

Written by Bobby M. Reyes
Friday, 17 June 2011 19:35 -

Sorsogon City Council Approves Application to Double BacMan Geothermal Plant's Output Without Asking for Ways to Treat Toxic Wastes

By Lolo Bobby M. Reyes of Sorsogon City, Philippines, and West Covina, California

Part VII of a Series on "Saving Our Sorsogon (SOS) Bay"

It is really a pity, if not tragic, that public officials of the Province of Sorsogon and the City of Sorsogon do not know apparently how to use search engines. With a few clicks on a computer, they could have read environmental issues about geothermal energy.

And Sorsogon provincial officials never bothered to check and/or coordinate with the Sorsogon City Council on the application of the Energy Development Corporation (EDC) to double the output of the BacMan Geothermal Plant (BGP). And to think that some environmentally-concerned citizens of Bulusan town have been opposing the provincial government's plan to build a geothermal plant near Bulusan Volcano. The Bulusan-based environmentalists have been telling the provincial officials about the toxic wastes produced by a geothermal plant.

As stated in Part VI of this series, the Sorsogon City Council refused to hold a public hearing on the EDC application. Here is the link to our report about it: [More On the "Save Our Sorsogon \(SOS\) Bay" Advocacy: "Arin si Brockovich?"](#)

There should have been a public hearing. If there was one, then local environmental-conscious community leaders like Pilar Alindogan Gabito and Sonia Lariosa and their allies could have asked specific questions to the EDC corporate and/or technical people. The public could have completed the "education" of public officials before they approved the EDC proposed expansion.

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Had Sorsogon city and/or provincial officials sought the aid of search engines, they would have read reports like this one:

http://www.ucsus.org/clean_energy/technology_and_impacts/impacts/environmental-impacts-of.html

QUOTE.

Geothermal Energy

Geothermal energy is heat contained below the earth's surface. The only type of geothermal energy that has been widely developed is hydrothermal energy, which consists of trapped hot water or steam. However, new technologies are being developed to exploit hot dry rock (accessed by drilling deep into rock), geopressured resources (pressurized brine mixed with methane), and magma.

The various geothermal resource types differ in many respects, but they raise a common set of environmental issues. Air and water pollution are two leading concerns, along with the safe disposal of hazardous waste, siting, and land subsidence. Since these resources would be exploited in a highly-centralized fashion, reducing their environmental impacts to an acceptable level should be relatively easy. But it will always be difficult to site plants in scenic or otherwise environmentally-sensitive areas.

The method used to convert geothermal steam or hot water to electricity

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directly affects the amount of waste generated. Closed-loop systems are almost totally benign, since gases or fluids removed from the well are not exposed to the atmosphere and are usually injected back into the ground after giving up their heat. Although this technology is more expensive than conventional open-loop systems, in some cases it may reduce scrubber and solid-waste disposal costs enough to provide a significant economic advantage.

Open-loop systems, on the other hand, can generate large amounts of solid wastes as well as noxious fumes. Metals, minerals, and gases leach out into the geothermal steam or hot water as it passes through the rocks. The large amounts of chemicals released when geothermal fields are tapped for commercial production can be hazardous or objectionable to people living and working nearby.

At The Geysers, the largest geothermal development, steam vented at the surface contains hydrogen sulfide (H₂S)-accounting for the area's "rotten egg" smell-as well as ammonia, methane, and carbon dioxide. At hydrothermal plants carbon dioxide is expected to make up about 10 percent of the gases trapped in geopressured brines. For each kilowatt-hour of electricity generated, however, the amount of carbon dioxide emitted is still only about 5 percent of the amount emitted by a coal- or oil-fired power plant.

Scrubbers reduce air emissions but produce a watery sludge high in sulfur and vanadium, a heavy metal that can be toxic in high concentrations. Additional sludge is generated when hydrothermal steam is condensed, causing the dissolved solids to precipitate out. This sludge is generally high

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in silica compounds, chlorides, arsenic, mercury, nickel, and other toxic heavy metals. One costly method of waste disposal involves drying it as thoroughly as possible and shipping it to licensed hazardous waste sites. Research under way at Brookhaven National Laboratory in New York points to the possibility of treating these wastes with microbes designed to recover commercially valuable metals while rendering the waste nontoxic.

Usually the best disposal method is to inject liquid wastes or redissolved solids back into a porous stratum of a geothermal well. This technique is especially important at geopressured power plants because of the sheer volume of wastes they produce each day. Wastes must be injected well below fresh water aquifers to make certain that there is no communication between the usable water and waste-water strata. Leaks in the well casing at shallow depths must also be prevented.

In addition to providing safe waste disposal, injection may also help prevent land subsidence. At Wairakei, New Zealand, where wastes and condensates were not injected for many years, one area has sunk 7.5 meters since 1958. Land subsidence has not been detected at other hydrothermal plants in long-term operation. Since geopressured brines primarily are found along the

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coast, where natural land subsidence is already a problem, even slight settling could have major implications for flood control and hurricane damage. So far, however, no settling has been detected at any of the three experimental wells under study.

Most geothermal power plants will require a large amount of water for

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cooling or other purposes. In places where water is in short supply, this need could raise conflicts with other users for water resources.

The development of hydrothermal energy faces a special problem. Many hydrothermal reservoirs are located in or near wilderness areas of great natural beauty such as Yellowstone National Park and the Cascade Mountains

Proposed developments in such areas have aroused intense opposition. If hydrothermal-electric development is to expand much further in the United States, reasonable compromises will have to be reached between environmental groups and industry.

UNQUOTE.

It is never too late to stop the operations of the BGP and inspect it for infrastructures built to clean the air-, water- and-other wastes generated – that could have prevented the pollution of the Kawayan River that empties into

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Sorsogon Bay

. If such environmental safeguards are not found, then local laws – from zoning to health regulations – can force the EDC to install them. And more importantly, to clean up the environment of the pollution the BGP has allegedly already caused – before the EDC can operate it again.

(To be continued . . .)

Editor's Note: Here are links to the previous articles in this series:

[The "Save Our Sorsogon \(SOS\) Bay" Initiative](#) (Part I)

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URL: <http://www.mabuhayradio.com/ecology-and-the-environment/the-save-our-sorsogon-sos-bay-initiative>

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[Sorsogon Bay: "So Near, Yet So FBAR." The "Red Tide" Ban by the BFAR Must Be Lifted \(Part II\)](#)

URL: <http://www.mabuhayradio.com/ecology-and-the-environment/sorsogon-bay-so-near-yet-so-fbar-the-red-tide-ban-by-the-bfar-must-be-lifted>

["Back to BacMan," Tracing to the Geothermal Plant an Apparent Cause of Pollution in Sorsogon Bay \(Part III\)](#)

URL: <http://www.mabuhayradio.com/ecology-and-the-environment/back-to-bacman-tracing-to-the-geothermal-plant-an-apparent-cause-of-pollution-in-sorsogon-bay>

[Ultimatum Given to BacMan Geothermal Plant to Treat Waste Water Before Emptying It into a Sorsogon-Bay Tributary \(Part IV\)](#)

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URL: <http://www.mabuhayradio.com/ecology-and-the-environment/ultimatum-given-to-bacman-geothermal-plant-to-treat-waste-water-before-emptying-it-into-a-sorsogon-bay-tributary>

[Sorsoganons Got Guts and Know How to Face Death Honorably](#) (Part V)

URL: <http://www.mabuhayradio.com/ecology-and-the-environment/sorsoganons-got-guts-and-know-how-to-face-death-honorably>

[More On the "Save Our Sorsogon \(SOS\) Bay" Advocacy: "Arin si Brockovich?"](#) (Part VI)

URL: <http://www.mabuhayradio.com/ecology-and-the-environment/more-on-the-save-our-sorsogon-sos-bay-advocacy-arin-si-brockovich>

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