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NICARAGUA, A POTENTIAL ALTERNATIVE-ENERGY HOTSPOT

As the price of oil bulged beyond the US\$50 per barrel mark for the first time in 2005, Nicaragua again found itself lost in a conundrum. With its geothermal, hydroelectric, and wind resources, the country is a potential generator of renewable, nonpolluting energy economically within reach of every citizen. But Nicaragua also lacks the means to motivate that kind of development and, as a result, spends so much of its meager treasure on imported oil that it plunges ever more deeply into crippling debt.

Early in 2005, the Comision Nacional de Energia (CNE) warned that the situation could only worsen unless a turn is taken toward alternative, renewable sources of energy. The CNE has been lobbying the private sector to invest in several different kinds of renewable energy projects. But, said CNE president Raul Solorzano, the electricity market is demand driven, and, if there are no buyers for electricity produced in sustainable ways, there will be no sellers interested in investing in its production.

Little interest, no obligation

At present in Nicaragua, there is one buyer. The Spanish multinational FENOSA, which controls about 80% of the electricity distributed in the country (see [NotiCen,2004-05-13](#)), has begun to buy power from renewable sources, but, Solorzano pointed out, it is under no obligation to do so. FENOSA's purchases could be an incentive for increased production but, without legal obligations, so far has not been.

Enrique Kuan Sauning, Instituto Nicaraguense de Energia(INE) energy advisor, said other reasons weigh heavily on the decision to invest in renewable sources. "The private interests lost interest in investing in the sector when Hidrogesa, the principal hydroelectric generator of the country and the backbone of the hydraulic complex that could potentially develop, was not privatized," said Kuan.

In the face of private-sector apathy, the country has a thermoelectric capacity of 560 megawatts to meet a demand of about 460 MW, but this seeming overcapacity is illusory. The poor condition of the infrastructure accounts for significant bleeding of electricity. A further impediment to attracting the private sector, which could theoretically do a better technical job of making plants reliable and efficient, is the lack of a legal and legislative framework for private development.

Legislation in the works

Roberto Gonzales, a member of the Comision de Infraestructura y Energia of the Asamblea Nacional (AN), said the AN is working on legislation with an eye toward freeing the energy sector from oil dependence. Gonzales told an Inforpress reporter, "We have been working, and an initiative already exists to reform the Ley de Hidroelectricas to modify the ceiling of allowable generation from 5 MW to 30 MW."

Gonzales said investors have expressed the need for favorable legislation to provide incentives and for the creation of a Superintendencia de Servicios Publicos to regulate the sector. "The country needs a water law that, beyond protecting water resources, allows for the establishment of development opportunities for the promotion of renewable energy without affecting the interests of citizens," he said.

For a country with a national budget of US\$1 billion, expenditure on oil and derivatives is staggering. For 2005, the INE calculates Nicaragua will spend US\$400 million for around 10.5 million barrels of oil. INE director of hydrocarbons Fernando Ocampo said this consumption is

500,000 barrels more than last year. His figures were based on average prices of between US\$40 and US\$50 a barrel, a figure already surpassed in February. Of the total oil imports, two-thirds goes for bunker fuel to generate electricity and for diesel; 80% of electrical generation is bunker fueled.

Only about half of all Nicaraguans have electricity in their homes. In December 2004, the CNE announced the development of 15 rural-electrification projects that would, by 2006, extend 678 km of lines to 1,559 campesino communities, or 88,653 houses under whose roofs dwell a half million people. These projects would raise the percentage of Nicaraguans with electricity to 61% at a cost of about US\$81.7 million. They would also obligate the state to ongoing subsidies, since the campesinos affected would be too poor to pay the full price of service.

The Plan de Electrificación Rural is studying financing mechanisms for these projects and subsequent ones to provide electricity to 71.2% of the population by 2013. The plans include hydroelectric and thermoelectric generation. The CNE is also pressing the AN to pass legislation to facilitate private-sector participation. Without an additional US\$100 to US\$200 million invested in renewable generation, the Camara de Industria has said Nicaragua would see shortfalls and blackouts in the next four years.

BCIE lends a hand

Shortly after the CNE announced its projects, the Banco Centroamericano de Integración Económica (BCIE) approved financing for a project to generate clean electricity from the waste of sugar cane at the processing plant San Antonio in Chichigalpa, Chinandega department. The project would generate 20 MW of relatively clean power, allowing the plant to be energy self-sufficient and to sell excess generation into the national grid through FENOSA. This new infrastructure would save US\$1.5 million compared to oil-fueled production and reduce carbon emissions by 28 million kg.

The BCIE financing represents 70% of the US\$3.7 million cost of the plant, with the rest coming from Grupo Pellas, said to be the largest financier in the country. The BCIE has been financing energy projects during the past four years and has invested US\$115.9 million in 10 projects generating 194.5 MW. The bank has also, during the period, provided US\$5 million in credit to the Facilidat Centroamericana de Energía Renovable y Producción Mas Limpia (CAREC) for the reduction of hydrocarbon emissions.

From all these efforts combined, the CNE estimates that, by 2012, 140 MW of electricity will be generated by renewable sources. This is but a small fraction of the potential. The INE says that hydroelectric potential is in the neighborhood of 1,700 MW, of which only 6% is in development. The geothermic potential is estimated at 1,000 MW, of which only 7% is developed.

As oil prices soar, additional renewable-energy schemes reach a point of economic feasibility. One such possibility is biodiesel, an agroindustrial product that can be made from a variety of oil-bearing sources, like sunflower, rapeseed, soy, palm, animal fat, and byproducts of the prepared-food industry. Biodiesel is in limited use in the developed world but awaits facilitating legislation, economic analysis, and a reordering of national priorities to become a reality in Nicaragua.

Biodiesel can be used as a substitute for diesel fuel or mixed into gasoline, up to 20% without requiring engine modifications. It has the advantage over diesel fuel of having no sulfur, but its economic feasibility depends on such issues as the relative advantages of using agricultural production for this purpose versus exportation. Current low world commodity prices and the expected negative effects on Nicaragua's agriculture of the pending Central America Free

Trade Agreement (CAFTA) could be as significant as rising oil prices in determining feasibility. Other elements of feasibility are the value of employment created by a biodiesel industry and national retention of wealth versus sending it abroad to buy oil.

Environmentally, biodiesel, lacking sulfur, does not contribute to the production of sulfuric acid, one component of acid rain, as do the petroleum derivatives it would replace. The production of carbon dioxide, a greenhouse gas, as a product of combustion is offset by the absorption of the gas in growing the plants from which biodiesel comes.

[Sources: La Prensa (Nicaragua), 11/04/04; Notimex, 12/01/04, 12/16/04, 02/16/05; unionfenosa.es, 02/02/05, 02/14/05]