MODEL OF SOCIAL RESPONSIBILITY AND COMMUNITY SERVICE: CASE HISTORY OF UNOCAL/PHILIPPINE GEOTHERMAL, INC.'S EXPERIENCE WITH THE MAK-BAN AND TIWI FIELDS

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Keywords. Philippines, environmental impact, sociology, sustainable development, community service. outreach

ABSTRACT

'This paper presents the history of the UNOCAL/Philippine Geothermal, Inc experiences in the initiation and execution of social services and programs in conjunction with development of two major geothermal resource areas. The necessity for aggressive community and social development programs evolved from the great societal impact that the geothermal development had on two subsistence level agricultural communities in the Philippines. The geothermal development is responsible for *the* transformation from an agriculture-based livelihood to one thar is partially industrial based. The disruption in the source of livelihood and the cultural conflict endemic to an agrarian society in close proximity to a high technology installation necessitated the involvement of the develope: in the community process following power plant construction. This is in contrast to major geothermal development areas in the United States, where the socioeconomic assessment precedes the development and most often terminates after acceptance in the environmental approval process In the present case, not only does the impact assessment continue into the operating phase, but a pro-active stance by the developer seems tu be required in initiating and continually supporting social programs throughout the operating phase of the power plant.

BACKGROUND

Thr Philippines. like most countries since the 1973 oil crisis, has had to rcshapr its energy policy. In 1977, oil constituted 95 percent of total commercial energy use, all from imported sources (Madrid, 1977). This was a central concern in the Philippines economy. Bv 1980, the geothermal power production capacity in the Philippines was 168 MWe. In 1981, the National Energy Program forecasted that approximately 1400 MWe of geothermal power could be on linc by 1988.

In 1994, the Philippines was second only to the United States in electric powcr generation from geothermal energy with an installed capacity of 894 MWe, or about15 percent of thenational installed power plant capacity. (Geothermal power plant capacity in the U.S. for that year was 2600 MWe.) With several major fields in operation, geothermal energy provided about 25 percent of Luzon's electricity. Prospects for increased geothermal power production appeared promising due to the favorable economics of replacing imported oil or coal for power production. The Philippines has an estimated 3,000 MW of total geothermal energy reserves; less than one-third has been developed. The estimated resource potential of about 2 billion bbl of oil equivalent/yr could readily supply the 263 million bbl of oil-equivalent energy requirement of the Philippines by the year 2000 (Datuin and Roxas, 1990; Gazo and Datuin, 1992).

National corporations, local governing entities, arid foreign and domestic companies havc been cffcctivc in developing the geothermal resource. It is recognized that development needs to be accomplished in a manner that: would create sound environmental programs and not contribute to air or water pollution; would offer commercial profitability in the case of a private entity, would best contribute to the national and regional economy; and would provide fair and adequate compensation to those communities immediately affected.

CORPORATE SOCIAL RESPONSIBILITY IN THE PHILIPPINES

In the Philippines. as in any developing country. adverse effects of resource developmenr, such as relocation of population, health hazards, change in sources of livelihood, disruption of living patterns, is exacerbated by poverty. Thus, an energ resource developer like Philippine Gcothcrmal, Inc., a subsidiary of the UNOCAL Corporation, had tu come to grips not only with environmental management challenges but also with thc environment of poverty itself. The government frequently lacks adequate financial arid organizational resources to carry out thc gargantuan task of elimination of poverty. For this reason, corporate entities operating in the countryside lake it upon themselves to contribute directly towards local development, which would raise local standards of living

'The Philippine Business for Social Progress (PBSP) is a private. national. non-profit foundation established in 1970 by leaders of top Philippine corpora-inns wirh the goal of formalizing and effecting a policy of corporate social responsibility. Members of the PBSP viewed poverty as the foremost cause of social unrest in thc carly seventies. They recognized that previous efforts had bern fragmented and uncoordinated, with little impact on the prevailing social problems. They recognized the need for a mechanism that would deliver organized, professional and continuing development assistance. It was the PBSP that provided the catalyst for the evolution of corporate social responsibility in the Philippines.

COMMUNITY DEVELOPMENT PROGRAM OF PGI

The Community Development Program of Philippine Geothermal, Inc. (PGI), a subsidiary of the UNOCAL Corporation, stems from several sources; from the evolution of corporate social responsibility in the Philippine milieu, the response of multi-national corporations to this concern and the particular experience of PGI due to the proximity of local communities to the power plant site, and to the residential and community dwellings remaining within the locus of the geothermal wells, power plants and feeder systems.

In 1988, PGI embarked on a Community Development Program after identification of the need for a community assistance program as well as the need for an informational and educational program about geothermal energy and PGI *An* entirely new department was organized within PGI to foster economic, social and human development in the community Programs were initiated that extended support for education, health care, nutrition, employment-based organizations, and ecologically attuned activities. The PGI stated position with regard to community development program was that the "community is an essential partner for growth and progress," arid that "these programs stress the company's commitment to fulfill its social responsibility and contribute to improve the quality of life in communities where it operates."

Assessment of Issues and Needs

The preliminary step taken in formulating the Community Development program involved a thorough and methodical

assessment of relevant issues and the pressing needs and concerns of the Bulalo and Tiwi communities, the locations of greatest impact of PGI's development. The assessment was made by administering and executing: (1) Community investigations by a PGI community relations officer through arm-familiarization process, the assessment of the economic resources, and social problems, (2) Consultations and dialogue with community leaders of the local governments, barangay (village) officials and community elders, (3) Consultations with established Non-Government Organizations (NGOs) and civic groups, and (4) Interviews with staff of the National Power Corporation (NPC), and with staff of PGI's power plant operations, to elicit their thoughts on appropriate responses to issues that were raised. The wealth of information which was gathered served as a guideline in determining appropriate forms of social intervention programs to undertake.

PGI's Community Development Program was formulated with three main objectives. (1) To serve as a vehicle by which PGI will meet its social responsibilities as a corporate citizen of the communities where it operates; (2) To promote goodwill and appreciation of the company; (3) To promote rapport and close interaction with policy-makers and regulators on the various levels of the local government structure. These objectives were attained through the following activities: (A) the initiation, establishment and support of meaningful and relevant welfare and development programs in the project communities; (B) the establishment of linkages and networks with government organizations, non-government organizations and people's organizations whose mission and objectives *are* consonant with those of PGI, and (C) supporting the National Power Corporation's activities in the project areas in the realms of information, education and welfare activities

Criterin for Program initiation end Support

The determination of which programs should be funded by PGI was based on the following criteria: (1) Projects that directly improve the well-being of the community or contribute significantly to environmental awareness and safety; (2) Projects that demonstrate the company's involvement with its communities in areas where it does business such as Albay, Laguna, Batangas and Metro Manila, (3) Projects that encourage self-help and community participation; end (4) Projects that create a positive awareness of PGI's role in the project areas and its contributions to the national economy.

PGI's 1994 budget for Corporate Affairs and Community Development programs in Metro Manila. and the Tiwi, Bulalo and Maibarara Fields was US$423,500. This was 1 1% of the Net Income Before Taxes (NIBT) of the preceding year, a benchmark that was recommended by the Philippine Business for Social Progress to its corporate members. Prior to the establishment of the 1 percent benchmark. the question that persisted within PGI was whether the corporation was giving enough. Table 1 contains the Corporate Social Responsibility Budget for five years throcgh 1994

Table 1. PGI's Corporate Social Responsibility Budget

Year	US$	%NIBT
1990	**243,500**	0.5
1991	636,000	1.5
1992	387,000	0.87
1993	**401,000**	**0.7**
1994	423,500	1.1

'THE MAK-RAK COMMUNITY DEVELOPMENT PROGRAM

Background, Mak-Ban

A presidential proclamation in February 1973 established the Makiling-Banahaw (Mak-Ban) Georhemal Reservation of 163,000 heciares in rhe three provinces of Laguna, Quezon and Batangas, under *the* administration of the National Power Corporation. Within this reservation area. the Bulalo field covers approximately 1600 hectares spreading over three different barangays, Bitin, Limao and Santa Elena, located in the provinces of Laguna and Batangas. The barangay of Bitin, wine of the fifteen barangays within the Municipality of Bay, Laguna, is situated at the foot of Mt. Makiling and is the community most immediately affected by the geothermal development. In the Bulalo field, land use is categorized as residential and commercial settlements; agricultural lands, planted mostly with permanent crops such as coconut. coffee, bananas and fruit tress. and garden vegetables; forests, thinly or thickly covered with forest-type vegetation mainly on the steep slopes, and geothermal development, which overlies all other land uses. The geothermal steam gathering and power generation equipment, roads, camps and support facilities dominate the landscape. (PGI, 1981, Bulalo ECR)

Two principal impact areas were defined around the Bulalo project. ("Bulalo" is the name of the developed commercial field situated within the Mak-Bar Geothermal Reservation.) The outer limit of the environmental impacts of the project was designated to be one kilometer from all parts of the geothermal project, an area that encloses approximately 2589 hectares, or 1.6 percent of the total Mak-Ban Geothermal Reservation. The second area encompassed the project Facilities, the power plants, plant stations, arid satellite separators which generate the largest sources of noise, odor and traffic. This high impact zone encompassed approximated 1100 hectarcq and encloses about 90 percent of the settlement areas. (PGI, 1981, Bulalo ECR)

Demographic and Socio-economic Profile, Mak-Ban

Baser! on the 1980 municipal census, Bitin had a population of 1,800 inhabitants. with an average household size of 5.2 persons. Agriculture and farm-related activities were the main means of employment and income. Approximately 40 percent of the families engaged in agriculture stated that they owned the lands thry cultivated, the other 50 percent were lenant or "nangungupahan" and "kaingeros" (slash-and-burn farmers). The majority of the dwelling units for approximately 350 households were of wood or other light construction material, No municipal sewer systems existed in the Bulalo area, individual systems were used by a single household or shard between households. Prior to geothermal development, lighting was by kerosene lamps for *70* percent of the households.

The number of households with electrical facilities increased after development The warer supply was obtained from two main sources: rainwater and purchased by local residents from privately-owned deep wells The medical health center was staffed by a health technician in the absence of a doctor; emergency cases were brought to Los Baños or to Manila. Bitin had one elementary school and a vocational high school, with 21 teachers and 429 pupils Public transportation was mainly in the form of the jeepney and tricycle The leading cause of illnesses reponed in the Bulalo area in 1978 was upper respiratory tract infection In 1975, tuberculosis was reported to be the leading cause of reported deaths. Other major illness were parasitism/malnutrition. A high percentage of malnutrition occurred in children ages 10 to 14.(PGI, 1981 Bulalo, ECR)

Land Expropriations, Mak-Ban

Land expropriation payments were difficult to conclude and constituted a major concern of the affected landowners By October 1980, total payments made in the immediate Bulalo area for improvements and land purchases amounted to 2.6 million pesos (US$346,000) An additioonal amount of 2.1 million pesos (US$279,000) was not paid because of problems encountered in payment of right-of-way claims. Approval of surveys by the Bureau of Lands were delayed. Tax clearances were not issued by the Municipal Government because of small landowners' failure to pay estate *taxes.* In the cases of deceased landowners. extra-judicial

partition by the heirs required publication tbr three weeks which caused a delay in the expropriation proceedings. In cases where the heirs were abroad, extra-Judicial partitioning was unlikely The refusal or failure of some heirs to pay inheritance taxes contributed to further delays in expropriation proceedings. Landowners refused lo pay the capital gains tax levied on rhe property expropriated because it reduced the consideration received, even in cases where the National Power Corporation offered advanced payment. Absentee landowners wto were abroad neglected to leave any special power of attorney. In cases of mortgaged property, the consent of the mortgagee could not be secured until payment was guaranteed and directed to ihe mortgagee Boundary disputes could not be settled amicably or extra-judicially. Affidavits of two adjoining landowners could not be secured easily for judicial settlement Landowners also failed to reflect compensation for disturbance improvements in their tax declarations or refused to execute a waiver in favor of tenants because of legal implications,

1994 Survey, Barangay of Bitin, Bay, Laguna

In a 1Q94 study commissioned by PGI of the Barangay Bitin, Bay Laguna (Tulungan SA Tubingan, 1994), the native residents expressed the view that their life before the development was one of abundance within a forested area, that they were able to harvest fruit from the then abundant fruit trees. although there was no means of transportation to market the fruit. There wan no electricity, but they had a supply of water carried from the spnngs less than one kilometer of their houses.

Their lives changed with the geothermal development in the early 1970's Initially, residents felt that they had not been given what was promised in exchange for the portions of their property which were taken for the development of the project: A road to make the community accessible to the main roads, and an abundant and free supply of water and electricity. The land was now criss-crossed with large pipes, the residents could not plant crops the way they used to, and they claimed that the soil had lost its fertility due to the heat radiating from the pipes They also thought that the constructios companies would provide for permanent employment

The majority of respondents (sixty sample respondents selected randomly from 629 households) were earning below 3000 pesos (US$109) a month. below the poverty threshold in the Philippines. Most had resided in the barangay for more thar. 16 years, and most ha3 one to six children living with them. The highest expenditure per month was for food, between 2000 and 4000 pesos (,betweenUS$72 and US$145); the second highest expenditure was education. The sampled households reported that after the geothermal development they did not need to spend money for water or electricity They could tap "unofficially" into waters facilities of PGI and tlie National Puww Corporation (NPC). Electricity was also supplied now by the NPC and used mainly for lighting(Tulungan SA Tulurgan, 1994)

Socio-economic Issues arid PGI's Response in the Mak-Ban Area

Socio-economic conditions in the Mak-Ban Area were those of unemployment arid poverty, malnutrition, unstable community leadership, lack of a potable water source, drug addition; absence of environmental sanitation, lack of opportunity to pursue high school and college education, poor access to neath services. inadequate sports, social and cultural amenities, arid inadequate infrastructure. During the years prior to 1991. PGI initiated various programs directed at alleviating some oithe conditions: a program til improve livestock raising, agricclture. trading and home based industries, establishment of a skills training center offering,courses in carpentry, computer skills, cooking-baking, cosmetology, radio and TV repair,and automotive and welding courses; nutrition education program, leadership and organizational development training for community leaders; initiation of a potable water supply project, initiation of a drug education campaign in schools. sponsorship of high school and college scholarship programs, medical and dental missions, establishment of a village pharmacy: donations of sports equipment: and repair of dilapidated roads

In 1994, a high:? focused plan of community programs was approved Eight areas were identified for funding foi the 1994 Mak-Ban Community Development Program with a total US$140,000 allocated

1 Infrastructure: The Bulalo Water System. The first program was directed towards improvement in the infrastructure with a budget of US$53,000 The planned projects entail the provision of materials for school repair and for construction of the Bulalo Water System which stands to benefit 3,000 households in an area centrally located in the field producrion zones. To ensure success, the project will be implemented in four phases. (a) social/community preparation, (b) planning and technical design. (c) construction; and (d) project completion and turnover

The Bulalo Water System Association was organized in 1993 to provide the necessary organization support for the water system prnject Association leaders representing a cross-section of the community were elected. Prior to this, PGI commissioned the Tulungan sa.Tubigar Foundation, Inc., a Non-Government Organization with a proven track record in community water system projects, to carry out the social preparation aspect and undertake the training of volunteer community residents With assistance from the Tulungan sa Tubigan Foundation, Inc., the association was registered with the Securities and Exchange Commission as a non-stock, non-profit corporation Ten association officers representing each of the four zones of Barangay Bitin participated in a series of training courses in order- to equip them with the knowledge and skills for he eventual management and upkeep of the water system

The source of water was proved to have an inadequate flow rate to meet the system's minimum requirements. The Laguna Water District assisted in identifying other possible water sources in Barangay Bitin, and is preparing a system design, plan and cost estimate for PGI's review. Despite some technical setbacks, the association officers were optimistic about completing the project If realized: this will be a marked demonstration of the value of the interaction between an impacted, but resurgent community, and its socially-responsive "corporate citizen"

Z **Public Welfare and Services.** A budget of US$16,000 was given to projects in this category and supported the government's efforts to provide primary health care io the disadvantaged sectors of the community. These included maternal and child *care*, emergency medica: and dental assistance, tuberculosis control and nutritior education. Summer programs were initiated wirh local organizations to occupy young people.

3. **Livelihood Assistance.** This program (with a US$11,500 budget) was essentially a proactive measure to lay the groundwork for community acceptance of a livelihood project. PGI worked with the National Power Corporation-Social engineering group to sustain the Integrated Livelihood Program, which was a program to improve livestock raising, agriculture, trading and other home-based industries. Beneficiaries were trained in values, skills, project management and organizational development to ensure viability.

4 **Community Schularship.** The high school and college scholarship programs (with a bucget of US$41,000) will have a steady long-terms impact on PGI operations in Mak-Ban. These programs were well in-place and the involvement of cooperating groups has been institutionalized. In the 1994 school year. the program was expanded to enable out-of-school youth to learn and acquire employable skills through enrollment in vocational courses.

5. **Conservation and Environmental** Protection, Thcsc projects (with a budget of US$6,000) **were** consistent with the **core** values **and** practices of **PGI. The** key **areas** of environmental protection and conservation were **pursued** in partnership with rhe local community. **the** governmental and non-governmental organization

6. **Customer Relations. Sports and** social activities (with a budget of US$4,000) **were** organized by a joint **PGI and National** Power Corporation committee in the spirit of **fostering** goodwill and camaraderie among **employees.** The annual friendship games has proven to bc a worthwhile vehicle in furthering good customer **relations. The** indoor and outdoor sporting events **were** stngcd Curing the summer months to ensure maximum participation

7. **Community Initiated Projects.** To be responsive to the needs of **the** community, this **part** of the Community Development Program budget (US$2,000) was allocated *for* activities initiated by the people in the community. In so **doing,** PGI attempted to meaningfully integrate with the cultural **weave** of the communities strategically located in and around **its** area of operation. Community **proposals** were evaluated on the **basis** of socio-economic and cultural value. **Sports** and special **events were** also considered.

8. **Information and Education.** Information and education projects (budget of **US$6,000)** were designed to promote understanding, acceptance and appreciation of PGI and its client, the National **Power** Corporation, and the gcothcrmal industry Specific sectors nf **the** community were targeted by these activities which include field tours. lectures and symposia, highlighting the positive impacts and benefits derived by the Philippine government and its **pcoplc** from geothermal **energy** development

THE TIWI COMMUNITY DEVELOPMENT PROGRAM

Background, Tiwi, Albay Province

The entire Tiwi Geothermal Reservation encompasses **17.66l** hcctarcs. In 1980, approximately 1800 hectares were used for geothermal power development, and of this approximately 180 hcctarc **wcrc** rcmoved from other land uses. The land use categories within the development **area was** classified into: settlements, which represented residential and commercial areas; flood-irrigated fields of rice **paddies** extending over the flat plains between the Milinao foothills and the Gulf of Lagunoy; rolling fields or groves covered with agricultural row crops, vines, orchards and coconut **groves** on the gently slopping terrain; **forests** and 'other," which included ti-e mountainous areas of Tiwi and portions of Malinao, with some coconut and citrus plantations on the foothills; the "other" included **small beaches** and hot springs area; and geothermal land **use** which **overlays** all *the* others. Geothermal pipelines, power plants, equipment, roads, camps and support facilities dominated the **landscape** (PGI, 1981j

Geothermal development **in** Tiwi **has** created changes in local land use patterns in conversion of agricultural **lands** and settlement **areas** It was predicted that **as** development progressed westward, the conversion would bc from forested areas io geothermal land use **As in** the case for the Bulalo field, **two** principal impact areas **were** defined. The first. the "entire impact **zone," enclosed an area** of approximately 2800 hectares and defined within a boundary of one kilometer **from** any site of the gcothcrmal project. The second area, the high impact ***zone,*** enclosed those project facilities which caused the **most** continuing disturbance to local residents. The high impact area covered most of the **settlement areas** The PGI's Tiwi geothmal deveiopment project extends over several barangays within the Municipality of Tiwi.

In 1980, the Municipality of Tiwi in **the** Albay Province, had a population of 28,700, **an** increase of 30 percent from 1970. Four of the twenty-five barangays within the Municipality of **Tiwi** are in the immediate impact **zone** of the project: Cale, Cararayan, Naga and Sogod The combined population of the four barangays experienced the greatest impact of the geothernial development, and increased by approximately 20 percent to 6.300 in 1980. The Barangay of Putsan. locnted on thc periphery of rhe development: experienced **an** 88 percent increase in the **same** period **due** to the location of offices of the National Power Corporation

The Tiwi **development posed** a particular problem for PGI **Over** the **years,** prominent figures in the government have continually referred to Tiwi as a "bad **example"** of geothermal exploration. **The** three **main** issucs were: **hydrogen** sulfide **emissions,** brine discharge to Lagonoy Gulf and the disappearance of Naglagbong Park Programs For mitigating the effects of hydrogen **sulfide** emissions have been jointly developed with the **National Powar** Corporation. The brine is no longer discharged into Lagunoy Gulf with the achievement of 10C percent reinjection. **But** the **issue** of **the** disappearance of Naglagbong Park lingers

Socio-economic and Environmental Issues and PGI's Response, Tiwi

Socio-economic and environmental issues identified between the years 1988-1992 were: the expropriation of land and concomitant **loss** of livelihood, **arid** unjust compensation as perceived by the landowners at 1 *50* **pesos** (US$0.05) **per sq** m; nuisance and pollution factors, i *e ,* air, **water:** noise; depletion of **water sources** and supply; fear and anxiety, **the** proximity of power plants and pipelines to populated arcas, subsidence, Naglabong Park hydrothermal explosion, roof corrosion (perception of "acid rain"); **depletion** of **fish** catch. poverty and economic upset with increased prices of basic commodities due tu strong purchasing power of PGI employees; high electric rates; no electricity despite being the power source (in 1991 only **38** percent or 2,191 households had electricity), perceived inequity of employment in employing "outsiders"; more taxes paid to Manila than to Tiwi; **and** loss of Naglagbong **Park** *(an* historic Bicol landmark).

During rhose years, PGI identified the main pressing issues as: pollution; depletion of water sources arid supply, hydrothermal explosion at Naglaqbong **Park** endangering the nearby Barangay of Baño, poverty: and unemployment Actions by PGI were the continuous monitoring of air, water **and** noise **levels;** brine reinjection; construction of a potable water system; evaluation and relocation of affected families in Baño; and employment through sub-contractors.

In 1988, **PGI** created a Community Development Program with a total budget of US$20,000 and hired a social **worker** on staff. In that year, the **programs** were directed **towards** the establishment of formal community **organizaiions. livelihood** improvement projects, infrastructure improvement projects, **road** repairs. chapel repairs. installation of drinking **water** for elementary schools, toilet construction for teachers, donation of materials for community center construction, leadership seminars, **scholarships. sports** equipment, **sewing** machines, donation of **books** and noiebooks for schools and students, health and sanitation education, medical and dental missions, medical assistance for indigents, arid **disaster** relief assistance for typhoon victims; nutrition program and anri-drug abuse campaigns

In 1994. ten areas were identified by PGI for funding for the Tiwi Community Development Program with a total budget of US$145,000. The situation assessments for each category represent 1994 data. and the established goals and the proposed **objectives** of the **projects**

1. **Livelihood/Income-Generating** Projects. Approximately 12,000 Tiwinos (2,080 families) were uneniployed. **This** was **equivalent** to 60 percent of Tiwi's total labor **force** of 20,000. Even most of those **with** gainful employment (8,000 **persons)** earned **less** than 36,000 pesos **(US$1,309) per** family per year, which was designated as the **poverty** threshold according to

the National Economic and Development Authority

This precariously high poverty incidence rate was considered to be a strong causal factor for many of the problems encountered by the project. Stoning incidents, pilferage and vandalism of pipelines, thefts, alcoholism, and other crimes within the Tiwi project were attributed to the consequences of sheer poverty. Prior to the start of the program, project money was continually spent for perimeter fencing, pipeline insulation repairs and maintenance. replacements, fielding of more security guards, procurement of more security lights and similar measures. In addition, the local government had no significant livelihood promotion program for the villages surrounding the geothermal facilities.

In 1993, US$1,778 was allocated for this sector with the major activity of evaluating the impact of PGI-assisted livelihood projects. This was increased in 1994 to US$5,000 for activities aimed to help develop micro-enterprises among idle or unemployed groups of residents directly impacted by geothermal operations to enable them to become productive members of their community. It was estimated that at least *500* Tiwinos received *specific* assistance, which included skills training, provision of seed funds to qualified groups and project monitoring and evaluation.

2. **Public Welfare & Services.** In 1994, the Tiwi population was 38,000, or approximately 6,000 households (average 6.4 persons per household). In cases of medical emergencies, Tiwinos had to go to privately-owned clinics, if they could afford it. Indigent patients are referred to either Tabaco (12 km away) or to the Albay Provincial Hospital (30 km away). In insrances were medicines were required, the costs were prohibitive.

There were no government ambulances, no fire-fighting equipment or trucks. In general, there was inadequate capability to handle natural disasters, such as those in December 1993 and January 1994. In recent years, PGI's Community Development Emergency Medical Assistance responded to extreme medical emergencies, which the municipal health clinic or the Department of Social Welfare and Development could nor handle. This particular PGI assistance project was acclaimed by all sectors in the community and endeared the company to the assisted families, their relatives, neighbors and friends. In 1993, US$5,900 was budgeted for this program. in 1994, US$4,500 was budgeted. The disaster support services were an extension of immediate assistance to indigent residents and impoverished communities. PGI's prompt response in these circumstances generated acclaim and respect in the region.

3. **Infrastructure.** The local government embarked on a high-profile infrastructure program consisting of street illumination (covering 2 to 3 km of the provincial highway), construction of a public. market, a gymnasium, same sewerage improvement works, repainting of public schools, and construction of a few barangay roads. All electricity bills within Tiwi have been subsidized (50 percent) by the local government.

The infrastructure projects were initiated to respond to community needs which could not be accommodated by the government and yet, were regarded as highly valuable and mutually beneficial for both the beneficiary and the donor. In 1993, US$11,606 was allocated for this sector for the provision of education materials and equipment for 10 Tiwi day-care centers and for 60 street lamp for the Tiwi local government.

The rehabilitation of the renowned and cherished Naglagbong Park remained the responsibility of the National Power Corporation and PGI. In 1994. of the US$63,500 allocated to this sector, US$50,000 was dedicated to the Naglagbong Park issue to effect a significant change on the site through landscaping, construction of concrete sheds, installation of lamp-posts, concrete walkways, tree-planting and provision of artificial hut water to man-made ponds. The responsibility for executing the project was to be shared with the community. the National Power Corporation and the local government organizations. The rest of the 1994 allocations were be used to supplement the meager resource of eleven (self-supporting) Tiwi day-care centers by providing them with educational materials, and for completion of the Mayon Multi-Purpose Center for the Mayon evacuees resettlement site.

4. Environment. In 1993, US$5,646 was allocated to the sector which included activities of reforestation and tree-planting, co-sponsorship of a seminar for the Pollution Control Association of the Philippines, and the donation of a computer and printer in support of activities of the Department of Environment and Natural Resources. In 1954, US$20,000 was allocated for two programs. US$15,000 for assistance to the Watershed Management Department of the National Power Corporation and the Department of Environment and Natural Resources for several environment conservation projects of reforestation and marine life preservation. Also, US$5,000 was budgeted for initiation of several public health and safety advocacy projects of the Department of Health and the Department of Labor and Employment. High-profile involvement in these endeavors earned favorable attention and recognition by regulatory agencies and the general public.

5. **Community-Initiated Projects.** Tiwinos (like the other Bicolanos) have their folkways and mores, distinct culture, values, idiosyncracies, and tradition. Despite what may seem to be an illogical propensity (considering extremely scarce financial resources) towards fiestas, formal bails, expensive religious rituals. (e.g. weddings, baptisms, funeral wakes), beauty contests, spurts tournaments, these events continue to be integral and indispensable components of Tiwinos' lives. Without such customs: especially in difficult times, life might become unbearable. The situation becomes problematic when the people are required by tradition to fulfill their obligations and meet society's expectations but are constreined by their inadequate resources. They then ask for help not only from kinsmen and friends, but also from others whom they believe are fellow members of their own community, and are perceive3 to be prosperous. PGI contributed modestly towards these activities, hut received substantial community appreciation.

6. **Government Organizations (GO's) and** Non-Government **Organizations** (NGO's) Support **Fund.** This program with a budget of US$3,000 provided assistance and computer training on a selective basis to agencies like the Department of Health, Department of Environment and Natural Resources, the Geothermal Advisory and Service Council for projects of mutual interest.

7. **Customer Relations.** Projects under. this sector were imed at building camaraderie among staff at the National Power Corporation, the Department of Energy, the Philippice National Oil Company and PGI. In 1994, plans for the NPC-PGI-Local Government Sports Tournament was initiated,

8. **Community Scholarships.** Higher education costs were prohibitive. PGI high school and college scholarships (budget of US$30,000) provided an opportunity for selected Tiwi youths to acquire education. PGI's Community Scholarship Project gained extensive recognition from many sectors throughout the region. Scholarship recipients performed well above the we-age in high school anti college. The program

generated immense gratitude among the parents and relatives of the recipients and the goodwill was disseminated by word-of-mouth.

9. **Special Project.** In its seventh year, the annual essay writing contest (budget of US$8,000), co-sponsored by the Philippine Information Agency, generated goodwill and earned the recognition of the local media. The contest covers the entire six provinces of the Bicol Region and generates a significant following among budding writers in high school and college.

10. **Information and Education.** Projects under this sector (with a budget of US$4,000) were designed to stimulate awareness, promote understanding and appreciation for PGI's leadership in geothermal energy development through briefings, field tours, participation in prominent science and trade fairs and exhibits, advertisements and other similar ventures.

CONCLUSION

Lingering issues remain in the areas of unemployment and in environmental complaints. The planned response programs by PGI are for an upgraded Livelihood Development Program. In Mak-Ban, the 1994 livelihood program was a proactive measure to lay the groundwork for community acceptance of a model livelihood project. PGI worked with the National Power Corporation-Social Engineering group to sustain the Integrated Livelihood Program, which was a program to improve livestock raising, agriculture, trading and other home-based industries. Beneficiaries were trained in values, skills, project management and organizations development to ensure viability. In 1992, in Tiwi, this program included swine dispersion, service cooperative formation, and skills training in coconut and meat processing. In 1994, in Tiwi, the program was expanded to activities which aimed at developing micro-enterprises among unemployed residents who were directly impacted by geothermal operations. Assistance included skills training and provision of seed funds to qualified groups.

Significant geo-political differences between Tiwi and Mak-Ban geothermal fields dictate dissimilar strategies and execution of the programs in these areas. At Tiwi, the geothermal project dominates both the physical and psychological landscape on the municipal, provincial and regional levels. At Tiwi, PGI is practically "The Company" not only for Albay province but for the rest of the Bicol region. In contrast, the Mak-Ban project is one of hundreds of viable enterprises operating in the Laguna-Batangas area.

The Tiwi Community Development Program is similar to that of Mak-Ban in value and content. The significant difference lies in the intensity and range of applications. In both areas, an assessment of the communities' needs and aspirations was used to define specific program components prior to initiation. These basic concerns have been incorporated into the work program. Planning sessions are held jointly with community leaders, which has been an effective strategy, first since the leaders understand the community priorities, and second, their participation generates strong community support. The Community Development Program undergoes a periodic review by PGI field supervisors (in particular, those in direct interaction with the communities) and by PGI's upper management.

The systems which constitute the subject matter of this paper -- social, economic and political -- are complex, dynamic and interactive. Not only do they contain feedback loops within their own dimensions, they also interact with the very technological change to which they are responding, and effect a degree of control over the technological development, in the process generating an iterative loop with counter-intuitive outcomes. It is no longer sufficient for the developer to estimate the physical environmental impact of a project. The developer must also assess the societal impact on those communities most immediately affected by the project.

As the experience of PGI in the Philippines demonstrates, the developer can be an pro-active participant, continuing the process of upgrading the community's well-being even after construction and initial start-up of the power plant. PGI's efforts at continuing community development programs may be viewed as enlightened self-interest which result in signification contribution and support for many of the community services in the areas of its power plants.

The continuing community development programs by PGI may, in one light, be viewed as the "enlightened self-interest" nature of an U.S. oil company, but a serious consideration of immediate costs versus long-term benefits, that PGI continues to aggressively contribute and support many of the community services in the areas of its power plants.

ACKNOWLEDGMENTS

The authors wish to express their appreciation to Edgar P. Sevilla for his significant contribution to this effort, to David G. Newell, and Chester F. Budd, Jr. for their support, and to Tiwi Meidav for his review and comments on this paper.

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