Re-Evaluasi strategi pengembangan lapangan panas bumi Dieng, Jawa Tengah berdasarkan studi geokimia terpadu = Re-Evaluation of development strategy of Dieng geothermal field Central Java based integrated geochemical study

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Abstrak

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Sistem panas bumi vulkanik, bertemperatur tinggi dan liquid dominated Dieng memiliki potensi sebesar 355 MWe meliputi area Sileri, Sikidang-Merdada dan Pakuwaja. Hingga saat ini telah beroperasi pembangkit listrik berkapasitas 1x60 MW disuplai oleh uap dari sumur di area Sileri.

Re-evaluasi strategi pengembangan lapangan panas bumi Dieng secara terpadu dilakukan dengan mengkaji data geologi, data geokimia manifestasi dan sumur dan data geofisika. Kajian geokimia meliputi air, gas, isotop untuk mengetahui karakteristik kimia reservoir, didukung oleh model 2D Magnetotellurik (MT) yang menggambarkan distribusi resistivitas bawah permukaan, model 2D gravitasi yang menggambarkan struktur bawah permukaan, serta didukung oleh struktur geologi, vulkanostratigrafi dan alterasi hidrothermal.

Hasil penelitian menunjukkan bahwa terdapat dua zona upflow utama di Sileri dan Sikidang. Zona asam di Sikidang ditunjukkan oleh keberadaan fluida magmatik, isotop 18O yang enrich dan mendekati zona andesitic water di sekitar sumur DNG-2 dan DNG-8. Zona aman silica scaling di area Sileri berada di sekitar sumur HCE-31 dan DNG-10.

Pengembangan lapangan Dieng selanjutnya masih mungkin dilakukan di area bagian timur laut yang ditunjukkan oleh keberadaan claycap dan heat source pada zona upflow Sileri.
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ABSTRACT
Volcanic geothermal systems, high temperature and liquid dominated Dieng has a potential of 355 MWe covers an area Sileri, Sikidang-Merdada and Pakuwaja. Until currently operates power plants with a capacity of 1x60 MW supplied by steam from wells in Sileri area.

Re-evaluation of Dieng development strategy in integrated to seek the extension of field development by assessing the geochemical data of

manifestations and wells, geophysical data and geological data. Geochemical studies include water, gas and isotope to describe reservoir chemical characteristic, supported by a 2D model of Magnetotelluric (MT) which describes the distribution of subsurface resistivity, 2D model of Gravity depicting subsurface structures, and supported by geological structure, vulkanostratigrafy and hydrothermal alteration.

There are two main upflow zone in Sileri and Sikidang. Acid zone shown at magmatic fluid existence, enrich of 18O and approximate the andesitic water zone in around DNG-2 and DNG-8. Safe Zone of Silica Scaling be in around of HCE-31 and DNG-10.

Furthermore, Dieng development is possible in north-east area which show in clay cap and heat source existence in Sileri Upflow Zone.;Volcanic geothermal systems, high temperature and liquid dominated Dieng has a potential of 355 MWe covers an area Sileri, Sikidang-Merdada and Pakuwaja. Until currently operates power plants with a capacity of 1x60 MW supplied by steam from wells in Sileri area.
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