

Geothermal Potential Site Selection Using GIS in Iran

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Abstract Type: Original Research

Keywords: Geothermal, Site selection, Geographic Information System (GIS)

Background and Aim: The purpose of this study is to find the geothermal potential area in nationwide of Iran.

Methods: Two analytical methods were used for selection queries: the union, and intersecting methods. This study carried out in the scale of (1:500,000) and 9 important data layers are employed. In every made factor maps the study area was classified into two classes; existence of geothermal resource and non existence of geothermal resource and binary maps were generated. These operations can be represented by the following simple equation:

$$S = (F \cup VR \cup VC \cup VM) \cap (HS \cup AZ) \cap (MiS \cup MaS \cup IB)$$

where the \cap and \cup are “AND” and “OR” operations, S is suitable areas and F, VR, VC, VM, HS, AZ, MiS, MaS, IN are faults, Volcanic Rocks, Volcanic Crater, Volcanic Mud, Hot Spring, Alterations Zone, Micro Seismic, Macro Seismic and Intrusive Bodies respectively.

Results: In the current study 18 geothermal prospective areas were identified.

Geothermal Area	Providence	Area (Km ²)	Geothermal Area	Providence	Area (Km ²)
Sabalan	Ardebil	13037	Mahallat_Esfahan	Esfahan_Markazi	13648
Damavand	Tehran	4648	Zanja	Zanja	3285
Khoy_Maku	Azerbaijan garbi	3257	Avaj	Hamadan	4283
Sahand	Azerbaijan shargi	3174	Kashmar	Khorasan Markaz	7107
Bazman	Systan baloochestan	8356	Ramsar	Gilan	5532
Taftan	Systan baloochestan	4310	Amol	Mazandaran	1697
Tabas_Ferdoos	Khorasan Jonoobi	46628	Baft	Kerman	11525
Khor	Esfahan	2334	Minab_Bandar abbas	Hormozgan	3191
Tekab_Hashtrood	Azerbaijan garbi	4639	Lar_Bastak	Hormozgan	4191

Discussion and Conclusions: Totally 9% of Iran has defined as a geothermal energy potential sites. Further detailed field investigations are recommended in every potential site. The designed model in GIS is a dynamic model and can be improve by adding new data.