

Participatory Mapping Solution for Village Potential and Boundary

Irland Fardani

Universitas Islam Bandung, Taman Sari Street No. 1, Bandung 40166, Indonesia

Participatory and Partnership in Rural Development (7)

Abstract

A common problem in every village in Indonesia is that identification of borders between villages cannot be spatially depicted, one of the methods used to accelerate village boundary settlement is to use participatory mapping methods. *Participatory mapping* is a map-making process that attempts to make visible the association between land and local communities by using the commonly understood and recognized language of cartography. Participatory mapping is the bottom-up approach that's allows the all the villagers can draw the maps of their village In this study, application of Remote Sensing and Geographic Information System (GIS) allow to identify the boundaries of Campakamulya village, a comprehensive mapping of 329 Ha of village was conducted. In this case, community local knowledge of the village boundaries is very less, only a few elders of the villagers knew the boundaries of the village. With the maps of village boundaries that gather by participatory mapping method, knowledge of the boundaries of these village can be well documented. Participatory mapping method in determining the boundary of this village can correct the existing village boundary data in the

government. This *Participatory* mapping activity can shorten the time for border survey activities and village potential.

Keywords

Participatory Mapping, Geographic Information System (GIS), Boundaries, Village

* Corresponding author. Tel.: +62-8122-326-1345.

E-mail address: irland.fardani@unisba.ac.id or irlan128@gmail.com

1. Introduction

Village is the smallest unit in development both in the flow of funds and administration in the law. Villages are often subjected to a wide range of government and non-governmental programs in action. One of the activities to support village development is mapping, where village administrative boundaries need to be established in order to maximize potential development. According to domestic legislation No. 27 of 2006 The boundary of villages is the boundary of the jurisdictional jurisdiction territory of the administration which is the authority of a village with another village, from the definition it is implied that the village is the deepest authority of the government to regulate government activities.

One approach that can be used in carrying out the mapping is by using Participatory mapping techniques. Participator mapping have been applied since 1990. Participatory

mapping is a map-making process that attempts to make visible the association between land and local communities by using the commonly understood and recognized language of cartography (IFAD,2009).

In Indonesia, participatory mapping had been done many times, by the government or by the Non- Government Organization (NGO), about 1.5 million hectare is have been mapped by the local communities in the past 10 years. Many local communities have been professionally trained by The Indonesian Community Mapping Network (*Jaringan Kerja Pemetaan partispatif* or JKPP), Open Street Maps, Green Maps etc.

The paradigm that has been running on the completion of the administrative boundary area is with the top-down hierarchy system. The use of a top-down hierarchy system often encounters many problems, one of which is the many conflicting interests in each province government. For that we need to try to solve this administrative boundary problem with bottom-up method, namely to solve the administrative boundary problem of the smallest unit that is border of village or village boundary. Participatory mapping can produce an administrative boundary map agreed upon by the masses as high as will not create conflicts and can be done faster mapping process (Arini, 2016). With this participatory mapping a general picture of the region can be updated, and describes all potential and strategic issues as well as tools for sustainable villages (Tallo, 2016).

2. Material and Methods

In this research, qualitative descriptive method is used by finding information from the community about the limits in Campakamuly village. Sources of the data is comes from primary and secondary data, primary data is direct field observation about village boundaries obtained from community leaders and head of the existing hamlet, while secondary data

obtained from village boundary data obtained from the Central Bureau of Statistics (BPS) or Geospatial Information Agency (BIG).

The purpose of this activity is map making in sub district of Cempaka Mulya, District of Bandung with participative mapping approach which later can be used for the needs of local community, while the benefit of this activity is simplify the process of using map for planning of rural development in the future.

2.1 Research Location

Campakamulya village includes district cimaung bandung regency with an area of 329.99 Ha. Have an altitude of 900 meters above sea level. The administrative area of Campakamulya village is limited by:

- North : Desa Pasirhuni
- East : Desa Pasirmulya
- South : Perum Perhutani
- West : Desa Cimaung dan Desa Mekarsari

Campakamulya village based on information in 2015 is divided into 4 Dusun, 48 RT and 12 RW with a population of 8,324 inhabitants. In general, the land in Campakamulya village is used productively and only a few are not used. This shows that the area of Campakamulya Village has adequate natural resources and is ready to be processed. As the

object of research, Campakalmulya Village, Cimaung Sub-district, Bandung Regency has a quite prominent potential in agriculture as shown in Figure 1, so the function of this mapping activity is to explore the deeper agricultural potential.



Figure 1 Conditions of rural areas

2.2 Data and Equipment

The data used in this research are:

- Indonesian Earth Map (*Rupa Bumi Indonesia*)

Indonesia Earth map that used is in 1:25.000 scale, its come from Geospatial Information Agency, used to be one of the existing road and river identification guidelines.

- Google Earth Image Map

Map google earth imagery used to be the first reference in the depiction of the condition of land cover in the village Campakamulya.

- Image photo from drone processing

Image photo form drone are used to detail the land cover and physical boundaries used as administrative boundaries.

Equipment that is used :

- GPS Handheld
- Drone DJI Phantom 4
- Camera



Figure 2 Equipment used in the survey

2.3 Methodology

The administrative boundary mapping process in Desacempaka mulya uses participatory mapping method, ie mapping that essentially invites the community to be actively involved in making administrative boundary map or regional potency. The community or elder chairman plays a very important role by showing the physical nature marks that mark the administrative boundary. Flow chart of the administrative boundary mapping can be shown in figure 4.

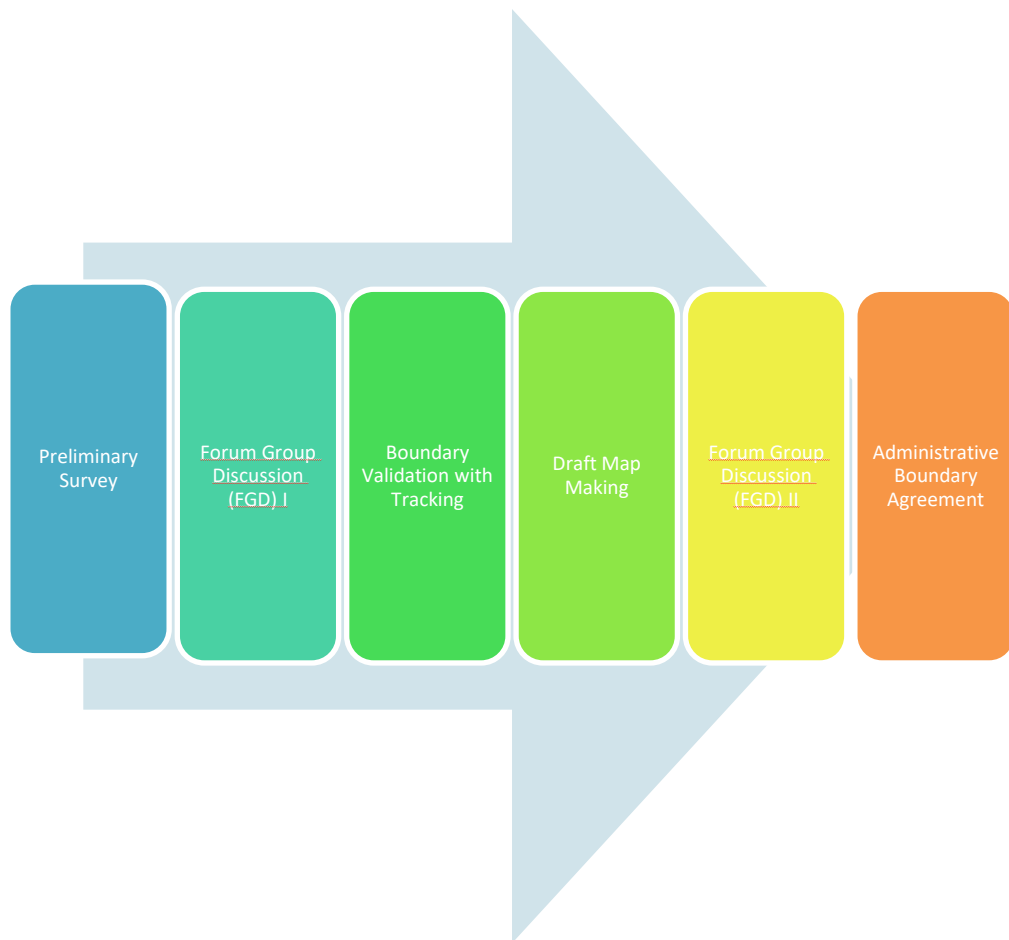


Figure 4 Flowchart Participatory Mapping Boundary Administration

Within the boundary of the village, a preliminary survey is carried out first, the core of the preliminary survey activity is data collecting existing data and conducting village research. The next step is to roll out the first Group Discussion Forum (FGD), the activities provided by the satellite image of the village of Campaka Mulya and then the village heads and community leaders train to know the borders of the hamlet or the potentials of each of their hamlets. In the delineation of administrative boundaries, it turns out that not all

residents present know the administrative boundaries, only each customary chairman or head of the hamlet knows the administrative boundaries exactly as shown in Figure 5.



Gambar 5 Village Boundaries and Potential Displays by the community.

To get a better picture of the condition of the village, mapping also utilized the drone to get a cempaka mulya village aerial photograph as shown in Figure 6. In this series of activities, tracking and plotting the village boundaries and potential use of GPS as can be seen in figure 7.



Figure 6 Mapping Using Drone



Figure 7 Activity plotting Administrative boundaries and potential villages

From FGD data and Mapping using drone, next is data processing from administrative boundary is overlay with map of aerial photograph from drone which resulted draft map boundary administration. The draft result of this administrative boundary map and potential is discussed again in FGD II which aims to verify in order to reduce errors on the displayed map content, from this activity obtained some correction to improve the content of the map already created. The final process is a process of agreement on the administrative boundaries and potential of the village.

Results

The result of this research is an administrative boundary map and potency of Campakamulya village, Campakamulya village consists of 4 Dusun and 12 RW as shown in Figure 8. In administrative boundary division in Cempaka mulya village, entirely using physical limit such as; roads, rivers, drainage and irrigation networks.

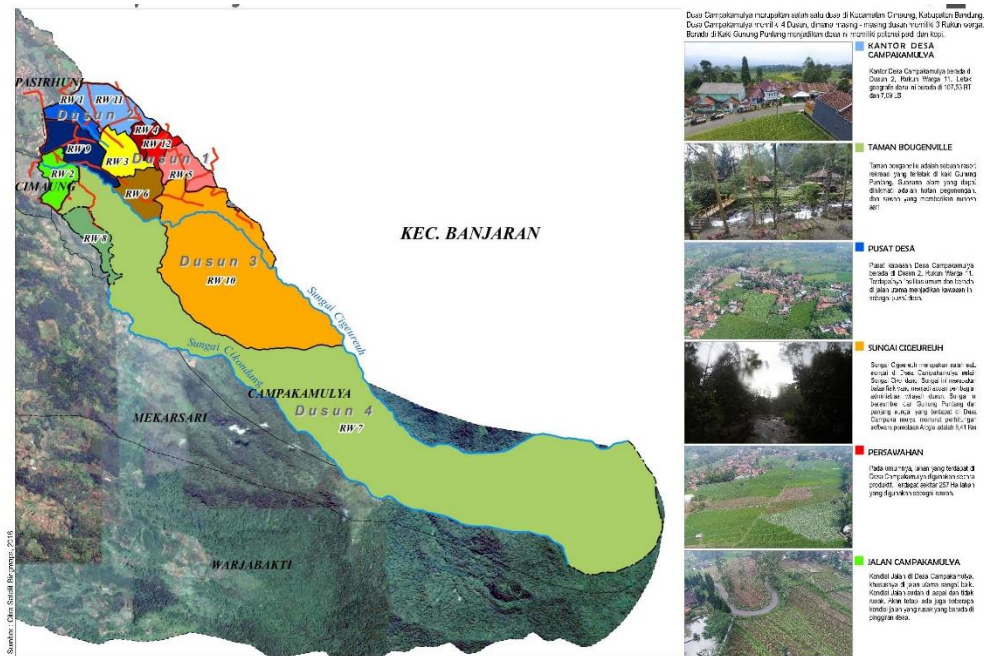


Figure 8 Map Campaka Mulya Administration.

The potential of agriculture and plantations in the village is quite large by covering food crops, vegetables, fruits of land use in the mountains in the form of protected forest areas, production forests and tourism forests. Currently there is favorite commodities coffee, which is being intensively - incessantly socialized to be more developed. For the hamlet potential map can be seen in Figure 9.



Figure 9 Map of Boundaries and Potential Dusun in Campaka Mulya Village

During this research, the level of community participation was quite high, as seen from the attention of the residents during FGD and field survey activities. Heads of hamlets

and villagers were enthusiastic to participate in field survey activities by tracking each hamlet boundary. The result of this administrative boundary mapping is made in 2 forms, namely the A0 boundary of the booklet which is directly submitted to the village head as shown in Figure 10.



Figure 10 Product Result Book Mapping of Administration and Product Delivery Limit to village head

Discussion

The participatory mapping process can be a methodology with a bottom up hierarchy used to solve administrative boundary problems. Community livelihood is very important in this methodology, because without the active participation of existing information society can not be well explored. Approach to the community informing the importance of this village map will lead to good participation.

References

Dwi, Arini., *Et all.* (2016). *Pemetaan Partisipatif Nagari Pamatang Panjang Kecamatan Sijunjung Kabupaten Sijunjung Sumatera Barat Guna Mendukung Percepatan Pembuatan Peta Desa*. Seminar Nasional 3rd CGISE dan FIT ISI 2016. Yogyakarta, Indonesia.

IFAD. (2009). *Good practice in Participatory Mapping. International Fund for Agricultural Development*

Jong Tallo, Amandus (2016). *Participatoru mapping Solution Village Development Karengas in a Suistainable Way*. Seminar Nasional Peran Geospasial dalam Membingkai NKRI. Cibinong, Indonesia.