



The Geothermal Potential, Current and Opportunity in Taiwan

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Located in the west Pacific Rim of Fire, Taiwan possesses rich geothermal resources due to volcanic activities and rapid uplifting of plate collision. Based on available data prior to 1980, Taiwan may have about 1 GWe of potential shallow geothermal energy, which is less than 3% of the national gross power generation. A 3-Mw pilot power plant, therefore, was constructed in 1981 and terminated in 1993 in the Chingshui geothermal field of Ilan, northeastern Taiwan. Recently, one of the National Science & Technology Program (NSTP) projects has been conducting research and reevaluating the island-wide deep geothermal energy. Four hot potential sites have been recognized. They are: (1) Tatun Volcano Group of northern Taiwan; (2) I-Lan Plain of NE Taiwan; (3) Lu-Shan area of Central Taiwan; and (4) Hua-Tung area of eastern Taiwan. We found that the geothermal resource in Taiwan may be as high as 160 GWe, with 33.6 GWe of exploitable geothermal energy. There are no any commercial geothermal power plants until now in Taiwan, although the potential is great. However, geothermal energy has been listed as one of major tasks of National Energy Program, Phase II (NEP-II) in Taiwan. We will conduct more detailed geothermal energy surveys on some proposed hot sites and to construct an EGS pilot geothermal plant with 1 MWe capability in a few years.

Currently, there are three nuclear power plants, named No. 1, 2 & 3, in operations, which produce 16.5% gross generation of electricity and one (No. 4) is under construction, but is stopped and sealed now in Taiwan. Furthermore, the life-span of 40-year operation for those three power plants will be close-at hand and retire in 2018-2019, 2021-2023 and 2024-2025, respectively. Therefore, to find alternative energy sources, especially on the clean, renewable and sustainable ones for generating electricity are emergent and important for Taiwan's government in next few years. Among various energy sources, geothermal energy can be as base-load electricity and offers an opportunity for a country with naturally free-resource and less dependence on fossil fuel. However, development of geothermal energy has been stopped for more than 30 years, and currently no working geothermal power plant existed in Taiwan. To jump-start the geothermal exploitation rather than solely rely on knowledge, we also need to introduce the techniques from outside of this country.