

## **GEOHERMAL PROJECTS IN NATIONAL PARKS IN THE PHILIPPINES: THE CASE OF THE MT. APO GEOHERMAL PROJECT**

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### **ABSTRACT**

The Philippines has an abundance of geothermal resources that can be commercially developed. Most of these resources are located in environmentally critical areas where there are special features of the ecosystems that need to be managed and protected. Many of these areas were also considered ancestral domain of local tribes. Geothermal projects need to undergo an Environmental Impact Assessment (EIA) process before exploration and development activities can proceed. PNOC Energy Development Corporation (PNOC EDC), a government owned and controlled corporation, has developed geothermal projects in two National Parks, namely: the Mt. Apo National Park located in the island of Mindanao and the Mt. Kanlaon National Park located in the island of Negros. The Mt. Apo geothermal project went through deep controversy for three unique reasons: Mt. Apo was a national park, the mountain was considered the ancestral domain of indigenous tribes, and there was increased awareness, concern and militancy for the environment at that time. Surface exploration started in 1983. Deep exploration wells were drilled in 1987-1988. The project was stopped in December 1988. Opposition came from environmental groups, non-government organizations (NGOs), religious clergy, and tribal groups. PNOC EDC and the government worked together to understand and address the legal, environmental, socio-cultural and economic issues. After lengthy consultations and information dissemination, the project was given an Environmental Compliance Certificate in January 1992. Numerous conditions were imposed for the geothermal development to proceed. In spite of this, however, international financing institutions like World Bank, Overseas Economic Cooperation Fund of Japan and Asian Development Bank kept away from the project, so PNOC EDC had to utilize internally generated funds for steam field development and enter into build-operate-transfer (BOT) contract for the power generation facilities. The first 52 MW geothermal plant was completed in March 1997 and another 54 MW plant went into commercial operation in June 1999. After all the controversy, the project would later become an environmental showcase for geothermal operations.

## 1. INTRODUCTION

Triggered by a worldwide oil crisis in the 1970s, the Philippine government launched an accelerated program to utilize indigenous oil, coal, nuclear, hydro, geothermal and non-conventional sources of energy to reduce the country's dependence on oil imports. Geothermal development became a success story when the Philippines, with 1,905 MW of installed geothermal power capacity in 1999, became the second largest producer of geothermal energy next only to the United States.

The Philippines lies in the volcanic belt known as the Circum-Pacific rim of fire where a considerable number of high quality geothermal resources can be found. Developing most of these geothermal resources is a complex undertaking because they are located in environmentally critical areas where there are special features of the ecosystems that need to be managed and protected. Some areas are also considered as ancestral domain of indigenous tribes.

Geothermal projects are classified as environmentally critical projects (ECPs) because they are mostly located in environmentally critical areas (ECAs) and, thus, are governed by the law on Philippine Environmental Impact Assessment (EIA) System issued in 1977. The EIA system mandated the acquisition of an Environmental Compliance Certificate (ECC) for ECPs. In 1992, Republic Act No. 7586, or the National Integrated Protected Areas System (NIPAS) Act, was passed, which provided for the establishment of protected areas. In 1997, R.A. 8371, or the Indigenous Peoples Reform Act, was enacted to establish the rights of the local tribes to their ancestral domain.

PNOC Energy Development Corporation (PNOC EDC), a subsidiary of the government-owned and controlled Philippine National Oil Company (PNOC), is at the forefront of geothermal exploration, development and production in the country. PNOC EDC currently operates a total of 1,149 megawatts of geothermal production fields located in four geothermal areas: 1) Tongonan geothermal area in the island of Leyte, 2) Palinpinon geothermal area in the southern part of the Negros Island, 3) Bacman geothermal area in the southern Luzon provinces of Albay and Sorsogon, and 4) Mt. Apo geothermal area in No. Cotabato in Mindanao. In addition, PNOC EDC is currently developing the 49 MW Northern Negros Geothermal Power Project in the Mt. Kanlaon area in the northern part of Negros Island which is scheduled for commissioning in February 2007. Among these geothermal development projects, the Mt Apo and the No. Negros projects underwent a tedious process of approval and acceptance before development activities could proceed because of their being located in national parks.

## 2. GEOTHERMAL DEVELOPMENT IN THE MT. APO NATIONAL PARK

### 2.1 The Mindanao I and Mindanao II Geothermal Power Projects

The first geothermal power project of PNOC EDC in the Mt. Apo geothermal area with an installed capacity of 52 MW started commercial operation in March 1997. A second geothermal plant with an installed capacity of 54 MW started supplying to the Mindanao grid in June 1999. The plants were not officially referred to by PNOC EDC as Mt. Apo geothermal project but rather as Mindanao I and II Geothermal Power Projects because of the past controversy generated by the national park issue. The two geothermal plants generate about 12% of the electricity requirements of the Mindanao power grid. They play a major role in the power supply situation in times of droughts because Mindanao is predominantly hydro-based.

The geothermal project is situated in the northwestern flank of Mt. Apo and occupies about 112 hectares out of the 701 hectares total area designated as geothermal reservation. Its geographical location offers power security advantages to the growth area of southern Mindanao, particularly to the cities of Davao and General Santos.

## **2.2 The Mt. Apo National Park**

The Mt. Apo National Park covers parcels of lands situated in the municipalities of Magpet and Makilala and the City of Kidapawan in the Province of North Cotabato, in the municipalities of Bansalan and Sta. Cruz and the City of Digos in the Province of Davao del Sur, and in the City of Davao. The major mountain ridges in the park are Mt. Apo, Mt. Sibulan and Mt. Talomo. The peak of Mt. Apo has an altitude of 3,142 meters (10,311 feet) above sea level, the highest in the Philippines. Mt. Talomo is 2,674 meters above sea level at its highest while Mt. Sibulan has an elevation of 1322 meters above sea level.

Mt. Apo was declared a National Park as early as May 1936 with an initial area of 76,900 hectares. Subsequent Presidential Proclamations reduced the park area with the conversion of some lands for agricultural purposes. In January 1992, under Presidential Proclamation No. 853 issued by President Corazon C. Aquino, an area of 701 hectares was excluded from the park area as geothermal reservation. Under R.A. 9237 otherwise known as the Mt. Apo Protected Area Act of 2003, the effective park was reduced to 54,974 hectares because peripheral areas were established as buffer zones. (Please refer to Annex 1 for the location map.)

The United Nations placed Mt. Apo on its list of National Parks and Equivalent Reserves in 1982. In 1984, the Association of Southeast Asian Nations (ASEAN) named it an ASEAN Heritage Site.

Among the forest stands left in the country, Mt. Apo was home to a number of rare flora, such as waling-waling orchids, and rare fauna, such as the Philippine eagle. The Bagobo, Manobo and Klata tribes consider Mt. Apo as their ancestral domain and their home since time immemorial. These tribes have lived around this mountain that they consider also as their sacred ground, their place of worship and burial ground of Apo Sandawa, their great forefather. Mt. Apo is the wellspring of their spiritual and cultural way of life and their source of food and medicine.

## **2.3 History of the Geothermal Project**

After extensive exploration work in the geothermal prospects in Davao del Norte, Surigao del Norte, Misamis Oriental and Misamis Occidental, which yielded unattractive results from 1978 to 1984, the only geothermal prospect left for PNOC EDC was the northwestern side of Mt. Apo.

In 1983, PNOC EDC asked the then Ministry of Natural Resources (MNR) for a permit to explore for geothermal resources over a small area of Mt. Apo. The Bureau of Forest Development, citing P.D. 705 prohibiting exploration and activities of commercial nature in national parks, initially denied the request. PNOC EDC was later able to obtain a non-exclusive, six-month exploration permit from the Bureau of Energy Development of the MNR because of a technical paper from the MNR, which declared that "energy development in parks [was] not expressly prohibited." In 1985, the potential resource area was narrowed down after through a series of electrical resistivity surveys. In November 1986, the company conducted consultations with local officials and residents around the project site as a standard operating procedure for projects ready for drilling.

The Environmental Compliance Certificate for exploration drilling was granted by the then National Environmental Protection Council (NEPC), the environmental authority at that time, on April 1, 1987. Exploration drilling started in October. In November 1987, the Department of Natural Resources (DENR) took over the NEPC's responsibilities.

By February 1988, exploration drilling had been completed. Subsequent tests and resource assessment indicated that a 120 MW of geothermal power could be developed in the prospect area. Before field development could begin, however, PNOC EDC had to secure another ECC, this time for development. This permit could only be issued upon the submission and subsequent government approval of an EIA. This would require the preparation of a comprehensive report on the social,

economic, cultural and environmental effects of the proposed geothermal project to be done by a third party group from the academe as required by the Governor of Northern Cotabato.

Opposition to the project began to mount by July 1988. A coalition called Task Force Sandawa (TFS) was established. The TFS formed lobbying, legal, media, education and networking committees to stop the project. TFS focused on two Senate Subcommittees: the Committee on Natural Resources and Ecology (CNRE) and the Committee on Tribal Filipinos. Before 1988 was over, the CNRE recommended the immediate termination of PNOC EDC's geothermal activities within the area. In December 1988, PNOC EDC pulled out of the area in order to have a better evaluation of its options.

Massive press campaigns against the project started in the first half of 1989. In mid-1989, the Catholic Bishops of Kidapawan, Marbel and Cotabato declared their opposition and encouraged the construction of the power plant outside the park.

Because of the deteriorating power supply situation in Mindanao, President Corazon C. Aquino, on May 16, 1990, formed a Cabinet Working Committee to examine the legal, cultural and environmental concerns, to recommend action plans and to ensure that PNOC EDC addressed all relevant issues before submitting its formal EIA. In January 1991, the formal EIA was submitted to the DENR. An official public hearing was held in Kidapawan, No. Cotabato on April 20, 1991. No consensus could be reached between the proponents of the project and its opponents. The DENR scheduled more public consultations on the outstanding issues. DENR estimated that the approval process, consultations and the granting of the permits would take about two years.

The ECC for the project was granted with strict conditionalities in January 1992. By February, PNOC EDC had mobilized its crew. Development went into full swing after a "pamaas", a sacred healing ritual of the local tribes, was held on April 10, 1992. Leaders of five tribal groups symbolically turned over the 701 hectares of land for geothermal development by PNOC EDC.

In January 1993, after much deliberation, the government and the cultural communities finally signed a Memorandum of Agreement, which set the conditions regarding the operation of the Mt. Apo geothermal project.

Before 1990, the National Power Corporation (NPC) maintained a monopoly on power generation in the country. NPC's deteriorating financial condition hindered its ability to undertake the construction of new power plants and this resulted in the issuance of Executive Order No. 215 in 1990 which removed its monopoly on and allowed private sector participation in power generation. Since NPC could no longer put up the geothermal power plant in the Mt. Apo project, PNOC EDC had to do it by itself or find a partner to set it up in order for the project to proceed until completion. In 1994, PNOC EDC called for a bid for the 52 MW geothermal power plant on "build-operate-transfer" (BOT) basis. The BOT contract was awarded to a consortium of Marubeni Corporation of Japan and Oxbow Power Company of the United States.

In due time, the first 52 MW Mindanao I Geothermal Power Plant was commissioned in March 1997. The project was further expanded with the construction of the second 54 MW Mindanao II Geothermal Power Plant which started commercial operation in June 1999. The BOT contract for the Mindanao II power plant was likewise awarded to the Marubeni-Oxbow consortium.

Consistent with the NIPAS Act of 1992, the Mt. Apo Protected Area Act of 2003 was finally enacted into law in July 2003 after lengthy and tedious deliberations. The Act defines a fixed boundary for geothermal exploration and development, restricts the geothermal area to the edge of the park to minimize impacts and assigns the geothermal area as a multiple-use zone where it is expected to provide economic options to park settlers.

## **2.4 Clarifying the Issues Raised Against the Project**

From start of exploration until construction, the Mt. Apo geothermal project was beset with legal, cultural and environmental concerns. The following is a discussion of how PNOC EDC handled such concerns.

### **2.4.1 Legal concerns**

**Violation of P.D. 705.** Early in the project, there was a perception of violation of P.D. 705, a law prohibiting exploration and activities of commercial nature in national parks. A systematic research, however, led to the unearthing of a 1983 DENR document entitled “An Analysis of Laws and Enactments on Parks” which opined that energy development is not expressly disallowed within parks. P.D. 1586, or the Philippine Environmental Impact Assessment System also allowed such activities as long as they undergo the EIA System.

**Reneging on the 1984 ASEAN Declaration.** Oppositors claim that by allowing geothermal operations in Mt. Apo, the Philippines reneged on an international commitment, recognizing Mt. Apo as an ASEAN Heritage Park. The Department of Foreign Affairs cited that the declaration was only a treaty and not a law; thus, the Philippines had no international obligation. The treaty did not preclude the government undertaking development activities in the park. The Earth Summit of 1992, likewise, recognized the sovereign right of the state to set its own environmental policies.

**Encroaching on Ancestral Lands.** The Church, environmentalists and various non-governmental organizations (NGOs) slapped PNOC EDC with a constitutional violation of the rights of tribal minorities. The Presidential Management Staff, however, argued “the protection of tribal rights [was] subject to national development policies and programs.” It was pointed out that energy development; park conservation and respect for ancestral rights could be made compatible through an integrative approach to development.

Protection of the forest for geothermal resource sustenance could be equated to preservation of the ancestral domain. Geothermal energy is a water-based resource and developers must adopt strict watershed policies.

**No Permit for Exploration Activities.** Oppositionists claimed that PNOC EDC had no ECC from the new government bodies under President Corazon Aquino. It was pointed out that the National Environmental Protection Council issued an ECC for exploration drilling on April 1, 1987 and that the DENR absorbed NEPC’s responsibility only in November 1987.

### **2.4.2 Cultural concerns**

**Ancestral Home.** The tribes believed that Apo Sandawa, the god of their ancestors, and other tribal deities lived in Mt. Apo. Geothermal operations, which desecrated his sanctuary, were sacrilegious.

Research revealed that about 80% of Manobos in the project site had been Christianized or integrated into Christian communities. Although they still had an attachment to Apo Sandawa, their animistic beliefs and practices were no longer as strict. Consultations in 1990 showed that the tribes reconciled their belief with their need for economic development. They wanted basic services, which PNOC EDC agreed to provide as part of the company’s community relations program. The tribes also petitioned the company to support a law recognizing the area as their ancestral lands so that rights and privileges could be afforded to them.

**Dyandi Pact of 1989.** Nine tribes claiming to represent 500,000 natives in the park resolved to oppose the project and performed a ritual called “dyandi” on April 13, 1989 to drive away PNOC EDC from Mt. Apo.

A survey conducted in the last quarter of 1990 by ethnohistorian Dr. Heidi K. Gloria of the Ateneo de Davao revealed that only 3 major tribes lived within the park: Cotabato Manobos, Bagobo Tagabawas, and Bagobo Guiangans. Only two tribes lived in the project site itself. These tribes did not take part in the “dyandi”. Petitioners in the “dyandi” of April 1989 came from areas 120 kilometers away from the project site; and not all were recognized as tribal leaders.

Legitimate datus, or tribal leaders, outside the project site who were interviewed expressed no position on the project because they were too far and that their tribal councils had not taken up the matter. The Office of Southern Cultural Communities (OSCC) reported in 1990 that there was an equal number of tribes opposing and supporting the project. Many datus around the park also revealed that their tribal councils had no position because of lack of adequate information on the project.

**Lack of Consultation.** Oppositionists claimed that the affected tribes were not consulted. It was on record that PNOC EDC started formal consultations in October 1987 and several more were held until 1993 as the company intensified its multi-sectoral information campaign. A petition endorsing the project was sent to the Office of the President in August 1989 signed by 90% of the residents in the area.

**Dislocation of the Tribes.** The Church and other NGOs feared the displacement of indigenous cultural communities in the area. Residents, however, had no such complaints. Most Manobos move from place to place in pursuit of their traditional livelihood of “kaingin”, or “slash-and-burn” practice of agriculture. Migration was not forced; residents simply decided to move their houses near the road or to lots formerly cleared by them.

During field development in 1992, only 68 families were directly affected by the project. They were offered a resettlement package consisting of replacement of lost homes, basic services and long-term livelihood projects.

**Limited Employment Opportunities.** Members of the tribes had very little education and feared that PNOC EDC would not employ them. It was made known that PNOC EDC had a policy of priority hiring of actual residents in all its projects. To ensure that this could be implemented in the Mt. Apo project, a training program for out-of-school youth would prepare select students for training on technical and administrative positions in the project.

### **2.4.3. Environmental concerns**

The negative campaign against the geothermal project also focused on the following concerns:

**Hydrogen Sulfide Pollution/Acid Rain.** Environmentalists feared that hydrogen sulfide, the most harmful geothermal pollutant, caused the defoliation of trees when geothermal wells are discharged.

Research identified that sulfate from hydrogen sulfide was a nutrient to plants, and growth stimulation had been observed in the Geysers geothermal fields in California. Heat from the fluids discharged from the wells caused localized defoliation. Experience in developed sites, however, indicated that trees recovered after some time. In the drillsites, H<sub>2</sub>S concentration was recorded at 1 ppm; lung irritation occurred at 20 to 40 ppm.

In the case of acid rain, studies showed that H<sub>2</sub>S was relatively stable, thus washed out of the atmosphere by normal rain, especially in the tropics. The volume of sulfur emissions from geothermal was lowest compared to fossil fuels and would not contribute to acid rain.

**Negative Impacts of Construction/Threat to Biodiversity.** Careful planning would minimize destruction of trees and tribal residences. Project installations, including roadways, would require only 112 hectares, or 0.2% of the total park area. To avoid the loss of biodiversity, PNOC EDC would

adopt technologies such as directional drilling in order not to disturb unique forest covers. An EIA Wildlife Survey in October 1990 indicated that all the endemic rare species found within areas proposed to be opened could also be found outside said areas. The survey further revealed that there was no resident Philippine Eagle recorded in the geothermal area for the past 15 years. The Eagles Nature Center confirmed that the endangered eagles were rarely observed in the northwest sector of Mt. Apo. Furthermore, the homing range of the eagle was 400-1000 meters above sea level where dipterocarp forests in which they prey are found. The geothermal area was 1100-1400 meters above sea level, or within the mossy forest range. The project area was, at times, used as corridors or passage areas for the eagles.

**Settler Influx.** The opening of new roads would cause the influx of lowland settlers and encourage illegal logging. To the contrary, based on the company's experience in Leyte and So. Negros, forest patrols maintained by the company kept illegal settlers and loggers away.

In January 1990, encroachment by illegal settlers increased after the company pulled out of the area. For fear of being blamed, PNOC EDC made representations with the local government units and the DENR to stop the problem.

**Deforestation.** Opponents feared that the project would destroy the forest cover and that inspite all the measures proposed by PNOC EDC, the stabilization and protection of Mt. Apo would be inadequate.

PNOC EDC clarified that out of the required 112 hectares for development; about 90 hectares were already subjected to the "slash-and-burn" practice of the upland tribes. The company committed to reforest 50 to 100 hectares of the park per year to bring back the forest. At the time of pullout, some 40,000 cuttings and 11,000 seedlings had been planted on the downslope of 8.4 kilometers of new roads, and about 2,000 more were planted upslope.

**Water Contamination.** Recognizing the potential dangers to water resources, it was explained that fluids extracted through the deep wells from the inside of the earth would have to be re-injected back to within the same depth. This would keep pollutants from contaminating ground water.

## **2.5 Conditions of the Environmental Compliance Certificate**

The ECC for the project was issued by the DENR on January 14, 1992 and imposed 28 environmental, social and economic conditions in response to public concern over the environmental and socio-cultural impacts of PNOC EDC's geothermal operations. Some conditions addressed specific issues identified during consultations. The EIA process took almost two years and involved consultations with tribes and settlers, academe, congressional committees, local government units, various government agencies, NGOs and church leaders. (Please refer also to Annex 2.)

**"Pamaas" Ritual.** Of high priority to the tribal communities according to ethnohistorian Dr. Heidi K. Gloria was appeasing Apo Sandawa's spirits. This was viewed as an honest-to-goodness tribal concern and would counter the curse put by the "dyandi" ritual performed earlier by oppositionists. The "pamaas" was performed on April 10, 1992 by leaders from 5 tribes together with the top executives of PNOC EDC. The ritual achieved two things for PNOC EDC: First, it was able to get the tribes on its side, and second, in the minds of the tribes the company was deferring to tribal beliefs and acknowledging that Mt. Apo was indeed a god.

**The Environmental and Tribal Welfare Trust Fund.** The ECC also required that out of the total electricity sold from the project, PHP 0.01 per kilowatthour would go to a Trust Fund. Money collected will be used for power subsidy in the park area and to fund livelihood programs. This fund is in addition to the 20% share of the local governments in the royalty fees to be paid by PNOC EDC under its Geothermal Service Contract in the Mt. Apo area.

**The Mt. Apo Foundation.** PNOC EDC also established the Mt. Apo Foundation, Inc. (MAFI), a multi-sectoral management group composed of PNOC EDC, local government units, DENR the Cotabato Tribal Consultative Council (CTCC) and NGOs. Funded initially by PNOC EDC, the MAFI had the tasks of planning, developing, implementing and monitoring programs or projects, which would conserve or enhance the forests and geothermal resources of Mt. Apo. Other programs include cultural revival, health and nutrition and infrastructure assistance.

**Relocation Housing.** For the relocation of 68 families affected by the geothermal operations, the company chose a site near Lake Agco, close to sources of livelihood. PNOC EDC provided for the houses and basic services. The company also supported livelihood projects for the families in order to uplift their economic condition.

**The Integrated Protection Agency and Systems Council (IPASC).** The IPASC was established by the DENR to manage, oversee, protect and conserve the entire 65,000 hectares of the Mt. Apo Protected Area, except for the 701 hectares reserved for geothermal operations. This superbody was aimed to address any residual objection that the project still faced. It also aims to show that “government is in the business of protecting the environment, not destroying it,” in the words of Cabinet Officer for Mindanao Paul Dominguez.

### **3. IMPLICATIONS AND LESSONS LEARNED FROM THE MT. APO PROJECT**

The Mt. Apo Geothermal Project offered a wealth of experience for PNOC EDC as the government’s frontliner in the development of the country’s indigenous geothermal resources. It was a breakthrough, as it did, in fact, prove that geothermal energy is environment-friendly and it can co-exist with national park interests.

The controversy over the Mt. Apo project made the company more sensitive to the sentiments of the people within and around the project site. The environmental issues were, in some sense, easier to resolve quickly because they had technical and engineering solutions such as re-injection, air scrubbing or directional drilling. The community is a different thing because their activism involves religious belief and preservation of their culture. In Mt. Apo, the people believed that the mountain was a god, and this must be respected.

Good communication about the company’s activities and intentions is a major factor towards gaining public acceptance of the project. It facilitates cooperation, understanding, and appreciation and helps to minimize conflicts and problems. Unfortunately, for PNOC EDC, the opposition to Mt. Apo was fueled by the negative press. Accusations, rumors and misconceptions about the project spread like wildfire largely due to ignorance of geothermal operations, political maneuvering and government mistrust. To gather legitimate support for the project, PNOC EDC had to launch a multi-sectoral information drive aimed at clearing the issues, elaborating on details and educating people. Government support at the Cabinet level helped to facilitate inter-agency coordination and exchange of information.

PNOC EDC learned to adopt a policy of transparency and openness in order to gain the public’s trust. Confident that it was doing things right, PNOC EDC invited those critical of the Mt. Apo project to visit the site and audit the environmental protection and enhancement measures as well as the social and economic support for the settlers that the company is doing. A visitor program was also initiated wherein tribal leaders and government officials in the vicinity of Mt. Apo park were brought to PNOC EDC’s geothermal projects in Tongonan, Leyte and Palinpinon, So. Negros for “show-and-tell.” The company is now very proud of its achievements in Mt. Apo and has made the project its environmental showcase for responsible and sustainable development.



The benefits of development need to be shared with the immediate residents of the project area. People do not want to be kept in darkness; they also want their quality of life to improve. Relocation and livelihood assistance must be assured. The Environmental and Tribal Welfare Trust Fund plus their share in the geothermal royalty fees are direct financial benefits provided for the Mt. Apo communities. The Mt. Apo Foundation will manage the community development programs that will benefit the geothermal area of the park.

The furor raised by environmentalists over geothermal operations in the national park kept away Official Development Assistance (ODA) donors like Asian Development Bank, World Bank and the Overseas Economic Cooperation Fund of Japan (now Japan Bank for International Cooperation, or JBIC). By the time the project was ripe for financing, PNOC EDC and the government were still struggling to address the issues and concerns of affected sectors. The important lesson here is that prior proactive consultations and understanding the community and the people's concerns can pave the way for acceptance of a project. This is a key element international financing institutions look for. In the case of PNOC EDC's No. Negros Geothermal Project which is located in the Mt. Kanlaon National Park, JBIC agreed to extend funding for the project because PNOC EDC was able to address the oppositors' issues and concerns early on.

### ANNEX 1 Location Map of the Mt. Apo National Park



ANNEX 2  
**Mt. Apo Geothermal Project**  
**EIA\* Evaluation Process**

1. DENR and concerned Sectors defined the Scope of the EIA Study	Jul 1990
2. Preparation of the EIA by Third Party from Academe as imposed by the Regional Development Council XII	Aug – Dec 1990
3. Evaluation of the EIA by DENR Special Review Committee from Academe	Jan – May 1991
4. Submission of 76 copies of the EIA for Public Hearing Review, 40 days before Hearing	Feb 1991
5. Community Consultation	Feb 1991
6. Consultation with NGOs	Mar 1991
7. Submission of Various Position Papers	Mar 1991
8. DENR Public Hearing	Apr 1991
9. Participation of PNOC EDC and Oppositors in EIA Review Committee deliberation	Apr 1991
10. Announcement of EIA Approval	May 1991
11. Discussion of Permit Conditions	May – Dec 1991
12. Issuance of Environmental Compliance Certificate	Jan 1992

\*EIA – Environmental Impact Assessment

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