

NEW LAW ALLOWING GEOTHERMAL PROJECTS IN PROTECTED AREAS IN NICARAGUA

Ariel Zuñiga, Nelly Harding

Nicaraguan Institute of Energy (INE)

Regulatory Institution

Areas of Geothermal Development and Environmental Control

Managua

NICARAGUA

azuniga@ine.gob.ni, nharding@ine.gob.ni

ABSTRACT

The Country's Geothermal Potential was demonstrated through investigations led by the government of Nicaragua supported by organizations like the United Nations. These investigations started in the late 60's, which prioritized the development of the geothermal fields of Momotombo and San Jacinto looking for forms of generating electricity that assure independence from fossil fuels. From the late 60's to 1996 there were no environmental laws that regulate the environment, even though there were decrees in the 90's that had identified the harm caused to the environment by industrial exploitation of geothermal energy and other industries without safeguards for the environment. The need to create a law that specifically regulated the exploration and exploitation of Nicaragua's geothermal potential manifested when the production of the active fields started to deteriorate showing that regulation of the activity was needed to assure sustainability of the resource and the environment. The regulation over protected areas was an obstacle for developing Nicaragua's geothermal potential. A reform was necessary in order to promote the activity. With this reform the principal obstacle was removed and now it is apparent that all instances have to work together to facilitate investment since it is a national priority. Through time the strategies of the government to develop geothermal energy were in a different agenda than that of protecting the environment. Finally it seems to be a clear comprehension that in order to achieve sustainability of the resource and economic independence from fossil fuels, it is of the utmost importance to assure control over the rate of exploitation. There are significant environmental benefits that can be obtained from the proper development of geothermal reservoirs even in protected areas. It is a necessity to have technical and environmental legislation go hand in hand complementing each other to achieve the country's goal of developing its geothermal potential and achieving independence from fossil fuels in its energy matrix.

1. INTRODUCTION

The government of Nicaragua with the help of the United Nations started in the end of the 60's the first studies and investigations to determine the geothermal potential of the country. The first investigations were made in the southeastern part of the country and were followed by the perforation of deep wells in Momotombo, culminating with the operation of the first termoelectrical unit of 35 MW installed in 1983, and a second one in 1989. From Momotombo the next site of interest was San Jacinto with seven deep wells perforated from 1993 to 1995, three of those were production wells with an estimated potential of 25 MW. At the moment the installed capacity in San Jacinto is only 10 MW. Studies of the pacific coast resulted in the Master Plan for Geothermal Development of Nicaragua that estimates the countries potential to be 1500 MW.

2. EARLY EXPLOITATION OF GEOTHERMAL RESOURCES: LEGAL STATUS

In the first stages of development, in the beginning of the 70's, the legislation for exploitation of natural resources was regulated by the "General law for the exploitation of natural resources", approved in 1958. This law regulates specifically, mining and hydrocarbons and did not take into account geothermal resources. The state own National Electrical Company of Power and Light (ENALUF), that later, became ENEL, started to develop the geothermal resources of Momotombo prioritized by the United Nations studies. This company was in charge of carried out generation, transmission and distribution and had the responsibility of planning and building all types of energy plans.

The Constitution of Nicaragua says that the State is the owner of all natural resources declared of national interest. The main concern at the time for developing geothermal resources was to find a source for the generation of electricity that was available in the country and would give economic strength that would translate into better quality of life. At the time environmental considerations were not taken into account, the focus of the operation was on the training of technical personnel and the development of the energy potential, leading to damage on both the reservoirs and the ecosystems.

3. LEGAL REFORMS

On October 18th, 1997, the State of Nicaragua through its national assembly, approved the Law for the Electric Industry (IEL), creating the conditions to open the energy sector to private investors. According to this law, the national electric company, ENEL, was divided into different sectors; generation, transmission and distribution companies. The transmission and two hydroelectric plants belong to the State, the rest of the generation plants and the distribution were sold to foreign private investors.

IEL, created the following institutions; The Nicaraguan Institute of Energy (INE) and The National Energy Commission (CNE). INE, as the regulatory entity of the energy sector, is in charge of supervising the quality, efficiency and continuity of the electricity in Nicaragua. CNE does the planning, promoting and energy policy making.

On October 24th, 2002, the country's Law of Exploration and Exploitation of Geothermal Resources, was approved. It designates INE to regulate the activities of exploration and exploitation of the geothermal resources and to overview bidding process of the geothermal field concessions.

4. ENVIRONMENTAL SAFEGUARDS

The development of the countries geothermal potential was aided with the publishing of Law 443; this law took in to account all aspects of development, including safe guards for the environment and the reservoirs, starting with the definition of Rational Exploitation that reads “The one that efficiently achieves sustainability of the resource and the protection of the environment”.

Law 443 also indicates that in order to guaranty a safe geothermal exploration and exploitation the Nicaraguan Institute of Energy (INE), together with the Ministry of the Environment and Natural Resources (MARENA) has to develop procedures to aid in the regulation and control of the activity. The law also states that the developing operation can be stopped if the company puts the resource, human life, property, or the environment at risk. This statement assures that even though it is of national interest to develop the country’s geothermal potential, it has to be done in the right way, to safeguard the interest of the nation and to ensure the sustainability of the resource and the environment.

Legislators and government officials had not taken into account the fact that most of the country’s geothermal potential was located in protected areas. These sites were declared protected prior to the creation and publishing of the geothermal law (Law 443), with the idea to protect special ecosystems that were thought to be unique in nature and an opportunity to save the forest that still existed in those areas.

The General Law to Protect the Environment and Natural Resources in Nicaragua (Law 217) approved in 1996, clearly states that the only activities allowed in protected areas are ecotourism and scientific studies. Article 106 reads “The renewable and non renewable natural resources that exist in legally protected areas will not be subjected to exploration and exploitation”. This article made it impossible to do any development of geothermal areas due to the fact that the areas of interest, volcanic areas and crater lagoons, were declared Natural Reserves in 1983 (Barahona, 2001) and then by presidential decree (Decree 42-91) in 1991, Protected Areas. In Figure 1 the extent of the protected area in reference to the geothermal site can be appreciated.



FIGURE 1: Source: Geothermal Master Plan

Once the government realized this shortcoming, INE and MARENA started working on an amendment to article 106 of law 217. This article was corrupted by the insertion of other activities different than geothermal, to be allowed in protected areas, this made its approval difficult, even

though the activities in question are in tune with the protecting sense of the law. Faced with this problem, legislators found a way to facilitate the approval of a law that would allow geothermal exploration and exploitation in protected areas, specially when the first round of bidding was over, and two projects were already signed and waiting for a permission to start.

The Law for the Reform of law 443 (Law 594) was approved in September 2006. This law reforms article 7 of law 443 that states that the exploration and exploitation of geothermal resources is of national interest, adding a second paragraph that reads as follows “It is permitted to explore and exploit geothermal resources. In case they are located in protected areas, an environmental permit must be obtained and an Environmental Impact Assessment Study must be made before any activity begins. The article also defines that 3 percent of the cost of the environmental study is to be destined to MARENA for the monitoring and control of the elaboration of the study. This amount is to be paid by the concession owner.

5. COMPLEMENTARY LEGISLATION

There is a complementary legislation in Nicaragua that dictates actions to be made in order to obtain an environmental permit in protected areas. There is also a list that contains, by decree (45-94), which projects are to have an Environmental Assessment Studies (EIA). Geothermal exploration and exploitation are on that list.

Protected Areas have special legislation that regulates the management of the reserve. Decree 14-99, contains categories of the reserves and the tools to manage the activities and the reserve. Among these tools we find Annual Operation Plans (POA) and Management Plans. In order to do start geothermal exploration in protected areas there has to be a Management Plan. This plan studies the category of the area, dictates the buffer zones, nucleus of the reserve, studies the flora and fauna, the abiotic elements, and at the end dictates what can be done and in what areas.

In the absence of this plans there can be POAs, this are elaborated annually and manages the way the activities are to be done in protected areas. With a POA the necessary elements to manage the reserve are stated and can be taken in to account by the company while making the EIA.

To safeguard the environment these activities are regulated separating functions among the organization in charge. For example MARENA Direction of Protected Areas formulates the Terms of Reference for the Management Plan and for the POA, an independent consultant does the Plan and presents it to MARENA where a different group from the Protected Areas Direction analyses the study results. At the same time the communities that are to be affected are consulted and their opinions are taken into account, until then, the Plan is approved. At the end of this process is MARENA the one that has to approve the Management Plans.

POAs, on the other hand, because they have to be reviewed annually, are approved by MARENA, without consulting the communities; it makes the approval time shorter and allows the exploration actions to begin once the EIA is completed. This allows activities within the reserves and dictates the best way to execute them with the protection of the natural resources in mind.

In order to give an environmental permit in protected areas, another dependency of MARENA, the Direction for Environmental Quality (DGCA), must obtain a permit allowing that type of activity in the reserve area, from the Direction of Protected Areas. The DGCA, aided by INE, must then elaborate Terms of Reference for the developing of the Environmental Impact Assessment Studies. The study must be done by a consultant hired by the company soliciting the permit, then it must be submitted to MARENA who consults it with INE and the Municipalities to take in to account their opinion and expertise. The Ministry of the Environment and Natural Resources is the only one that by law can extend an Environmental Permit.

Our legislature separates the activities of exploration and exploitation of geothermal resources in order to protect the environment due to the differences in areas covered, intensity and impacts of both phases. This assures us of a well manage development of the activity and makes it easy to detect impacts, risk, allowing proper mitigating measures.

Some of the initial activities of geothermal exploration are common with those needed to be done for the base line description of the area in the Management Plan of the Reserve and the EIA. These studies are non-invasive, and present a proper picture of the resource, for example geophysical and geochemical studies tells us the composition of the soil, the presence of geothermal manifestations on the surface, the presence of gaseous components related to the exploration of the resource, and many others things than helps us to know what the conditions of the site prior to the development of the activity, and how it can be altered by it.

6. NEW ENVIRONMENTAL REFORMS IN PROGRESS

MARENA has a project to reform decree 45-94 of Environmental Permit, modifying the projects list and the level of evaluation. INE has proposed after evaluating the process of geothermal exploration that the base of non-invasive studies require an environmental evaluation, and the invasive part of EIA, as well as the exploitation phase. These will allow the companies to collect data for the project while collecting data for the EIA and the Management Plan expediting the exploration process and at the same time safe guarding the environment. This reform is expected to be approved in the first trimester of 2007.

7. CONCLUSION

It has been hard for Nicaragua as for many third world countries to sustain protected areas, most of which have existed in paper only, due to the shortages in control measures because of budget deficits. MARENA's budget gets shorten by legislators annually. Meaning that the necessary steps to protect, sustain, monitor and develop the management plans for the protected areas become harder to accomplish. For most of the protected areas there are no Management Plans, and very little supervision. These areas have suffered damaged by deforestation, advancement of the farm lands, erosion, and degradation, mostly because of anthropogenic intervention.

The development of geothermal plants in protected areas can result in a symbiotic relationship in which both parties are benefited. Geothermal energy is clean; the resource needs to protected for the sustainability of the project. Trough the implantation of geothermal projects the reserves may develop reforestation plans, human development actions to better the quality of life of the local population, new attractions for ecotourism, security personnel for the project area that can ensure also the protection of that part of the reserve, the development of the POAs and Management Plans is necessary to assure sustainability of the areas, and the assurances for the company of the country's interest of developing its geothermal potential to change the energy matrix and end the country's dependence on fossil fuels.

REFERENCES

Decree 45-94 Environmental Permit an Environmental Assessment, 1994. Ministry of the Environment and Natural Resources. Gaceta . Managua, Nicaragua.

Decree 42-91. Declaration of Protected Areas for Volcanic Sites, Crater Lagoons and Mountains. Ministry of the Environment and Natural Resources. Gaceta 207, nov. 1991. Managua, Nicaragua.

Barahona, Tupac, 2001: Envío Magazine No. 234. Protected Areas, Natural Resources, With or Without people?. Central American University, UCA. 2001. Managua, Nicaragua.

Law 217. General Law of the Environment and Natural Resources. La Gaceta No.105. 1996. Managua, Nicaragua.

Law 594. Reform and Additions to Law 443. Law for the Exploration and Exploitation of Geothermal Resources. La Gaceta 173. September 2006. Managua, Nicaragua.

Law 443. ` Law for the Exploration and Exploitation of Geothermal Resources. La Gaceta 222. November 2002. Managua, Nicaragua.