Retrofit of mature and marginal oilfields in the Peruvian jungle into geothermal power generation fields

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ABSTRACT

Some Peruvian oilfields such as block 192 (formerly 1AB) and block 8 located in the jungle have many oil wells under production, in both oilfields, oil production began in 1974. Currently, somewells are closed, others producing with 98% of water cut nearby to close due to high lifting cost. The project, managedby the Peruvian Institute of Oil & Gas (IPEGA-UNI)of the National University of Engineering, aims to convert these mature and marginal oilfields into geothermal electricity generation fields, the fluids that are extracted have an average well temperature of 100 ° C at the wellhead, due to the fact that the sedimentary rocks in the jungle basins were deposited over rocks igneous or magmatic, those rocks were in contact with liquid magma inside the earth, consequently, they are the main means of transporting heat to the earth's surface generating different degrees of geothermal gradient, oil reservoirs are close to rocks igneous, with an average temperature of 120 °C at 3000 meters deep. Hence, In the geothermal industry, binary cycle technology was developed that uses low enthalpy geothermal fluids in a temperature range of 80 ° C to 180 ° C, within this range is the water produced together with oil. The project goes further, with a minimum of wells tocontinue extracting the oil to use it in a boiler as fuel and to increase the temperature of the system including the boiler combustion temperature for the same, maximizing the existing energy in the field, combustion at a lower temperature, then inject it through a well into permeable formations, there are wells and formations in the field, in order to avoid discharging CO2 into the environment and avoid climate impact. Adding a new resource to the country's energy matrix.Additionally, carbon credits maybe used to make the project financially profitableThe most important aspect of the proposal is that the infrastructure will continue to be used (wells, highways, houses, airports, etc., which cost billions of dollars of infrastructure). The jungle has huge natural resources of quality and variety (fruits, woods, various endemic medicinal plants, lakes, brooks for fish farms, etc.) these resources by having electricity available to existing native and foreign communities in these lots, prior training to avoid unnecessary deforestation and avoid damage to the environment these resources will be exploited industrially and the products will be extracted within Peru and exported abroad through airports.

The native and foreign communities will improve their quality of life, migration to the cities will be avoided when the fields are closed, and the oil workers will continue working without fear that the resource will be depleted.