Proceedings World Geothermal Congress 2010
Bali, Indonesia, 25-29 April 2010

The Overlapping of Land Use in Geothermal Development in Indonesia: Problems and the Solutions

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Keywords: land use, conservation area, protected forest, national park

ABSTRACT

Indonesia has huge geothermal resources which are mostly associated with volcanic systems are located in protected areas.i.e. conservation forests or national parks. All activities are forbidden at th areas regarding the current forestry regulation. While utilization and development of the geothermal resources in the areas will create economic benefits but the regulation remains as barriers/constraints of the development, so this contradictions needs to be solved soon.

One of methods to solve this problem was creating memorandum of Understanding (MoU) between forestry Department and local government. This method had been implemented by a local government of west lampung district, Lampung Province, Indonesia in the case of sekincau suoh geothermal area. This paper will share and explain the experience from local government of west lampung district to find a win-win solution in solving the overlapping of land use in sekincau suoh geothermal area.

1.INTRODUCTION

Sekincau Suoh geothermal area, located in Sekincau mountain and Suoh valleys of the Bukit Barisan Mountains. Geothermal research in this area has been conducted since 1972, including geological surveys, geochemical and geophysics. The research shows that the Sekincau Suoh has posible reserve about 430 MW (Presentation of Evaluation Working Area (WKP) Sekincau Suoh, Ministry of energy and mineral resource 2008).

The location of geothermal prospect areas Sekincau Suoh is part of the national park area of Bukit Barisan Selatan (TNBBS). But based on the Law No. 41/1999, it does not allow the execution of the activities of geothermal energy development in national park areas, especially in the core zone and forest zone. On the other hand the local government, especially West Lampung district, is expecting Sekincau-Suoh geothermal prospect could be developed to support regional development.

West Lampung has the administrative area of 495,040 ha and ± 71.38% of it is a forest area. Because of the natural resources partially located in the forest region, and to develop geothermal field requires a relatively less open land, then it makes the geothermal potential difficult to develop. Moreover electrification ratio in Lampung province had reached 47% (PLN Lampung area in2007).

To be able to use the geothermal potency, the legal reference is needed to do the execution of exploration or exploitation activities in this region. Therefore, the local government of West Lampung has initiated to solve the problem through create the Memorandum of Understanding (MoU) between Forestry Department and local government. The cooperation include agreements that may be useful for both parties (the Department of Forestry and the Government of West Lampung district) such as building the access to Suoh prospect area, doing collaboration in of Sekincau Suoh prospect area and supervising the National Park area around the area of geothermal prospect.

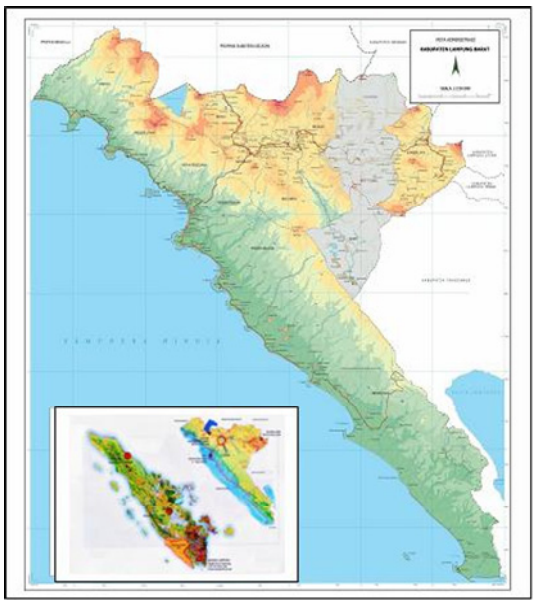


Figure 1: Map of West Lampung

2.SEKINCAU-SUOH GEOTHERMAL FIELD

Geothermal research that have been done in Sekincau Suoh area include geological, geophysical, geochemical surveys, study of model estimation and geothermal potential. The study shows the distribution of the complex manifestations Sekincau - Suoh can be divided into 2 groups, namely group Balirang and Sekincau-Suoh Valley group.

Sekincau-Balirang group consisting of crater Balirang, Pond Asri, Gemorah Betri, and Gemorah Bacingot. In Belirang crater, the water temperature of crater lake is 38ºC and pH is very acidic, fumaroles/solfatar (98ºC, pH = 1), hot mud, and rocks alteration very broad. In the Pond, there is a lake Asri (former crater) with water temperature is 38ºC and pH 3-5, fumarole / solfatar (96º C), and altered rock. In Betri appear a warm water lake (35º C, pH = 5), solfatar / fumaroles (92º C, pH = 2), hot mud, and altered rock. In Bacingut, there are craters filled with water and bursts of steam temperature 100 º C, solfatara, and altered rock.

Valley Suoh Group consists of fumaroles, hot mud, and rocks alteration in north valley around G. Loreng and a collection of hot springs, fumaroles, hot mud, and rocks alteration in Sri Rejo village, in the south. Temperature of surface manifestation in this region varies between 63 º C to

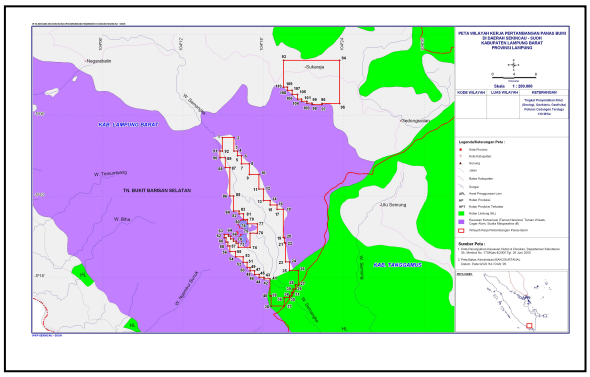
99 ° C. Explosion craters are hydrothermal or freatik in this valley that forms the northern lakes. Manifestations in Sri Rejo create the straightness form from north to south following the topography to the north. From the fluid chemistry of hot water in Sekincau-Suoh, the reservoir temperature estimation around 250 ° C. (Presentation of Evaluation Working Area (WKP) Sekincau Suoh, Ministry of energy and mineral resource 2008).

The results of geophysical studies show the location of conductive zone is in Sri Rejo-Suoh area to the northwest following the river Wai Semangko in Bumi Agung and to the north east in the area Belirang and Bacingut

3.CONSTRAINS OF GEOTHERMAL UTILIZATION IN SEKINCAU SUOH

The potential of geothermal field makes Sekincau Suoh prospective to be developed, however the overlapping issues of land became the main obstacle. Location of Sekincau suoh in the category of inclave, means that the location is surrounded by forest areas. Access to the development of geothermal sites was constrained because of no permission from the forestry department. Permit must be obtained in order to develop sekincau suoh geothermal area, not only for WKP area, but also to built the access roads.

Based on the geoscience study, local government has proposed the establishment of working area in Sekincau Suoh about 13,924 ha. But part of the area is overlap with Bukit Barisan National Park South (TNBBS) and protected forests. The existence of overlapping land is causing Sekincau Suoh geothermal areas cannot be determined as geothermal working areas.



Overlapping maps of land

3.1 Effort to Overcome Obstacles

In order to overcome these fields overlap, the Government of West Lampung district appealed the Minister of Forestry of Indonesia to get a permission to utilize the geothermal potential in the region TNBBS. But according to the provisions of Law No. 41/ 1999 about Forestry and the Law No.5/1950 about the conservation of biological natural resources and their conservation, such permission can not be published. As an alternative, it is suggested that local government makes a comprehensive of feasibility study about geothermal development planning (environmental impact assessment).

West Lampung district governments in recent years have give a letter of intention and proposal of development of Geothermal Potential Sekincau-Suoh in term of to get the consideration and approval from the minister of forestry to use the area. Without the approval from Forestry Department, the Ministry of Energy and Mineral Resources will not give the permission to develop the Geothermal Working Area of Sekincau suoh. As an initial step, the local governments made an inventory of western Lampung forestry data includes color data currently presented as a land WKP, existing infrastructure, expansion of areas if need, types of flora, fauna, social, cultural and other genetic resources available in the forest area. The existing data is examined in comprehensive by local governments before the western Lampung raise the review to the forestry department. After the review given to the forestry department, local governments have mandate to conduct a study together with the forestry department. From the studies carried out by the forest department and local governments, the results show that the geothermal area prospect need forest area as rainfall catchment, but the forest area where the WKP are located was critical and require the solution. Because the location of geothermal areas sekincau suoh is inclave, then the present access only a footpath that built by the local community. Since the footpath that made by the local community quite a lot, the forest condition around Sikincau Souh is quite concern.

If we are only guided by Law No.41/1999, the geothermal impression is not good and the space for develop the geothermal area will be limited. Therefore, it is necessary to make a better understanding that benefit both parties (win-win solution), which means profitable for geothermal sector as well as not harming the forest. Alternative solution is formulated so the mining sector can keep continue to take place for geothermal development, but the sustainability of forests protecting can also be maintained.

According to Law No.41/1999, the central government has rights to determine the state forests and make a plan to use the forest, and base on the Law No. 24/ 1992 about Spatial Planning, the central government is need to pay attention in plan of land usage. While Law No. 22/1999 of Regional Autonomy gives a power over various natural resources to local governments (80%). This will give the opportunities for developing the potential local resources, including the potential of forests.

This is related with the implementation of the concept of regional autonomy (Law No. 32/2004) in Indonesia, so that each region should be able to manage the resources owned in order to increase revenue and enhance regional welfare.

Government of West Lampung district trying to make a breakthrough in sekincau suoh geothermal development include the:

- Development of geothermal potential in the production forests and protected forests can be done through the process of borrowing area use forests; this is regulated in Forestry minister No.P.64/Menhut-II/2006).
- Development of geothermal potential in conservation forests can collaborative management by the regulated in the forestry minister No.P.19/Menhut-II/2004) can also be reached by the change of forest functions listed in article 19 of Law No.41 of 1999.
- Combination of regulatory and policy considerations with the study from forestry department and West Lampung local governments produce two agreement.

The first agreement is a West Lampung local government willing to make the access road to the geothermal potential sekincau suoh with the budget from local government (Anggaran Pendapatan dan Belanja Daerah,APBD), later the road will be used for nature tourism access, doing the geothermal research and corporation in forest patrol. By build the infrastructure, the local community is expected to use it and not to make a new footpath so it will not continuing the damage of the forest condition.The second agreement, the potential geothermal area that located in forest areas will be determined as a forest utilization zone area. In this zone forest area, the local government will cooperate with forestry department to observe and maintain the forest resources TNBBS either for timber and non timber, the nature tourism, the hydrological function of forests as protection against erosion, biodiversity as genetic resources, protection of species diversity and ecosystem diversity as well as future benefits (option value, quasi-option value). Forestry departments and local governments make a joint program in research of geothermal potential development of sekincau suoh in the TNBBS zone. The program includes a preliminary survey and study of geothermal potential sekincau suoh, the area of TNBBS zone that could be utilized for exploration and to define the WKP area for geothermal development by the Department of Energy and Mineral Resources. In addition both parties also agreed to conduct the rehabilitation and enrichment of plants and wildlife in the TNBBS area affected by geothermal potential sekincau suoh.

The results of this program will be evaluated annually to monitor, guide and improve the implementation according to the planning and elegibility as well as government policies. From the forest conservation program conducted is expected to improve the quality of forests, and the forestry departments can involve the results of these conservation programs as an environmental service and forestry Clean Development Mechanism Program CDM.

The results of a study conducted by the forestry department and the Government of West Lampung district has stated in the cooperation agreement (MoU) which have been signed by the Head of Bukit Barisan National Park South and Regional Head of West Lampung known by the Director General of Forest Protection and Nature Conservation. This agreement is also used as a consideration by the Department of Energy and Mineral Resources to establish the WKP of Geothermal Potential sekincau suoh.

The experience that has made by local government of West Lampung, hopefully can be applied in other regions in Indonesia in term to regional development based on the principle of win-win solution. From that scheme, the forests functions as a buffer of life, the location of both soil and water conservation, biodiversity conservation and ecosystem can be achieved and the potential of geothermal can be utilized along with with forestry activities.

CONCLUSION

Department of Forestry supports the development of sekincau suoh geothermal area because the area is in the utilization zone of South Hill National Park (TNBBS), and the pattern and scheme activities are a win win solution between both parties. Collaboration schemes and activities of the forestry department and local government of western Lampung include the forest conservation, joint patrols, the development of nature tourism and the development of geothermal potential. Development of geothermal potential for electrical energy supply in forrest area have been made the Government of West Lampung district, and also expected to be implemented in other areas in Indonesia.

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