

Sistem informasi geografis (SIG) dapat menginformasikan dan mampu menggambarkan fenomena alam yang ada disekitar kita. Seperti penelitian eksplorasi panas bumi yang berbasis informasi spasial. Penelitian ini bertujuan untuk mengembangkan peranan analisis spasial sebagai sebuah metode untuk memodelkan indeks potensi panas bumi (IPP) suatu wilayah khususnya lapangan panas bumi Dieng. Metode *knowledge driven - analytic hierarchy process* (AHP) yang digunakan, dapat dianalisis secara efisien serta menambah pemahaman tentang potensi sumber daya panas bumi di suatu area. Variabel data yang digunakan seperti *normalized difference vegetation index* (NDVI), pusat erupsi gunung api, suhu permukaan, *lineament density*, manifestasi panas bumi, dan alterasi hidrotermal.

Model IPP berdasarkan matriks perbandingan memiliki nilai konsistensi rasio 0,0683 atau diartikan konsisten. Nilai konsistensi tersebut diperoleh dari matriks antar variabel yang memiliki nilai prioritas rata rata berbeda satu dengan lainnya seperti *normalized difference vegetation index* (NDVI) memiliki prioritas rata rata 3,5 %, alterasi hidrotermal 8,7%, manifestasi panas bumi 13,1%, suhu permukaan tanah 13,8%, densitas *lineament* 24,9%, dan pusat erupsi 35,9%. Hasil pemodelan IPP di daerah penelitian memiliki tiga kelas yaitu indeks tinggi dengan cakupan area 2,2%, indeks moderat 23,3 %, dan indeks rendah 74,3%. Area potensi tersebut dikelompokkan kembali berdasarkan indeks tertinggi antara lain zona Pagerkandang, zona Siglagah, zona Pangonan-Merdada, zona Campursari, dan zona Pakuwaja. Evaluasi zona IPP terhadap sumur pemboran memiliki kesamaan. Seperti zona Pagerkandang 22,9% (8 sumur produktif), zona Siglagah 11,4% (3 sumur produktif), dan zona Pangonan-Merdada 57,1% (6 sumur produktif).

Berdasarkan area potensi dan kesamaan evaluasi, *knowledge driven - analytic hierarchy process* (AHP) dinyatakan dapat mejadi sebuah metode acuan dalam pemodelan sebuah lapangan panas bumi.

Kata kunci: Informasi spasial, AHP, Eksplorasi Panas Bumi, Dieng

ABSTRACT

The geographic information system (GIS) can inform and able to describe the natural phenomena around us. Such as research of geothermal exploration based on spatial information systems. The purpose of the research is to develop spatial analysis as a method for modeling the geothermal potential index (GPI) of a region, especially the Dieng geothermal field. The knowledge driven - analytic hierarchy process (AHP) is the fundamental method used to analysis of the potential of geothermal resources in the research area. The variables data in this analysis is normalized difference vegetation index (NDVI), volcano eruption center, surface temperature, lineament density, geothermal manifestations, and hydrothermal alteration.

The GPI model based on the comparison matrix has interpreted a consistent that value of CR 0.0683. The consistency value has owned average priority value different from other variables. Such as the normalized difference vegetation index (NDVI) have the average priority of 3,5%, hydrothermal alteration of 8,7%, geothermal manifestation of 13,1%, surface temperature of 13.8%, lineament density of 24,9%, and volcano eruption center of 35,9%. The GPI modeling results in the research area have three classes. It have consisted high index with area coverage of 2.2%, moderate index of 23,3%, and low index of 74,3%. The potential areas base on the highest index have few zones like Pagerkandang zone, Siglagah zone, Pangonan-Merdada zone, Campursari zone, and Pakuwaja zone. The result of the evaluation the GPI toward the drill well activity have similar area potential. The same area potential is like Pagerkandang zone 22,9% (8 productive wells), Siglagah zone 11.4% (3 productive wells), and the Pangonan-Merdada zone 57.1% (6 productive wells).

Based on potential areas and similarities in evaluation, the knowledge driven - analytic hierarchy process (AHP) can be a reference method in modeling a geothermal field.

Keywords: *Spatial information, AHP, Geothermal exploration, Dieng*