ABSTRACT

Dieng is one of the most hazardous areas in Central Java because of the craters and the eruption of volcanic gases. For several centuries, volcanic activity in Dieng has been dominated by phreatic eruptions. The most disastrous occurrence was the Timbang CO_2 emission in 1979 which caused the death of 149 people by its CO_2 volcanic gases emanation. Until now, Timbang crater always emanates CO_2 volcanic gases. Even though Dieng area is hazardous, the people in Dieng are still living in the hazardous areas. Therefore, this research has been done to discuss the origins of CO_2 volcanic gases hazard in Dieng as well as the way Dieng people deal with the hazards.

By using a case study and participatory approach, this research identified the human vulnerability of people living in Batur, Sumberrejo, and Pekasiran village in Dieng as well as disaster experience, risk perception and coping capacity towards volcanic gases. The research used both quantitative and qualitative approach to analyze the results. In order to study human vulnerability and coping capacity within the study area, questionnaires (n=70) and in-depth interviews (n=15) were carried out with the local people of the study area. A purposive sampling was drawn up based on hamlet cluster and *snowballing* techniques were applied to recruit informants. The questionnaires were analyzed by using frequency analysis, chi-square test and ordinal regression analysis using SPSS software. The results of in depth interview were analyzed and described qualitatively.

The research result shows that Simbar, Serang, and Kaliputih hamlets in Sumberejo village were the most hazardous area comparing to other hamlets in the study area. The human vulnerability discussion in this research shows that human vulnerability varies based on socio-economic characteristics and the distance between respondent's location and Timbang crater. The disaster experience and risk perception influence the thinking process and the decision making process of Dieng people especially in disaster risk reduction. For example, the evacuation patterns from 1979 to 2013 disaster shows that the disaster experiences changed as well as people have changed their risk perception based on their experience and knowledge. In addition, the coping strategies that they have are basically based on disaster experiences which transferred from generation to generation within communities. Human vulnerability and risk perception were analyzed using ordinal regression analysis. The results show that the *distance, health impacts,* and *livelihood impacts* can be used as a predictor which influence risk perceptions.

Keywords: *carbon dioxide (CO₂), coping capacity, Dieng Plateau, human vulnerability, volcanic gases*

INTISARI

Dieng merupakan salah satu wilayah yang paling berbahaya di Jawa Tengah karena letusan freatik dan potensi bahaya gas beracun karbon dioksida. Pada tahun 1979, salah satu kawah di Dieng yaitu Kawah Timbang, mengeluarkan gas beracun karbon dioksida (CO_2) dan menyebabkan 149 orang meninggal. Sampai saat ini, Kawah Timbang selalu memancarkan gas beracun. Meskipun kawasan Dieng berbahaya, masyarakat Dieng tetap tinggal di daerah berbahaya. Oleh karena itu, penelitian ini telah dilakukan untuk mengetahui karakteristik gas beracun di Dieng serta kerentanan dan cara masyarakat menanggulangi bencana gas beracun di Dieng.

Dengan menggunakan studi kasus dan pendekatan partisipatif, penelitian ini mengidentifikasi kerentanan manusia di desa Batur, Sumberrejo, dan Pekasiran di Dieng termasuk pengalaman bencana, persepsi risiko dan kapasitas masyarakat dalam mengatasi gas beracun. Dalam penelitian ini, kuesioner (n = 70) dan wawancara mendalam (n = 15) dilakukan dengan orang-orang setempat di wilayah penelitian. *Purposive sampling* disusun berdasarkan cluster dusun dan teknik *snowballing* diterapkan untuk merekrut informan. Kuesioner dianalisis dengan menggunakan analisis frekuensi, uji chi-square dan analisis regresi ordinal.

Hasil penelitian menunjukkan bahwa dusun Simbar, Serang, dan Kaliputih di desa Sumberejo adalah dusun yang paling berbahaya dibandingkan dengan dusun lain di wilayah studi. Diskusi kerentanan manusia dalam penelitian ini menunjukkan bahwa kerentanan manusia bervariasi berdasarkan karakteristik sosial ekonomi dan lokasi. Pengalaman bencana dan persepsi risiko mempengaruhi proses berpikir dan proses pengambilan keputusan dari orang Dieng terutama dalam pengurangan risiko bencana. Sebagai contoh, pola evakuasi dari tahun 1979 hingga 2013 menunjukkan bahwa pola evakuasi berubah sesuai dengan berubahnya persepsi risiko masyarakat. Strategi penanggulangan bencana masyarakat didasarkan pada pengalaman bencana yang ditransfer dari generasi ke generasi dalam masyarakat. Kerentanan manusia dan persepsi risiko dianalisis dengan menggunakan analisis regresi ordinal. Hasil penelitian menunjukkan bahwa jarak, dampak kesehatan, dan dampak mata pencaharian dapat digunakan sebagai prediktor yang mempengaruhi persepsi risiko.

Kata kunci: *gas vulkanik, kapasitas masyarakat, karbon dioksida (CO_2), Dieng Plateau, kerentanan manusia*