Intisari

Kompleks Gunungapi Dieng adalah salah satu kompleks gunungapi yang memiliki karakteristik berbeda dibandingakan dengan gunungapi lain di Indonesia. Kompleks Gunungapi Dieng didominasi erupsi freatik dengan tipe ancaman berupa hembusan gas beracun CO_2. Hembusan gas beracun CO_2 pernah menyebabkan 149 korban meninggal pada tahun 1979 dan ribuan penduduk harus dievakuasi pada tahun 2011 dan 2013.

Tujuan penelitian adalah (1) menganalisis secara spasial persebaran zona bahaya gas beracun CO_2 di kompleks Gunungapi Dieng, (2) menilai tingkat kerentanan sosial ekonomi masyarakat di wilayah rawan bencana terhadap bahaya gas beracun CO_2 di Kompleks Gunungapi Dieng, dan (3) menilai tingkat kapasitas masyarakat di kawasan rawan bencana terhadap bahaya erupsi gas beracun CO_2 di kompleks Gunungapi Dieng. Penelitian dilakukan secara deskriptif kualitatif dengan pendekatan partisipasi masyarakat dan morfologi. Teknik sampling yang digunakan yaitu *proportional quota sampling* dengan jumlah responden sebanyak 129 responden. Metode penentuan responden yang digunakan yaitu *In depth interview* dan kuesioner. Metode analisis data yang digunakan yaitu *distance analysis* dan unit morfologi untuk analisis persebaran zona bahaya, pembobotan untuk analisis kerentanan, dan skala *likert* untuk analisis kapasitas.

Hasil penelitian menunjukkan bahwa telah ditemukan 22 titik rawan gas beracun CO_2 yang tersebar di daerah penelitian. Tiga titik rawan memiliki konsentrasi gas CO_2 berada di atas ambang batas toleransi manusia dalam keadaan gunungapi berstatus normal yaitu 0,8-8,02% per volume dengan tingkat ke asaman rata-rata air kawah adalah normal (6,9-7), dan 6 (enam) titik rawan memiliki rentang frekuensi kejadian dengan kategori sering yang tesebar dari arah Utara-Selatan. Berdasarkan hasil analisis spasial (0 meter – 1000 meter dan 1000 meter – 2000 meter) dan pendekatan morfologi, Desa Sumberejo adalah desa paling rentan terhadap ancaman erupsi gas beracun CO_2 dibandingkan dengan Desa Batur dan Desa Pekasiran. Hal ini sangat dipengaruhi oleh faktor morfologi dan kemiringan lereng. Hasil penelitian kerentanan menunjukkan bahwa Desa Sumberejo merupakan wilayah dengan kerentanan tertinggi (skor 5,00), Desa Pekasiran memiliki kerentanan sedang (skor 3,80), dan Desa Batur memiliki kerentanan rendah (skor 3,40). Kerentanan masyarakat di daerah penelitian sangat dipengaruhi oleh parameter penyusunnya. Hasil penelitian kapasitas menunjukkan bahwa daerah penelitian didominasi oleh tingkat kapasitas sedang. Secara lebih rinci, desa dengan dominasi tingkat kapasitas tinggi adalah Desa Sumberejo, dan desa dengan dominasi tingkat kapasitas sedang adalah Desa Batur dan Desa Pekasiran. Desa Sumberejo menjadi desa yang paling berbahaya secara spasial dan paling rentan secara sosial ekonomi terhadap persebaran zona bahaya gas beracun CO_2, akan tetapi memiliki dominasi kapasitas paling tinggi dibandingkan dengan Desa Batur dan Desa Pekasiran. Hal ini tidak terlepas dari adanya informasi dan sistem edukasi mengenai kebencanaan yang turut terbangun pada masyarakat.

Kata Kunci: Bahaya, Gas Beracun CO_2, Freatik, Erupsi.

Abstract

Dieng volcano complex is one of the complexes of volcano that has different characteristics compared to the other volcanoes in Indonesia. Dieng volcano complex is dominated by a phreatic eruption that has serious threat of carbon dioxide poisonous gas blowing. It once caused 149 people died in 1979 and thousands of people evacuated in 2011 and 2013.

This research is aimed (1) to spatially analyze the distribution of hazard zone of carbon dioxide poisonous gas in Dieng volcano complex, (2) to assess the community's vulnerability level of socio-economic on the vulnerable zone towards carbon dioxide in Dieng volcano complex, and (3) to assess the community's capacity level on the vulnerable zone towards carbon dioxide poisonous gas in Dieng volcano complex. The study was conducted using descriptive qualitative with community participatory and morphological approach. The sampling technique used was proportional quota sampling with a total of 129 respondents participated on it. The method use to choose the participants was by doing the in depth interview and distributing the questionnaire. The data analyses employed were distance analysis and morphological unit to analyze the distribution of the hazardous zone, weighting to analyze the vulnerability, and likert scale to analyze the capacity.

The research shows that a total of 22 vulnerable points of carbon dioxide poisonous gas scattered on the area of the study. The concentration of the carbon dioxide in three of them is above the human tolerance threshold on volcano at normal status that is 0.8-8.02% per volume with the pH level of the water normal (6,9-7) and six vulnerable points have frequency of events on frequent category that were distributed from North-South. The distribution of CO_2 points was influenced by the activity of macro fault line so it was very potential for it to release the poisonous CO_2. Based on the distance analysis (0 meter-1000 meters and 1000 meters-2000 meters) and morphological approach, Sumberejo village is the most vulnerable area in comparison to Batur Village and Pekasiran Village. It was highly affected by the morphological and slope factors. The results of the vulnerability assessment shows Sumberejo village was the area with the highest vulnerability (score: 5.00), Pekasiran village was the area with medium vulnerability (score: 3.80), and Batur village as the area with low vulnerability (score: 3.40). The vulnerability of the community of the research area was highly influenced by its indicators. The capacity assesment shows that the study area was dominated by the capacity of medium level. Furthermore, the village with the dominance of high capacity level was Sumberejo village and the villages with the dominant medium capacity levels are Batur village and Pekasiran village. Sumberjo Village was the most hazardous spatially towards the poisonous gas and was the most vulnerable zone socio economically. However, it had the highest capacity domination among the three. It is because of the availability of the information and education system of disaster among the community.

Keywords: Hazard, Carbon Dioxide Poisonous Gas, Phreatic, Eruption.