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Map of "SI PANDA" Gunungsari Village, Ciranjang District, Cianjur Regency

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ABSTRACT

A village is the smallest unit in a government consisting of a legal community unit that has the authority to manage its household based on original rights and customs. Peraturan Pemerintah No. 72 Tahun 2005 tentang Pemerintahan Desa, Article 14 paragraph (1) states that the village head is tasked with organizing government, development, and community affairs. Based on this, in building a village, planning is needed from various references, one of which is a village map that can be used as a component of the village information system. Village maps can be useful for village officials to find out village boundaries, and identify and inventory village potential or assets. This can be the first step in planning the empowerment of village potential. The map made by UPI KKN students in Gunungsari Village is the "SI PANDA" map (Visualization Map of Profiles and Resources). The "SI PANDA" map was made because of the awareness of the lack of general information about the village. The method used in making this map is the cartometric method accompanied by interviews. The "SI PANDA" map was created to give the village a general overview that can be used to provide a general overview and first impression for the general public and lay people who are new to the village environment.

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ABSTRAK

Desa adalah satuan terkecil dalam sebuah pemerintahan yang terdiri dari kesatuan masyarakat hukum yang memiliki kewenangan untuk mengurus rumah tangganya sendiri berdasarkan hak asal-usul dan adat istiadat. Peraturan Pemerintah No. 72 Tahun 2005 tentang Pemerintahan Desa pasal 14 ayat (1) yang menyatakan bahwa kepala desa bertugas menyelenggarakan urusan pemerintahan, pembangunan, dan kemasyarakatan. Berdasarkan hal tersebut dalam membangun desa diperlukan sebuah perencanaan dari berbagai acuan, salah satunya yaitu peta desa yang bisa dijadikan sebagai komponen sistem informasi desa. Peta desa dapat berguna bagi aparat desa untuk mengetahui batas wilayah desa, mengidentifikasi dan inventarisasi potensi atau aset desa. Hal ini dapat menjadi langkah awal perencanaan pemberdayaan potensi yang dimiliki desa. Peta yang dibuat oleh mahasiswa KKN UPI Desa Gunungsari ini *yaitu peta "SI PANDA" (Peta Visualisasi Profil dan Sumber Daya). Peta "SI PANDA" dibuat karena adanya kesadaran akan kurangnya* informasi umum tentang desa. Metode yang digunakan dalam pembuatan peta ini yaitu metode kartometrik yang disertai wawancara. *Peta "SI PANDA" dibuat dengan tujuan agar pihak desa memiliki suatu gambaran umum yang dapat dipergunakan untuk memberi* gambaran umum dan kesan pertama bagi masyarakat umum maupun orang-orang awam yang baru mengenal lingkungan desa.

Kata Kunci: kartometrik; peta desa; SIG

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INTRODUCTION

The village according to the Undang-Undang Republik Indonesia Nomor 6 Tahun 2014 adalah satuan terkecil dalam sebuah pemerintahan yang terdiri dari kesatuan masyarakat hukum, serta memiliki kewenangan untuk mengurus rumah tangganya sendiri berdasarkan hak asal-usul dan adat istiadat yang diakui dalam Pemerintahan Nasional dan berada di Daerah Kabupaten (Mulyono, 2014). A village is led by a village head, as regulated in Peraturan Pemerintah No. 72 Tahun 2005 tentang pemerintahan desa pasal 14 ayat (1) yang menyatakan bahwa kepala desa bertugas menyelenggarakan urusan pemerintahan, pembangunan, dan kemasyarakatan.

Village development is necessary to improve resource welfare, as the lack of equality in villages is also due to the lack of information systems (Agustina & Yahya, 2022; Setiawan et al., 2020). The information system described in Undang-Undang Nomor 3 Tahun 2024 tentang perubahan Kedua Atas Undang-Undang Nomor 6 Tahun 2014 tentang desa menjelaskan bahwa sistem informasi desa yang mencakup data desa, data pembangunan desa, kawasan perdesaan, dan informasi lain yang berhubungan dengan pembangunan kawasan desa (Qashlim et al., 2023; Sastrawangsa et al., 2023). Planning is essential for rural development, one of which is creating village maps that can serve as components of the village information system. Village maps can help village officials understand the boundaries of the village, identify and inventory the potential or assets of the village as a preliminary step for planning the empowerment of the village's existing potential (Purnomo et al., 2021). The utilization of Sistem Informasi Geografis (GIS) for mapping the inventory of village potential or assets is very necessary, as GIS can be used as an interactive tool to improve understanding of the concept of location and geographical elements on the Earth's surface. (Purnomo et al., 2021). SIG can display the location of objects in the form of lines, points, and areas, as well as information about those objects, making it easier to understand and comprehend (Schulze, 2021).

In a similar previous study by Falih and Nabilah titled 'Application of sistem informasi geografis (GIS) in Mapping Potential in Pataan Village,' the map created only presented land use in the village along with its quantity (Falih & Nabilah, 2021). Penelitian lain menjelaskan analisis lahan untuk pembangunan, dan keduanya memiliki kesamaan lebih menekankan untuk pembangunan desa dan acuan untuk para aparat desa dalam mengambil kebijakan (Suwondo et al., 2020).

Based on the explanation, a map was created named the Peta SI PANDA (Profile and Resource Visualization Map). The area to be mapped is the Gunungsari Village in the Ciranjang District of Cianjur Regency, with coordinates -6.793147971470261 °S, 107.28485113542186 °E. To the North, it is bordered by the Cirata Dam, to the South by Karangwangi Village, to the East by Kertamukti Village, and the West by Kertajaya Village. This village has an area of about 386 hectares. In addition, this village borders a dam and is located in a lowland area, making it quite conducive for agriculture and freshwater fisheries. The SI PANDA Map can contain the village profile, which includes the village's history and information from each neighborhood. Another purpose of this SI PANDA Map is to provide information about the resources available in the village area, such as public facilities, health facilities, UMKM, and tourist attractions. In addition, there is also a three-dimensional model map that displays the topographical conditions of the village. The Peta SI PANDA is designed with the hope that it can serve as an interactive source of information that is easy to understand and interesting for both the village residents and visitors from outside the village.

Literature Review

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Village

A village is the smallest unit in a government that plays an important role in national development and has the interest to regulate the community based on ancestral rights and customs, thus has the right to promote the welfare of the community by obtaining information and participating in overseeing the government. (Mulyono, 2014). The village is led by a village head, as regulated in Peraturan Pemerintah No. 72 Tahun 2005 tentang pemerintahan desa pasal 14 ayat (1) yang menyatakan bahwa kepala desa bertugas menyelenggarakan urusan pemerintahan, pembangunan, dan kemasyarakatan. Based on this, one of the village developments that will be carried out is to plan the development that will take place in the village.

Villages differ from sub-districts; the main difference between these two administrative areas is the location in which they stand. A sub-district is the smallest part of a city's administrative area, while a village is the smallest part of a regency's administrative area. Villages in Indonesia are still closely associated with the traditional activities of their communities, which rely on natural resources as their livelihoods (Priatmoko et al., 2021).

SIG (Sistem Informasi Geografi)

GIS is an information system used to input, store, retrieve, process, analyze, and generate geographically referenced data or geospatial data, to support decision-making in the planning and management of land use, natural resources, the environment, transportation, urban facilities, and other public services. GIS serves as a tool or medium used for mapping and analysis of various activities on the Earth's surface. GIS is a system that can support spatial decision-making and is capable of integrating location descriptions with characteristics of phenomena found at those locations (Balew et al., 2022; Treccani et al., 2024). A complete SIG includes the necessary methodology and technology, namely spatial data, hardware, software, and organizational structure.

The information system described in Undang-Undang Nomor 3 Tahun 2024 tentang perubahan Kedua Atas Undang-Undang Nomor 6 Tahun 2014 tentang desa menjelaskan bahwa sistem informasi desa yang mencakup data desa, data pembangunan desa, kawasan perdesaan, dan informasi lain yang berhubungan dengan pembangunan kawasan desa. This village information system is useful as a village tool that supports facilities and infrastructure in the village, because with the existence of the village information system, the government manages the village and the village community, and all stakeholders can access the village (Qashlim et al., 2023; Sastrawangsa et al., 2023).

Map

Village maps can facilitate village officials to know the boundaries of the village area, identify and inventory the potential or assets of the village as an initial step in planning the empowerment of the potential possessed by the village (Purnomo et al., 2021). The information generated from three-dimensional data for creating maps uses Sistem Informasi Geografis (GIS). In the aspect of GIS for creating maps, a conceptual understanding of data modeling, representation, and structure is required, so that the generated data can be represented accurately. The visualization results of three-dimensional graphic maps require accuracy testing and position accuracy testing from GPS to obtain appropriate data. The maps produced in a three-dimensional model display the topographic conditions of the village (the 3D graphic visualization is depicted in terms of shape, position, and orientation that have been created in digital format to represent complex depictions and processes occurring on the Earth's surface) (Ramadhan

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& Bahri, 2023; Apriyanti & Fathurohman, 2022).

Cartometric

Cartometric is a method of tracing boundary lines by determining the positions of coordinate points and identifying area coverage on working maps or corrected images (Adikresna & Budisusanto, 2014; Sukmono et al., 2021; Sutanta et al., 2020). According to the Ministry of Home Affairs in 2016 regarding Guidelines for the Establishment and Affirmation of Village Boundaries, cartometric is the tracing/drawing of boundary lines on working maps and the measurement/calculation of the positions of points, lines, distances, and area coverage using base maps and other supporting geospatial data. This method is carried out by digitizing over images to determine the points, lines, and areas to be marked, thus providing effective results for the establishment of village boundaries based on high-resolution satellite image data (Sukmono et al., 2021; Sutanta et al., 2020).

METHODS

The method used in the creation of the "SI PANDA" map is the cartometric method. The use of this cartometric method requires several data, including geospatial data, satellite imagery, and topographic data of the village area in the form of DEM (Digital Elevation Model). Active participation from the community and other government officials is needed for the process of obtaining data and information in the field regarding boundary lines. Another research method used to obtain more detailed information involves the village heads as resource persons who are interviewed (Firmansyah et al., 2021; Simorangkir et al., 2021). Through several questions that were formulated beforehand to support the completion of this map, the village heads were then gathered and asked to provide information to mark the boundaries on the images along with objects regarding the profile and resources of the village to be inputted onto the map.

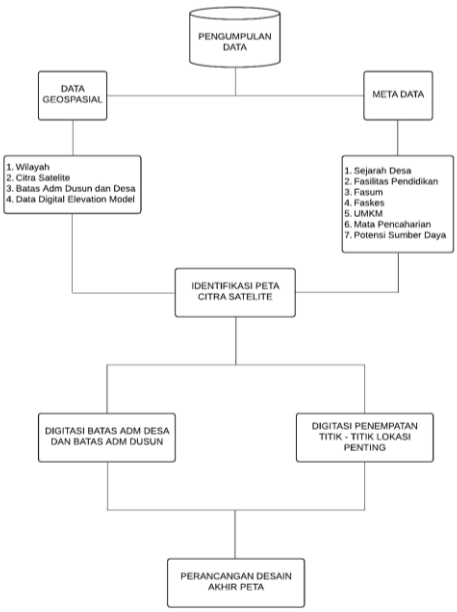

Figure 1. Stages of map creation
Source: Author's Documentation 2024

In this map-making activity, there are several stages that are carried out as shown in **Figure 1**. The initial stage in map making begins with collecting geospatial data and metadata, followed by map identification

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using satellite imagery. The next stage is digitization based on the previous results which ultimately leads to the creation of the final map design that will be published.

RESULTS AND DISCUSSION

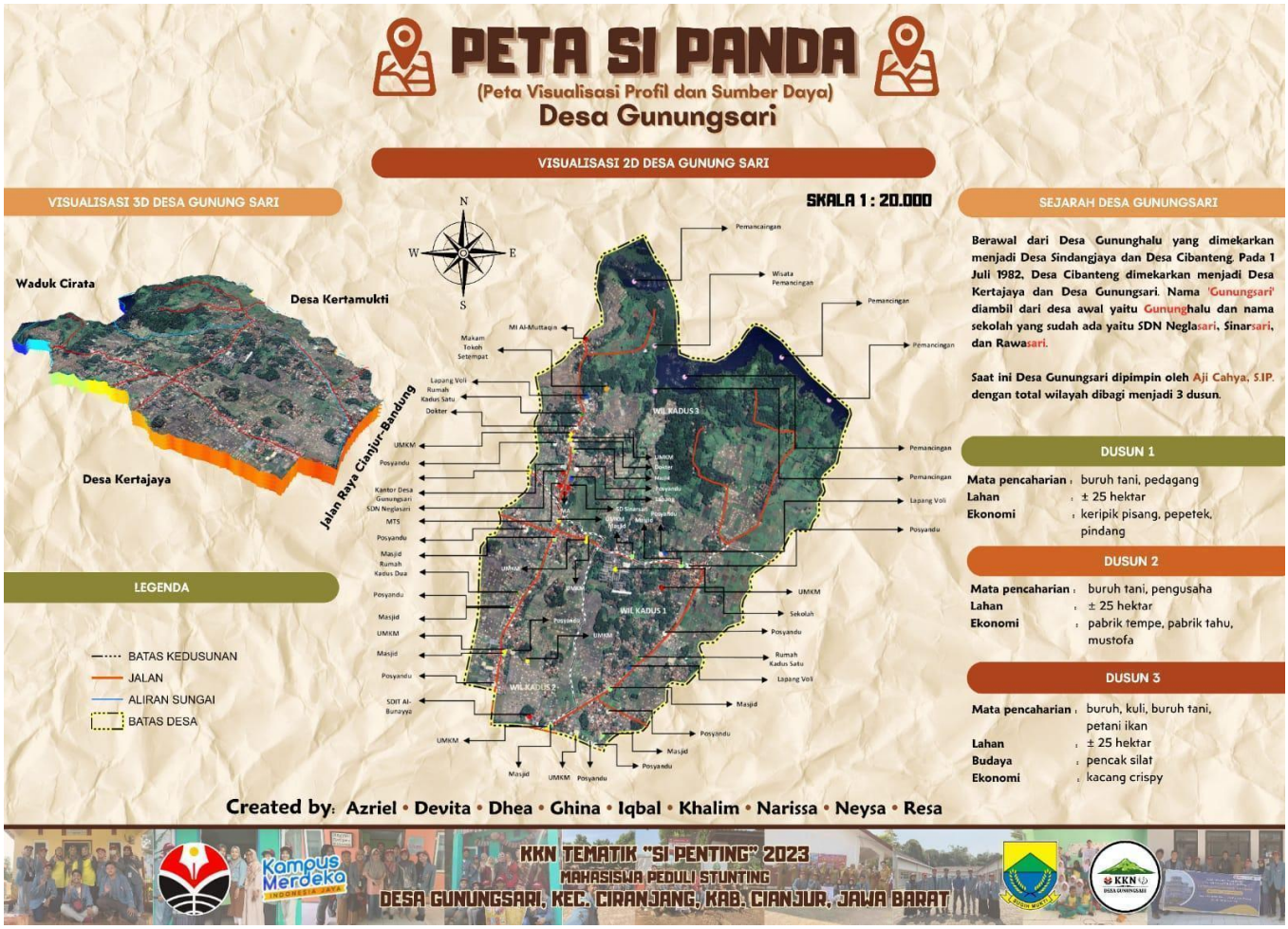

Figure 2. SI PANDA Map
Source: Author's Documentation 2024

The right section of the map in **Figure 2** displays a collection of historical information and profiles of the villages, along with the sub-villages in each of those villages. The middle section shows the face of the map at a scale of 1:20,000 and indicates the location of the objects that have been predetermined, with details of the quantities in **Table 1**.

Table 1. Details of the SI PANDA Map Object

No	Object	Total
1	Educational Facilities	6
2	Religious Facilities	8
3	Public Facilities	3
4	Health Facilities	13
5	Economy	10

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No	Object	Total
6	Tourist Attractions	5

Source: Community Service 2024

Based on **Table 1** above, the educational facilities include SD (elementary schools), SMP (middle schools), SMA (high schools), and madrassas. Religious facilities include mosques, prayer halls, and assemblies, while public facilities include sports fields such as futsal, GOR (community centers), and soccer. Health facilities include doctors, midwives, and integrated health services. Economic objects consist of various types of stores for different needs such as building materials and staple goods. Tourist attractions include reservoirs, fishing ponds, and floating ponds that are commonly used for fish farming for the surrounding community.

Based on the above activity flow, the first activity begins with data collection, which includes geospatial data such as satellite imagery and topographic data, as well as data from interviews. The geospatial data used includes area data represented by lines, points, and areas in format (.shp) as symbols for public facilities, educational facilities, health facilities, UMKM, and tourist attractions. Google Earth satellite imagery obtained from SAS Planet with a zoom resolution of 20x is used. The use of GPS plays a significant role as a control point measurement and mapping depicted through satellite image interpretation (Utomo & Andari, 2022; Ramadhony et al., 2017; Silalahi et al., 2021). The village topographic data is in the form of DEM (Digital Elevation Model) obtained from DEMNAS, which is used for data accuracy with the advantage of higher spatial resolution of 0.27 arc-seconds (Darojat, 2021; Iswari & Anggraini, 2018; Kristiawan & Sumaryono, 2020; Wilis et al., 2024).

The results from the geospatial data obtained from various sources also include data obtained from direct interviews with the owners or those who best understand the area, such as the village head and village officials (Urbac et al., 2023; Yudanegara et al., 2024). The results of this interview revealed several topics that were questioned, including the history of the village, the livelihoods of the village, and the social and cultural conditions of the village. After the interview and obtaining all the information related to the village, the village heads were then asked for assistance to show the locations of all the facilities and places to be included in the map, and they were also asked to indicate the boundary points between the hamlets. All facility locations and hamlet borders were marked by digitization on images or cartometrically.

The preparation of a series of maps is carried out after all data has been collected, consisting of two-dimensional village maps with the placement of important village points (Alvisyahri et al., 2023; Zulafwan, 2016). The key points of the village consist of public facilities, economy, education, health, and UMKM marked with symbol points and text in the ArcMAP software used to map the density of settlements by utilizing high-resolution satellite imagery (Sastrawan et al., 2021; Setyaki & Setyaningsih 2022). This map is equipped with a three-dimensional visualization with simple descriptions of the village boundary limits that are easy to understand (Apriyanti & Fathurohman, 2022; Ramadhan & Bahri, 2023).

The patented map is then combined into one poster design sized A0 (84.1 x 118.9 cm). The poster design on the map, the implementation of the layout or layout of the supporting media is in accordance with design principles to achieve good results (Niâ, 2020; Meidina, 2023). The design is equipped with a legend, a historical profile of the village, as well as explanations of the facilities and potential of the village detailed by each hamlet.

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Discussion

In this community service activity as part of KKN (Kuliah Kerja nyata), located in Gunungsari Village, Ciranjang Sub-district, Cianjur Regency, the goal is to plan for village development, one of which is to create a map as a village information system. The service activity ran well, based on data collected from interviews with the village head and residents as data sources. The participation of the community and local government is a decisive factor in maintaining the environment in a certain area (Nurdin et al., 2023). The collection of geographic data through a participatory approach of the community can serve as a background in the creation of GIS (Sigit & Imam, 2022; Wahab & Kurniawan, 2022). This is very helpful in determining location points, so the design of the SI PANDA map can be appropriate and accurate as a village information system. This is explained by Purnomo et al. that village maps are created to facilitate village officials in knowing the boundaries of the village, identifying, and inventorying village potential or assets as initial steps in planning the empowerment of the potential that the village has (Purnomo et al.. 2021).

The SI PANDA map is created in a three-dimensional model that displays the topographic conditions of the village, providing information about the resources available in the village area such as public facilities, health facilities, UMKM, and tourist attractions. This product can serve as a preliminary guide for local communities and visitors who wish to get to know the village. It is hoped that the design of the SI PANDA map aligns with its goals and benefits, thus facilitating various parties who will visit or engage in village development.

CONCLUSION

Peta Visualisasi Profil dan Sumber Daya (SI PANDA) is a map that depicts the exact location of facilities and potential resources in the village. This map displays two-dimensional and three-dimensional satellite images with simple boundary points between villages, allowing for a concise and clear presentation of general information about the village. Peta Visualisasi Profil dan Sumber Daya (SI PANDA) is a product created out of awareness of the lack of general information about the village. The SI PANDA map is created with the aim that village authorities have an overview that can be used to provide a general impression for the general public and for newcomers who are getting to know the village environment. Therefore, with the creation of the SI PANDA map, it is hoped that there will be sustainable village development by utilizing this map, enabling the exploration of potential in Gunungsari Village.

AUTHOR'S NOTE

The authors declare that there is no conflict of interest related to the publication of this article. The authors affirm that the data and content of the article are free from plagiarism.

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