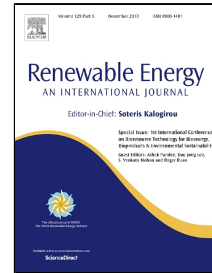


Accepted Manuscript

Establishment of Enhanced Geothermal Energy Utilization Plans: Barriers and Strategies

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PII: S0960-1481(18)30924-8

DOI: 10.1016/j.renene.2018.07.126

Reference: RENE 10400

To appear in: *Renewable Energy*

Received Date: 06 April 2018

Accepted Date: 26 July 2018

Please cite this article as: Shu-Yuan Pan, Mengyao Gao, Kinjal J. Shah, Jianming Zheng, Si-Lu Pei, Pen-Chi Chiang, Establishment of Enhanced Geothermal Energy Utilization Plans: Barriers and Strategies, *Renewable Energy* (2018), doi: 10.1016/j.renene.2018.07.126

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1 **Establishment of Enhanced Geothermal Energy Utilization Plans:**

2 **Barriers and Strategies**

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8 **Abstract**

9 Geothermal energy has received tremendous attention as a largely untapped renewable resource that does
10 not produce significant CO₂ emissions during electricity generation. Worldwide installed capacity of
11 geothermal energy plants has reached 14.3 GWe in 2017. However, widespread adoption of geothermal
12 technologies should consider its potential environmental impacts. In this study, we first review the current
13 state-of-the-art enhanced geothermal systems around the world, especially the United States, Philippines,
14 Indonesia, Turkey and New Zealand. Then, we address the challenges and barriers to its adoption from
15 the institutional, regulatory, technological and financial aspects. We also propose several strategies to
16 implement geothermal energy plans, including (1) establishment of clear national energy utilization
17 policies, (2) consolidation of geothermal laws and regulations, (3) engagement in geothermal potential
18 assessment and periodic maintenance services, and (4) provision of fiscal incentives, financial supports
19 and guarantees. Finally, we illustrate the implementation plans and business model of enhanced
20 geothermal system deployment to conduct a demonstration plan for geothermal energy utilization. A case
21 study of geothermal utilization in Taiwan, i.e., the Chingshui geothermal field, was discussed.

22 **Keywords:** enhanced geothermal system; key performance indicators; strategic environmental
23 assessment; comprehensive performance evaluation; Chingshui geothermal field; business model.

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