BRIEFING □ PNOC

The target: energy independence

THE 1973 global oil crisis has brought into sharp focus the utter vulnerability of the Philippines, like any other developing nation, to drastic changes in the international oil market. For as it is, the country is heavily dependent on petroleum to fuel its development needs.

As a result, a redefined energy policy has been drawn up by the government, the underlying philosophy of which is that while imported petroleum remains a major factor, it should not constitute the be-all and the end-all for its sustained economic viability.

The Energy Development Board, which has been mandated to formulate policies, implement and coordinate all government activities relative to the exploration, exploitation and development of the country's energy resources, has thus evolved an energy plan based on the redefined national policies and goals.

The energy plan aims to reduce heavy dependence on imported petroleum from the present 95 percent of the country's total energy needs to 72.1 percent by 1985 and 53 percent by the year 2000. To achieve this, the exploitation and development of indigenous energy resources become imperative. Behind all these is the fact that the Philippines is endowed with energy sources whose potential is still waiting to be tapped to the hilt.

Petroleum

FOR one thing, there is petroleum. The country is situated at the edge of the Southeast Asian continental plate and experts agree that it has all the potentials of becoming an oil producer. There are 11 known sedimentary basins in the country; namely, Cagayan Basin, Luzon Central Valley Basin, Southern Luzon Basin and Bicol Shelf Basin in Luzon; Samar-Leyte Basin, Visayan Sea Basin, Panay Basin and Palawan Basin in the Visayan Region, and Agusan-Davao Basin, Cotabato Basin and the Sulu Sea Basin in Mindanao.

Hydro

THEN there is hydro power. The EDB plan is to increase the share of hydro power in the total energy needs from the present 4.8 percent to 8.8 percent by the year 2000.

According to estimates, the country's hydro-electric potential stands at 8,000 megawatts of which only 600 megawatts are being utilized. The present hydro power generating capacity is equivalent to 50 million barrels of oil annually. And there is no reason why the country's hydro power potentials cannot be developed. Except for the production of electro-mechanical equipment, Filipino expertise in this field is almost complete. In hydro-electric technology, for instance, there is a local well-developed expertise in site investigation, geology, design, construction and plant engineering.

The EDB considers hydro power as not only indigenous and non-depletable, but also inherently capable of multi-uses, contributing significantly to agriculture, sound forest management, fishery development and various recreational activities.

Under the plan, the EDB aims to accelerate hydro-electric development to fully utilize at least 85 percent of its total potential in the next 25 years. The program is considered vital in food production, potable water supply, flood control, power generation and navigation.

Coal

ALTHOUGH quite belatedly, coal, too, is now getting the attention that it deserves. Estimates are that the Philippines' coal reserves may reach 125 million metric tons. Philippine coal has been found suitable for thermal and cement kiln use.

The reserves are distributed throughout the archipelago, with greater concentration detected in Cebu, Batan Island off Albay, Semirara Island off Antique and Malangas situated in Zamboanga del Sur.

To speed up coal development, President Marcos has issued Presidential Decree 972 or the Coal Development Act of 1972. Like the incentives given to oil exploration firms, the Act provides attractive terms for coal producers and industrial firms which will convert or reconvert to coal use. These incentives include tax exemption on imported capital equipment for coal production and for conversion of existing oil-fired plants and facilities; tax credit on domestic capital equipment; net operating loss carryover; capital gains tax exemption; accelerated depreciation; preference in grant of government loans; and remittance right at the prevailing exchange rate to cover interest and principal of foreign loans and obligations regarding technological assistance relating to coal conversion programs.

PD 972 also signalled all-out government participation in all phases of the country's erstwhile anemic coal industry. Under this program, the EDB is empowered to engage in supply, storage, transport and distribution of coal, importation, technical and financial assistance, and the maintenance of a national oil stockpile.

The EDB expects coal demand to increase from the present 226,000 metric tons to 2.9 million tons by 1985.

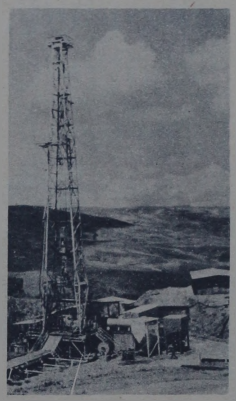
Geothermal

ANOTHER indigenous energy source which the government intends to utilize is geothermal energy. So far, five priority areas have been identified for development. These are Tiwi in Albay, Makiling-Banahaw in Laguna, Tongonan in Leyte, Southern Negros and Manat in Davao.

It is not surprising that the Philippines abounds with geothermal energy sources. The country straddles the so-called circumpacific "fire belt." Its estimated geothermal resources is about 200,000 megawatts.

By 1978, the first 55-megawatt turbine generator will be operational at the Tiwi project. Sixteen production wells have so far been drilled, of which 14 are now producers.

Geothermal development is being



Tapping local energy resources.

undertaken under close supervision by the EDB in close collaboration with other government agencies. The National Power Corporation, for instance, is actively involved in the two most advanced geothermal projects—Tiwi and Makiling-Banahaw. On the other hand, the EDB is supervising the Tongonan project in Leyte and the Southern Negros project. The PNOC Energy Development Corporation has likewise been harnessed for the exploration and exploitation of geothermal resource areas.

Nuclear

IN anticipation of the activation of the first nuclear power plant in the Philippines, the Energy Development Board has intensified the exploration and development of nuclear fuel, especially uranium.

The first nuclear plant, which will begin operations in 1982, will have a generating capacity of 620,000 kilowatts, equivalent to some $60 million in savings from non-importation of crude oil. The National Power Corporation has drawn up a 25-year power expansion program that includes the installation of 11 nuclear plants which will form a vital component of government efforts to reduce fuel imports.

The nuclear generation program is being supported at this early stage with the exploration and exploitation of local nuclear materials and the training of Filipino nuclear technological manpower. Field surveys are being conducted in two promising areas in Camarines Norte and Samar. In one area in Camarines Norte, some deposits of uranium-bearing ores are already pinpointed with a conservative estimate of 200 metric tons of recoverable uranium.

The EDB, in cooperation with Philippine Atomic Energy Commission, is currently negotiating for a technical assistance program from the Australian government for uranium and nuclear-ore exploration. Actual uranium exploration shall be undertaken by the PAEC with EDB-prescribed guidelines.

Solar

THE Energy Development Board, for the first time in the country's history of energy planning, has included the utilization of solar energy and non-conventional sources in the overall energy plan. The Board, while recognizing technical and other problems inherent in the utilization of solar energy, believes that this energy source may be the key to future national development because it is practically inexhaustible, does not cost anything and has the most minimal environmental impact.

An assessment of the Philippine situation shows that solar energy offers tremendous potential for applications of immediate and future relevance. Direct solar energy conversion, wind energy conversion and bio-conversion to fuels are the areas considered to have specific applications with the greatest impact in the near and medium-term future. Majority of these applications are rural-based and their introduction in remote powerless areas could have far-reaching effects on the living conditions of the rural masses. Solar energy-generating plants and devices may enable solar-derived electricity to become a significant factor in supplying the country's energy demands by the the end of the century.

A seven-year solar energy development program has been drafted calling for the mass production of solar utilization devices for sale to the public or for distribution to rural areas through possible government financing and subsidy. These devices will be capable of heating buildings, space-cooling, crop drying, refrigeration and heating engines for the pumping and generation of low-power electricity. □

A wealth of power sources

Geothermal power can substitute for oil.

Hydro—An appraisal of all the available potential dictates a full utilization of the natural water resources of some 8,000 megawatts (MW). At present, only 600 MW are being utilized. Assuming a load factor of 50 percent, the energy generation capacity corresponds to 50 MMB of oil equivalent per year.

Geothermal—It is known that the Philippines is lying on a high heat flow region (circumpacific "fire belt") where volcanic activity was and is very intensive. In the country, about 25 volcanic centers with known surface and thermal manifestations have so far been identified. If we consider these volcanic centers as ready sources of heat energy and assuming that only 25 percent of the rock volume beneath each is fractured and naturally water-filled, we can project an energy generating potential of 2 x 10^6 megawatt-centuries. This potential is equivalent to 2.5 x 10^9 MMB of oil.

Nuclear Minerals—Field surveys are being conducted in two promising areas: Camarines Norte and Samar. Conservative estimates of the recoverable uranium in Camarines Norte alone is 200 metric tons. All other rela geological data are currently under evaluation.

Coal—There is disparity in estimates of the nation's known reserves. These range from 36 million to 125 million tons. However, if we assume that only one quarter of those parts of Cebu which are covered by younger limestone might be underlain by a one meter thick coal layer, geological considerations bring an evaluation of existing potential coal resources to as much as 1 billion tons. Similar geological conditions exist in several areas in Mindanao. Using the same assumptions as above, then another billion tons of coal might exist. This brings our total estimated coal potential to as much as 2 billion tons. This corresponds to 6 billion barrels of oil equivalent.

Petroleum—There are 230,000 square kilometers of sedimentary basins in the country and assuming that about 1 percent of this total area is prospective oil accumulation with average net pay thickness of 30 meters, then we can estimate a potential reserve of 10 billion barrels of oil. □