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To cite this article: W.F. Rosyidin *et al* 2019 *IOP Conf. Ser.: Earth Environ. Sci.* **271** 012015

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Identify of Multi-Hazard on Muhammadiyah Education Area by VISUS Method in Jakarta

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Abstract. The research did in Jakarta Province with school area focus. Nowadays, Jakarta is the capitol area with high risk potentials occurrence. As the capitol, Jakarta have many schools area. However, there are many potentials hazard in each school (two of schools) with number of risk element. the area are SMP Muhammadiyah 36 Duren Sawit Jakarta Timur and SMA Muhammadiyah 3 Jakarta Selatan. The element at risk at schools are human, building, vehicles and other. The methode used VISUS. The VISUS is Visual Inspection for Safety Upgrading Strategis. It is the way of identify hazard at education area for safety with focus in weakness to hazard (vulnerability), number of safety (capacity) and magnitude of hazard. The identifying see of physic area visibility. The focus assessment hazard were earthquake, flood, and fire. Stage of observe are prepare, survey then input the data. Futhermore, surveying process at schools have three puposes. Those are identify location, surround area, building inside and outside. The identify process did the identify process did by surveyors who have certified form UNESCO. The surveyors used of VISUS application support which is developed by UNESCO to identify all items focus at schools. the result is identity of data schools based on hazard observe in surround.

1. Introduction.

Generally in this paper describing the way to assessment the element at risk in some area. The area were some education places as facilities schools at Muhammadiyah senior high school and junior high school surrounding in Jakarta. It used by Visus's Methode which are three part main methodes. The methode of VISUS is Visual Inspection for Safety Upgrading and Strategis. This paper is one of part series research process which had been.

The disaster analysis is important thing in Indonesia. Indonesia is vulnerability country from disaster, especially in Jakarta. Moreover climate change, land subsidance, land slide, high level sea , tide flood and intrusive water are disasters source in Jakarta as the capitol. [7]. The Jakarta's area province is 661,52 km² with average lower land is 40% under sea level. As geomorphic is fluvial majority in north area. The factor geomorphology have indicating Jakarta is the prone flooding area. In other word, the disaster have impact loss until 5,16 trilion IDR [2]



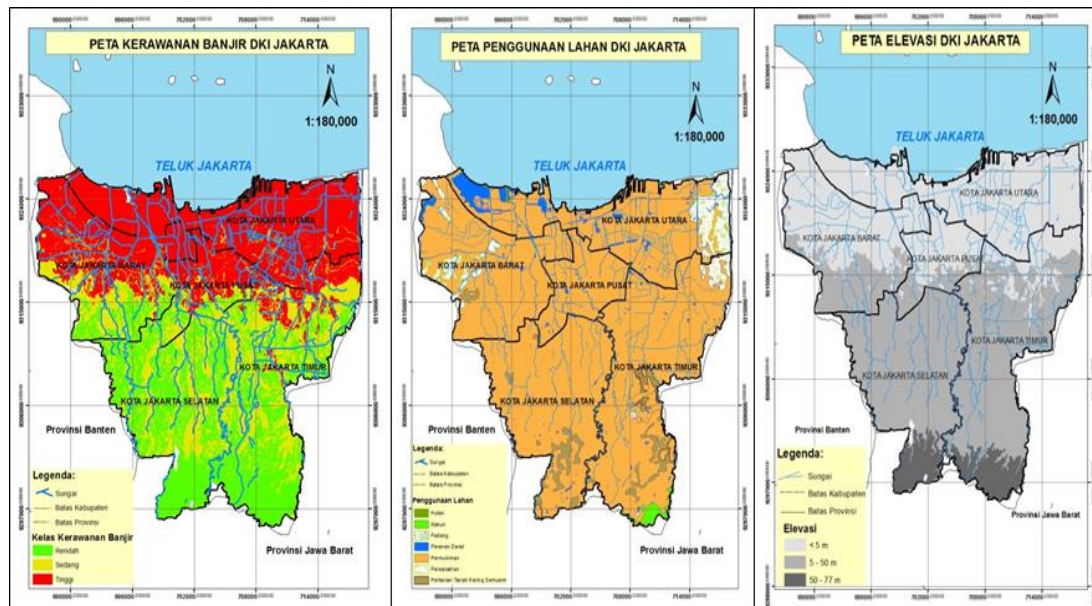


Figure 1. Jakarta Flood Potency Hazard Map [4]

2. The Problems and Area of Study

The problems of study are the way to make rapid assessment the element at risk. The element at risk are the area of education such as in schools. As sample areas study are SMAM 3 Jakarta, SD Muhammadiyah 8 Jakarta (Jakarta Selatan), SMP Muhammadiyah 36 Jakarta (Jakarta Timur). However, management of schools do not understand how much they have capacity resiliences in schools to reducing of disasters risk. Moreover, base on the government rule that schools are safety place representative because many academic civities are are susceptibled from hazard, it should be to observed. It will identifying with VISUS's method by surveyors with have input the information in schools surround area.

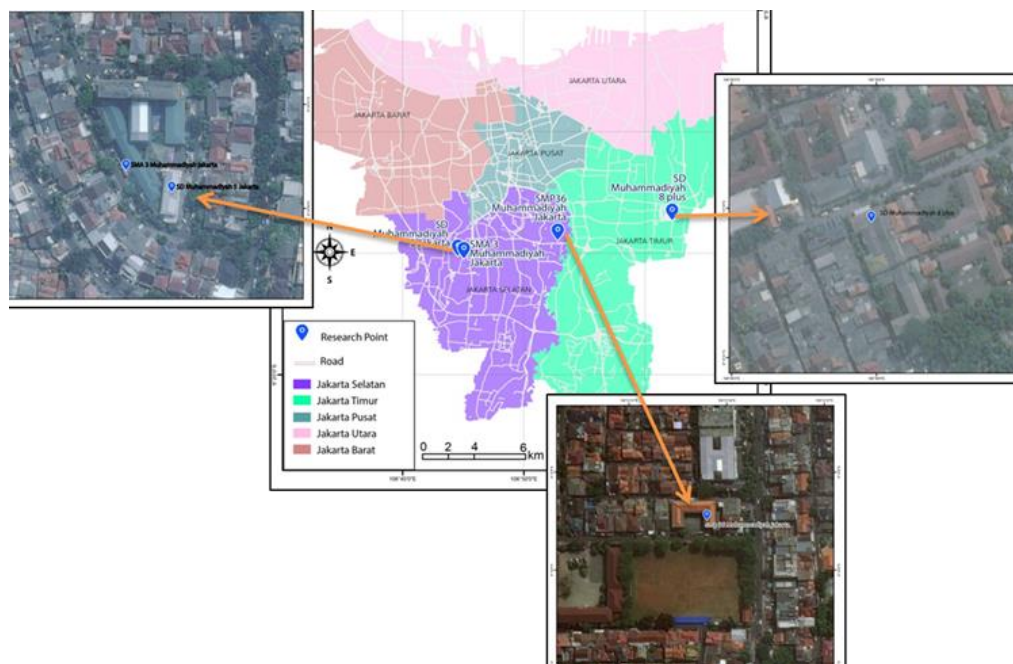


Figure 2. Area Study.

3. Methodology

There are some focus objectives to be observed. First, physical objects are buildings, some facilities school, and hall nearby rooms. Second, human safety in schools are included the safety of school citizens. Third, doing elimination of total loss in school area for example damage of building or facilities loss. In other words, VISUS's method is visual inspection safety upgrading and strategic. Visus is a method with survey of vital points of the elements at risk. Visus has been developed by Grimaz from SPRINT, Udine University and supported by UNESCO [9]. For this moment, it was used some part of Visus method with three main points of school value safety comprehensive. They were focused to see evaluating of life safety such as location, structure building, and utilities access. That were general information, location inspection, school yard, building internal and building external then finishing with drawing of school sketch and note. It had seen the objects materials in triage and intervention as surveyor. The surveyors Visus's method must have a legal certificate from Visus's consortium by UNESCO. After joining training the surveyors can activate Visus's application mobile by them.

In order, there are some part steps to using Visus. Firstly, the surveyors will activate their application mobile with fill data object such as school ID, time, location (georeference). Then they do identifying to get information of type operational school for example daily usage or weekly usage. These are steps to inserting data for steps begin. (Figure 3)

Figure 3. Theme of Visus's Application Input

Secondly, storage the data into Visus's application. It had observe the objects to views of hazardous events which had experienced, for example : earthquake, tsunami, landslide, volcano, windstorm, fire and extraordinary occurrence. The focus observe of objects were possibility occurrences that ever happened. The information data had taken from persons appointed to recognizing of the multihazard.

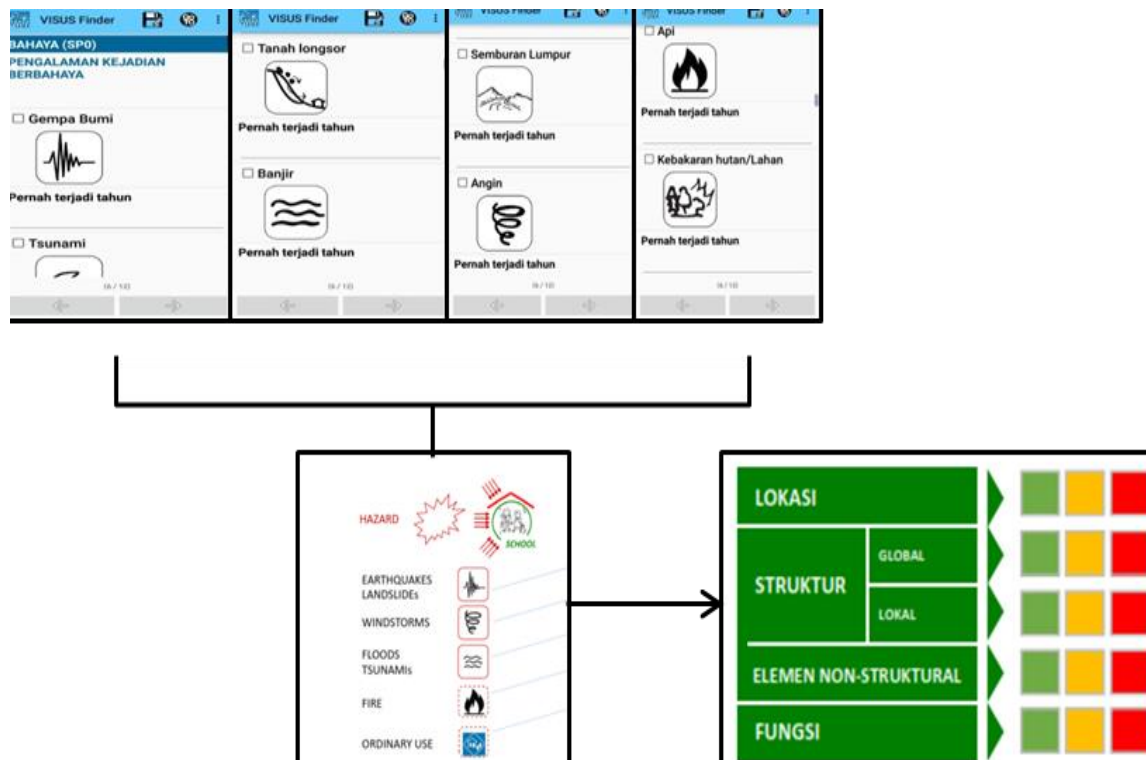


Figure 4. Steps Information Data Hazards

Thirdly, after input data storing has been keep then classifying of result input. Those data will classifying indicate for occurrences of magnitude. It is called hazardous characterization, for example : magnitude of flood level, probability of fire, predict of hydrometeorology disaster (hazard water segmen), potensial of earthquake, tsunami prone area, and windstorm. The focus object will given score values based on result. The result values are low, medium and high.

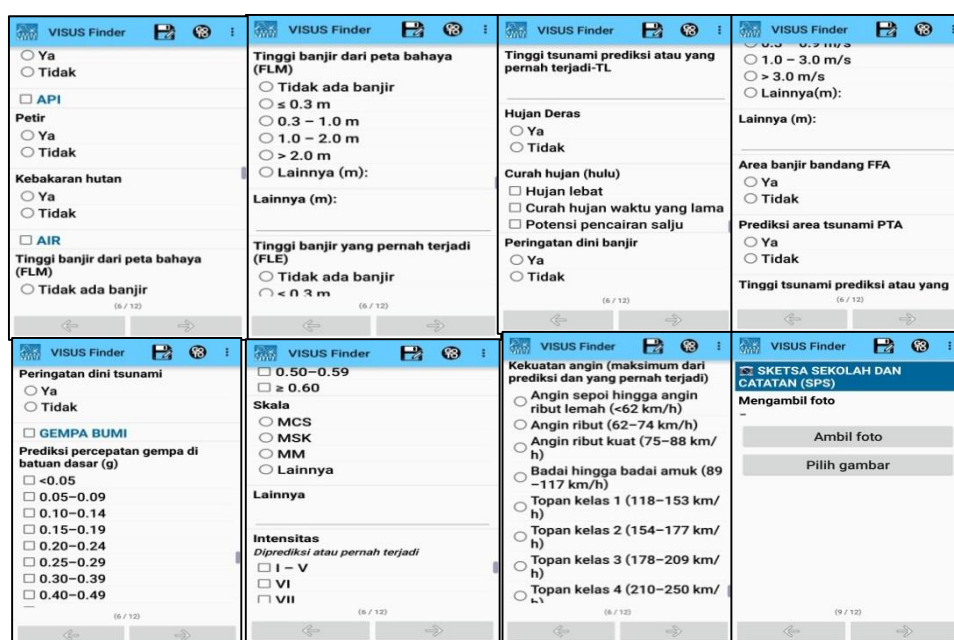


Figure 5. tools of menu in application

4. Result and Dscussion

As describing, SMP Muhammadiyah 36 Jakarta is sample object to reporting. In this place, there are point of identification after survey session. Some data intake general information are school information, usage, and historical hazardous based on participation survey. There is form input to submit the information in this school. The School has give general information. The location SMP Muhammadiyah 36 Jakarta is in Tebet Jakarta Selatan. (Figure 6)

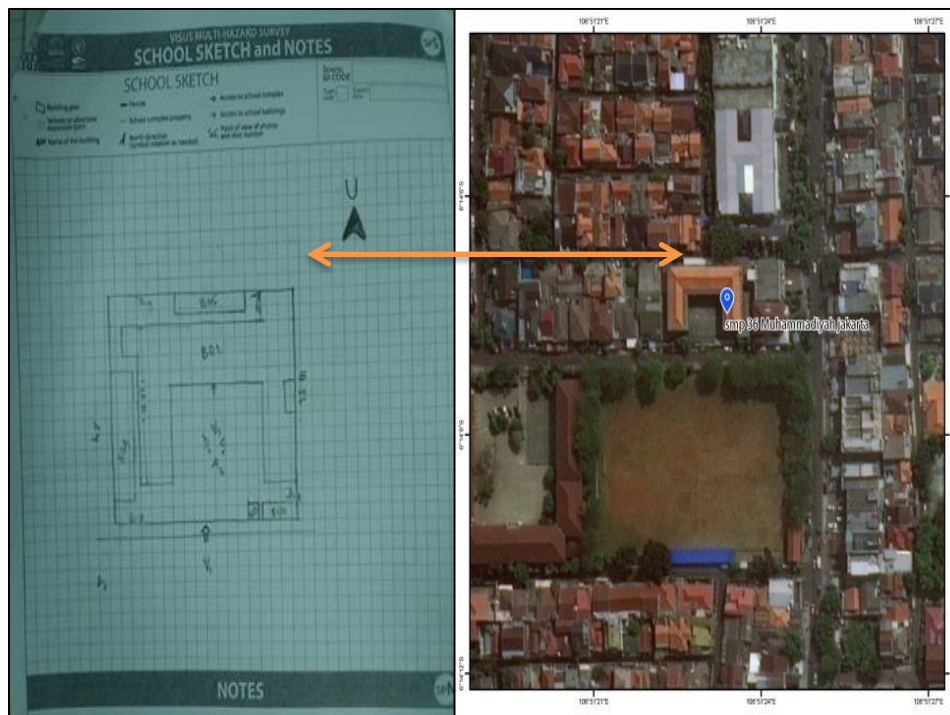


Figure 6. Sketch SMP Muhammadiyah 36

The figure displays eight screenshots of the VISUS Finder application interface, organized into two rows of four. Each screenshot shows a different section of the application, with a blue header bar containing the 'VISUS Finder' logo and title. The sections are as follows:

- Top Row (Left to Right):**
 - INFORMASI UMUM (SP0):** Displays school information including Kode ID Sekolah (20104981), Temp-Code (3), Tanggal Survei (16 Mar 2018), and school details like Nama Sekolah (SMP MUHAMMADIYAH 36 JAKARTA), Negara (INDONESIA), Provinsi (DKI JAKARTA), Alamat (Jalan Tebet Timur II No 35), and Koordinat (-6.2355341 106.8564814 58.0 18.0).
 - KEGUNAAN SEKOLAH (SP0):** Displays school usage information including JENIS SEKOLAH (Swasta), PEMAKAIAN HARIAN (Hanya siang hari), PEMAKAIAN MINGGUAN (Senin Selasa Rabu Kamis Jumat Sabtu), Pemakaian tahunan (Januari Februari Maret April Mei Juni Juli Agustus September Oktober November Desember), Jenjang yang diajarkan (SMP), and Lainnya.
 - # Guru Perempuan:** Displays the number of female teachers (10).
 - # Staf Perempuan:** Displays the number of female staff (2).
- Bottom Row (Left to Right):**
 - Pernah terjadi tahun:** Displays a list of years when events occurred (2018).
 - Suhu:** Displays temperature information including Minimal (22.0), Maksimal (34.0), Serangga/hama (Ya), Rayap (Tidak), Petir (Tidak), Kebakaran hutan (Tidak), and AIR (AIR).
 - Hujan Deras:** Displays heavy rain information including Curah hujan (hulu) (Hujan lebat), Peringatan dini banjir (Tidak), Peringatan dini tsunami (Tidak), GEMPA BUMI (GEMPA BUMI), and Prediksi percepatan gempa di batuan dasar (g) (0.30-0.39).
 - UDARA:** Displays air information including Kekuatan angin (jika sekolah di daerah pesisir, isi bagian bahaya angin), Kekuatan angin (maksimum dari prediksi dan yang pernah terjadi), Peringatan dini untuk angin (Tidak), and GEMBAR SEKOLAH YANG MEWAKILI (SP0).

Figure 7. Result of Identification in SMP Muhammadiyah 36

Type of usage is public school. It is only during for daily with weekday usage operation. The Estimation area is 1617 m². More over, total of academic civities are 296 person. They are students, teachers, non-teaching personnel (male-female). There are one main building and four building to ancillary. The hazardous event which experienced is earthquake. Hazard characterization are not predicted snow. The humidity is dry air. It have 22° C for minimum temperatur and 34°C for maximum. The predicted of wind force is breeze or moderat gale (<62 km/h). It have 0.30-0.39 for predicted PGA (peak ground accelerate) withscale MM, but there is no early warning for this hazard. There are hazard flood with more type level. One of influenced is upstream from heavy rainfall and heavy rain (figure 7).

Furthermore, in general the object location have flat or almost flat as topography and content patern area location in urban so location object is close with high traffic street, that very dangerous accident but the object school is close for emergency service. In inspection of school yard, there is danger potentials fall (from terraces, steep slopes other). The object location have ignition sources with flames near combustible elements. Moreover , condition access the object is only one gate.

5. Conclusion

Overall, identifying of the object (school area) to observe multi hazard using participate of respondents. The object as school education area have more hazards characterization. It happened from different hazards and environment. The surveyors should be strict to see what occurrence or fact ordinary in object. This research result could be first and base of early data for schools as disaster risk reduction programme.

Acknowledgments

The authors would like to thank the Study Programme of Geography Education, Faculty of Teaching and Education, University of Muhammadiyah Prof DR HAMKA especially to LEMLITBANG UHAMKA which has facilitated the research activities through excellent research grants

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