

Administrative and Topographic Map of Kelurahan to Support Land Efficiency and Flood Mitigation

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79



Abstract

Purpose: The community service activity by the University of Bengkulu Geophysics and Physics Team aimed to assist the community of Kandang Limun, Bengkulu City, by developing maps that display area boundaries and topographical elevations. The maps were intended to serve as easily accessible sources of information for the local community and to aid in planning and development efforts.

Method: The methodology involved conducting a preliminary survey, collecting data, preparing software tools, and creating both boundary and topographic maps. A questionnaire was distributed to assess community satisfaction with the project.

Practical Applications: The maps provide valuable information for local government and residents, serving as a resource for defining area boundaries and understanding topographical features. These maps are particularly useful for urban planning, land use, and community development initiatives.

Conclusion: The creation and public display of administrative and topographical maps in the Kelurahan office have improved access to essential geographical information. This initiative supports better community planning and contributes to the informed development of the area, benefiting both the local government and residents.

Introduction

The authority that each region has in the law on regional government since the

enactment of regional autonomy (Luis et al., 2021). To optimize the authority of a country, the most important thing is territorial boundaries, the purpose of regional development is so that the area is more developed and the people who are there are more prosperous, so for this reason, in terms of development, it is important to set regional boundaries so that they do not become problems between villages later (Bashit et al., 2019). Regional boundaries are not only a determinant of administrative work areas but also useful in information on the location of the boundaries of activity locations, be it development or even the boundaries of business activity management in an area (Bafdal et al., 2014). Therefore, firmness is needed in the implementation of regional boundaries in an area with the need for good and correct mapping and fulfilling technical aspects and accompanied by juridical aspects (Pertambangan, 2023).

Village maps can also be useful when villages experience deletion, merger or even change of status to Kelurahan or Kelurahan to village as an annex (Fitriana et al., 2019). As an effort to support the realization of an independent community and develop the potential of natural resources by improving the quality of human resources in the Kelurahan apparatus (Reichenbach et al., 2019). In Kelurahan development, Kelurahan apparatus is needed that has quality human resources who are ready to be responsible for providing community services and full contribution to Kelurahan development (Gunawan, 2022). Community participation is currently needed in development, such as community participation in planning, budgeting and others (Dwiyanti et al., 2020). No exception in the field of mapping known as participatory mapping. Maps that involve active participatory from the community are called participatory mapping (Fisko, 2015).

Kelurahan Kandang Limun is one of the Kelurahan located in Muara Bangkahulu District, Bengkulu City. With an area of 422.7 Ha, consisting of rice fields or swamps 216,681 Ha, Land 206,019 Ha. This Kelurahan has Kelurahan boundaries, namely the north is bordered by Central Bengkulu Regency, the south is bordered by Rawa Makmur Permai, the west is bordered by Beringin jaya Kelurahan and for the east it is bordered by Pematang Gubernur Kelurahan (Harmes et al., 2022). Kelurahan is an administrative government unit that is only

representative of the Regency/City Government (Yuliyanto et al., 2022). This Kelurahan has a map or boundary map but not the latest map (the map is also not clearly visible) therefore it is necessary to update the map and in this Kelurahan does not have a topographic map of the Kelurahan area (Amaru et al., 2013). The mandate of Law Number 6 of 2004 concerning villages is the importance of making regional boundary maps. Based on Government Regulation (PP) Number 10 of 1961 concerning Land Registration, it is related to the implementation of making village maps (Septiani, 2019).

Figure 1. Team Members and Kelurahan Head showing the current map, the map looks less clear



Based on these things, this service is carried out as an effort to help the community in providing information or description both about regional boundaries, and the topography of the area, through mapping (Saily et al., 2022). A map is a depiction of the earth's surface displayed in a flat plane. The manifestations in the map can be a source of information used

by local governments as a reference in planning to determine decisions in the process of developments in the local area (Luis et al., 2021). Mapping process and the resulting maps aimed at the benefit of society, for the most part the information contained in the map comes from knowledge the local community and the community decide for themselves use of the resulting maps (Kaifan et al., 2021).

Method

This Community Service activity is in the form of Making Village Area Boundary Maps and Topographic Maps carried out in Kelurahan Kandang Limun, Muara Bangkahulu District, Bengkulu City. This activity is composed of several stages, namely by conducting a preliminary survey in the form of a permit application to the Kelurahan Kandang Limun Government and providing an explanation of the purpose of holding the activity and what benefits will be obtained. Furthermore, the presentation in the form of the flow of service activities to be carried out was also conveyed so that the Government and local administrators understand in detail the flow of activity implementation from the beginning to the end of the activity.

The following is an explanation of the stages of community service in Kelurahan Kandang Limun:

1. Conduct a survey first by visiting the Kelurahan Kandang Limun office to be able to explain the purpose of holding activities to the head and local Kelurahan officials, explain the flow of activities and explain what benefits can be obtained from the village map procurement activities.
2. Furthermore, the preparation stage is by collecting data that can be used as supporting data in the process of making the maps. The supporting data in question is in the form of regional boundaries in accordance with archival data in Kelurahan Kandang Limun, as well as the latest image data, coordinate points on each area boundary and public facilities that are also found at the Kelurahan location, and
3. Preparing ArcMap 10.7.1 software used in the process of making the maps later.
4. The process of building a boundary map is to digitize it first to create an area boundary that is adjusted to the archives of Kandang Kandang Limun. Then input the coordinate data of public facilities and others such as roads obtained from secondary data.
5. The process of making a topographic map of the area is to download DEM (Digital Elevation Model) data provided by the Indonesian geospatial web obtained from satellite images of the Kelurahan.
6. Then input into ArcMap 10.7.1 software DEM (Digital Elevation Model) data so that Topographic maps can be obtained
7. The result of this activity is the Kelurahan Kandang Limun Area Boundary Map and the Kelurahan Kandang Limun Topographic Map, which is printed on Albatros paper with each map measuring 120 cm x 85 cm

After the submission of the maps, to measure partner/community satisfaction with the results of this activity, satisfaction questionnaires were given to the community as respondents to Likert scale questionnaires, with preferences of Satisfied (P), Quite Satisfied (CP) and Not Satisfied (TP). The questions in the questionnaire include: 1) How is your assessment regarding the implementation of community service activities by UNIB lecturers and students in Kelurahan Kandang Limun with the theme of this area map?; 2) How is your assessment of the results / outputs of community service activities by UNIB lecturers and students at the Kelurahan Kandang Limun with the theme of this area map?; 3) How do you assess the benefits of this community service activity?; 4) What is your assessment of the communication carried out by the implementation team of this activity? ; 5) How do you assess whether this activity can solve the problem of map needs?; 6) Please write your suggestions for our activity implementation team! "So that activities are further increased

both in their fields and frequency, continued, continued, other maps, etc."

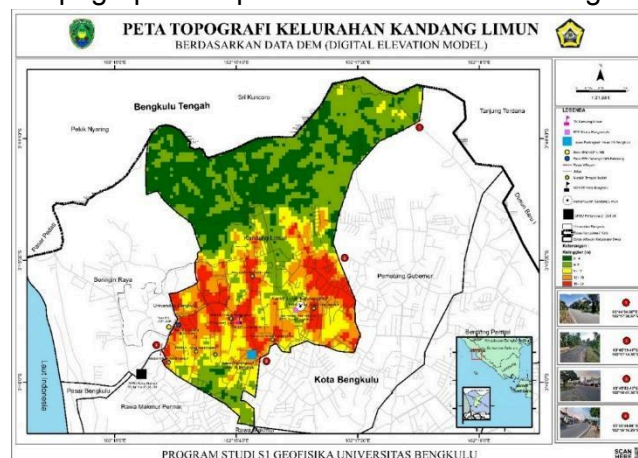
Result

The results of the implementation of this community service are in the form of administrative maps and Topographic Maps covering the entire area of Kelurahan Kandang Limun. The map is presented in Figure below.

Figure 2. Map of Kelurahan Kandang Limun Area



Figure 3. Topographic Map of the Kelurahan Kandang Limun Area



The results of the map above are the final results of this community service activity. In general, maps are made to fulfill a specific function. According to the International Cartograph Association, the function of maps is to show the position or relative location, which is related to the original location on the surface of the earth, able to show size, able to present and show shapes, collect and select data from an area and present on a map with symbolization. The purpose of making maps includes space communication, storing information, helping work, assisting in design, and spatial data analysis. With these functions and objectives, it is expected that the administrative map from the results of this community service.

The participation of the community and Kelurahan officials is very helpful in determining the boundaries of the area in order to speed up the process of delineation of the boundaries of the village area. The determination of the boundaries of the Kelurahan Kandang Limun area was carried out with the participation of Kelurahan officials, and this service activity ran without any obstacles or problems in determining the boundaries of the

Kelurahan Kandang Limun area.

Figure 4. Team Member & Kelurahan Head Discussion



Figure 5. Kelurahan Head's Enthusiasm by Nailing the Map Location



Figure 6. Team Members & Kelurahan Head After Topographic Map Installed



Figure 7. Team Members & Kelurahan Head After the Area Boundary Map is Installed



Discussion

After all activities have been completed, all Kelurahan staff and Kelurahan heads have also been able to assess from the initial condition to the end of the activity, so the community service team provides questionnaires. The questionnaire was given at the end of the meeting, but the questionnaire sheet was picked up two days later. This delay is deliberately done so that all respondents can provide answers more objectively. Questions asked and a recapitulation of respondents' answers as in Table 1. At the end of the questionnaire sheet, several lines of free filling are given to write down the respondents' suggestions. The five questions asked were answered by respondents with satisfied and very satisfied answers 100%, and none of the respondents answered dissatisfied. Community service activities by making maps of Kandang Kandang Limun, namely two maps: regional boundaries and topographic heights are very useful and needed by village officials and residents.

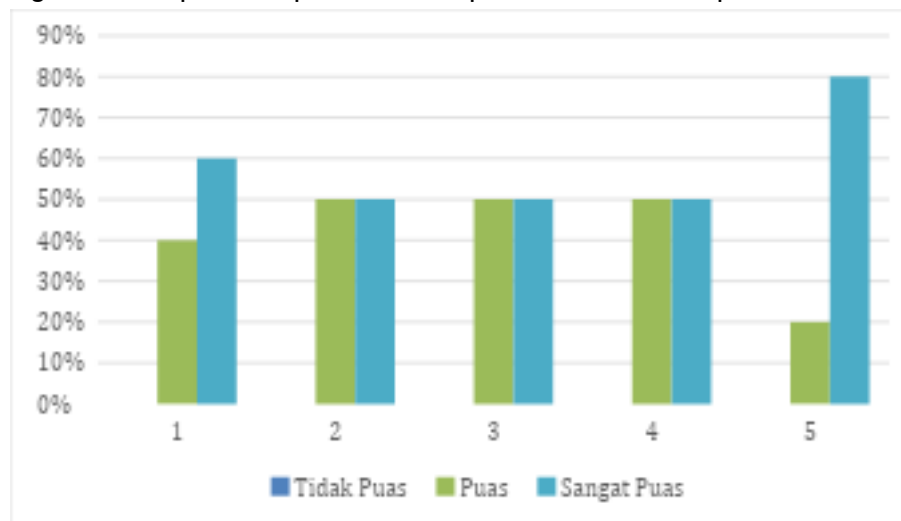
Table 1. Percentage of Questionnaire Results

No	Question	Very Satisfied	Satisfied	No Satisfied
1	How do you think about the implementation of community service activities by UNIB lecturers and students in Kelurahan Kandang Limun with the theme of this area map?	60%	40%	0%
2	How do you assess the results / output of community service activities by UNIB lecturers and students?	50%	50%	0%
3	How do you think about the benefits of this community service activity?	50%	50%	0%
4	What is your assessment of the communication carried out by the implementation team of this activity?	50%	50%	0%
5	What is your assessment, can this activity solve the problem of map needs?	80%	20%	0%
6	Please write your suggestions for our activity implementation team! "So that activities are further increased both in their fields and frequency, continued, continued, other maps, etc."			

From Table 1, none of the village staff or residents who filled out the questionnaire were dissatisfied with community service activities. In addition, the suggestions written also contain proposals for the continuation of service activities in the future. The most dominant

answer answered with great satisfaction by respondents was the fifth question, namely the question "Can this activity solve the problem of map needs? Respondents here answered yes very satisfied 80%, and 20% answered satisfied and none of the respondents were dissatisfied. This is certainly very logical, because at the preliminary meeting the Kelurahan head and staff did say that they really need an informative, clear and beautiful map to display in the office space. The size fits the room and is easy for residents to see. Identification of these problems can be fulfilled entirely. An overall graph of respondents' responses can be seen in Figure 8.

Figure 8. Graph of respondents' responses to the five questions asked



Conclusion

Kelurahan Kandang Limun already possesses a detailed area map that includes information about the boundaries of the kelurahan, as well as the locations of public facilities and other relevant features. Additionally, the kelurahan has a topographic map of the area, with data obtained through the Digital Elevation Model (DEM). After the installation of the map and dissemination through the Kelurahan questionnaire, the community has gained an understanding of the function of both the updated boundary map and the topographic map. The community service team received appreciation from the Kelurahan and village officials, who expressed readiness to use both maps collaboratively with the community.

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Reference

- Amaru, K., C. Asdak, and R. Balia. 2013. "Penyuluhan Pengenalan Peta Dan Identifikasi Potensi Daerah Untuk Pembuatan Peta Potensi Desa Di Desa Jati Mekar Dan Desa Cijati, Kecamatan Situraja, Kabupaten Sumedang." *Dharmakarya: Jurnal Aplikasi Ipteks Untuk Masyarakat* 2(1):32-40.
- Bafdal, N., R. L. Balia, S. Dwiratna, and K. Amaru. 2014. "Penyusunan Peta Potensi Desa Agrowisata Berbasis Masyarakat Di Desa Cibuntu Kecamatan Pasawahan Kabupaten Kuningan." *Dharmakarya: Jurnal Aplikasi Ipteks Untuk Masyarakat* 3(2):81-87.

567) Administrative and Topographic Map of Kelurahan to Support Land Efficiency and Flood Mitigation, Refrizon, Farid, M., Ekawita, R., Fauzi, H. W., Anggria, D. C., Prasetyo, R. D.

- Bashit, Nurhadi, Yudo Prasetyo, Hana Sugiastu Firdaus, and Fauzi Janu Amarrohman. 2019. "Penetapan Batas Desa Secara Kartometrik Menggunakan Citra Quickbird." *Jurnal Pasopati* 1(76):9–15.
- Dwiyanti, Nela Elisa, Vira Irnanda, Elleona Septi N, Indriati Retno Palupi, Wiji Raharjo, Wrego Seno Giaboro, Afriliani M. Handini, Ananda Achlaqul Karimah, Ririn Setyowati, and Edoardo Tobing. 2020. "Analisi Hubungan Magnitudo Gempa Bumi Terhadap Hasil Frekuensi Dominan Pada Rangkaian Gempa Aceh 2004, Yogyakarta 2006, Palu Dan Lombok 2018 Sebagai Upaya Mitigasi Bencana." *Jurnal Meteorologi Klimatologi Dan Geofisika* 7(3):44–50.
- Fisko. 2015. "Pentingnya Peta Desa." *Jurnal Bhumi* Vol.1, No.(6):69–73.
- Fitriana, Fitriana, Muhammad Farid, Afrizal Mayub, and Connie Connie. 2019. "Identifikasi Koefisien Atenuasi Dan Implementasinya Untuk Mengetahui Kesiapsiagaan Masyarakat Terhadap Bencana Gempa Bumi Di Kota Bengkulu." *PENDIPA Journal of Science Education* 3(1):20–27. doi: 10.33369/pendipa.v3i1.6921.
- Gunawan Asril, Ananda Gamas et all. 2022. "Pembangunan Desa Berbasis Sistem Informasi Geografis (Sig) Di Desa Rantau Atas Seiring Perpindahan Ikn Di Kalimantan Timur." *Jurnal Pengabdian Masyarakat* 1(3):299–308.
- Harmes, Harmes, Bambang Juanda, Ernani Rustiadi, and Baba Barus. 2022. "Pengaruh Lahan Kosong Terhadap Kemiskinan Di Kota Bengkulu." *Tataloka* 24(4):282–94. doi: 10.14710/tataloka.24.4.282-294.
- Kaifan, Andrian, Al Mawardi, Faisal Abdullah, and Mustika Amri. 2021. "Pembuatan Peta Desa Dusun Lhoh Kumbang Kecamatan Muara Dua Kota Lhokseumawe Dengan Cara Fotogrametri." 5(1):90–92.
- Luis, Ratantra Rasjid Agitama, Mahir Okky Dharmawan, and Priyono Priyono. 2021. "Penyusunan Peta Desa Dalam Kegiatan Pengabdian Masyarakat Hibah Peta Di Kelurahan Jebres, Kecamatan Jebres, Kota Surakarta." *Abdi Geomedisains* 2(1):1–8. doi: 10.23917/abdigeomedisains.v2i1.297.
- Pertambangan, Studi Teknik, Fakultas Teknik, and Universitas Palangka Raya. 2023. "Pemetaan Batas Wilayah Desa Menggunakan Teknologi Unmanned Aerial Vehicle (UAV) Di Desa Pamarunan." 1:60–69.
- Peraturan Pemerintah (PP) Nomor 10 Tahun 1961 tentang Pendaftaran Tanah
- Reichenbach, Andreas, Andreas Bringmann, Elsevier Enhanced Reader, Constantin J. Pournaras, Elisabeth Rungger-Brändle, Charles E. Riva, Sveinn H. Hardarson, Einar Stefansson, Washington Navy Yard, Eric A. Newman, and David Holmes. 2019. "No 主観的健康感を中心とした在宅高齢者における健康関連指標に関する共分散構造分析 Title." *Progress in Retinal and Eye Research* 561(3):S2–3.
- Saily, Randhi, Harnedi Maizir, Sjelly Haniza, Ahmad Hamidi, and Ridho Azhari. 2022. "Pembuatan Peta Potensi Wisata Di Kelurahan Rimba Sekampung." 3(2):93–98. doi: 10.31849/fleksibel.v3i2.
- Septiani, Pipit Eka. 2019. "Jurnal Pengabdian Masyarakat." *Dinamisia : Jurnal Pengabdian Kepada Masyarakat* 3(1):105–11. doi: 10.31849/dinamisia.v3i1.2729.
- Undang-undang Nomor 6 Tahun 2014 tentang Desa
- Yuliyanto, Eko, Risa Amelia, and Anggy Pradiftha Junfithrana. 2022. "Pembuatan Peta Desa Margalaksana Kecamatan Cikakak Kabupaten Sukabumi." *Jurnal Pengabdian Kepada Masyarakat Abdi Putra* 2(2):46–49. doi: 10.52005/abdiputra.v2i1.132.