)*. Jakarta: Citra Niaga Rajawali Pers., 1993.
- [11] Susilawati, “Strategi Pemberdayaan Masyarakat Di Kawasan Jatigede Oleh Pemerintah Kabupaten Sumedang,” *J. JPPDP*, 2017.
- [12] N. L. L. Aziz, “Otonomi Daerah Dan Pembangunan Perdesaan,” *J. Penelit. Polit.*, 2016.
- [13] *Buku Profil Desa Purwosekar Kecamatan Tajinan Kabupaten Malang*. 2019.
- [14] D. S. Pratama, Y. Syaukat, and M. Ekayani, “Estimasi Nilai Ekonomi Dan Eksternalitas Negatif Pemanfaatan Waduk Darma,” *Risal. Kebijak. Pertan. DAN Lingkung. Rumusan Kaji. Strateg. Bid. Pertan. dan Lingkung.*, 2018.
- [15] B. Ali Imron As, Ruddianto, “Perancangan Kapal Pembersih Eceng Gondok di Sungai Rowo Tirto Probolinggo,” in *Seminar MASTER 2017 PPNS*, 2017.