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CENTRAL AMERICAN COUNTRIES PLAN A REGIONALLY INTEGRATED SYSTEM OF ELECTRICITY GENERATION & DISTRIBUTION

In mid-August, the heads of Central America's electricity institutes met in Managua to review progress on plans to integrate the region's electric generation and distribution systems into one massive electricity grid. The project, which aims to provide all the Central American countries with a constant flow of electricity derived from cheap and sustainable energy sources, will be completed by the year 2001 at a cost of about US\$500 million.

The six Central American governments--including Panama but excluding Belize--began drawing up plans to integrate their electricity systems after regional dependence on petroleum-generated electricity surged to unprecedented levels during the first half of the 1990s. The sharp escalation in petroleum-based energy consumption is largely the result of adverse climatic conditions and extensive deforestation throughout the isthmus, both of which markedly reduced hydroelectric output after 1990.

According to a special report by the UN's Economic Commission for Latin America and the Caribbean (ECLAC), during the 1980's regional dependence on oil-based thermoelectric generation dropped dramatically as a number of huge hydroelectric projects, under construction since the late 1970's, finally came on line in various countries, particularly Guatemala. Regional petroleum consumption for electricity generation fell by an annual average of 8.8% from 1982 to 1990, with the total use of oil for electricity reaching a historical low of just 2.6 million barrels in 1989.

Consequently, the contribution of oil to total electrical production in the region fell dramatically, with petroleum-generated electricity accounting for just 9% of electrical output in 1989, down from its high of 30% in 1980. But in 1991, and then again in 1994, severe droughts gripped the region, sharply curtailing hydroelectric output in most of the isthmian countries.

The droughts were brought on by the climatic phenomenon known as "El Nino," which struck the Pacific coast of Central and South America in those two years, seriously altering precipitation patterns throughout the continent. The droughts, however, were aggravated by extensive deforestation, which significantly decreased water levels in the rivers that feed some of the region's largest hydroelectric plants, such as the Chixoy dam in Guatemala (see [EcoCentral, 08/15/96](#)).

These factors, combined with a surge in energy demand caused by robust economic recoveries in most isthmian countries, led to a sharp increase in petroleum-based thermoelectric generation. In 1994, the region consumed 11.8 million barrels of oil for electricity production, a 350% jump compared with the 2.6 million barrels used in 1989, according to ECLAC. As a result, by 1994 oil-based electricity generation accounted for 33% of total electrical production, nearly a four-fold increase compared with the 9% contribution by thermoelectric sources registered in 1989.

In response, the Central American nations have been discussing an ambitious plan to resolve the region's energy needs and reduce dependence on petroleum-based electricity production. The crux of the plan--called the Central American Electric Interconnection System (Sistema de Interconexion Electrica en Centroamerica, SIEPAC)--calls for the integration of the region's electricity infrastructure into one massive generation and distribution network capable of guaranteeing a constant flow of energy to all the countries.

Under SIEPAC, the six countries would construct and link up some 1,700 km of high-voltage electrical lines that would extend from Guatemala to Panama. At the same time, the governments would promote construction of hydroelectric and geothermic power plants in strategic locations on the isthmus.

According to Teofilo de la Torre, SIEPAC executive secretary, through regional coordination and integration, the governments expect to use the region's resources much more efficiently, with those countries that have greater generating capacity supplying a regular flow of energy to those with deficiencies. That, in turn, will help meet more of the region's growing demand, while providing an emergency backup network when natural disasters or other problems cut output or distribution in one or more of the participating countries.

In addition, the system should lower the cost of electricity for consumers. SIEPAC officials calculate that the regionwide electrical grid would save between 15% and 20% in production costs, which would eventually translate into several million dollars in annual savings.

"With an aggressive push to construct generating plants in each of the nations, we hope to produce enough fuel to meet at least basic demand," said de la Torre. "Then the network of transmission lines will act like a massive highway system that allows the energy to flow wherever it is needed throughout the region."

The heads of the region's electricity institutes held two meetings since July to review the progress of SIEPAC, the latest of which took place in Managua August 11-12. According to de la Torre, the participants are currently drawing up technical and financial assessments for the project, which will be completed by the end of this year. The goal is to have the transmission interconnection functioning by the year 2001, with the majority of new power plants coming on line by the year 2004.

The construction of the transmission network is estimated to cost about US\$500 million, much of which the regional governments hope to finance through bilateral aid from Spain and other members of the European Union (EU), as well as with aid from multilateral lending institutions, particularly the Inter-American Development Bank (IDB). Spain is expected to provide significant financial and technical assistance for the project, and the Spanish company ENDESA is planning to participate directly in SIEPAC.

"The Spanish government has basically been the godparent of this project since it began, providing important donations and technical studies," said de la Torre.

The cost of constructing power plants, however, will immensely outweigh investment in the transmission network. SIEPAC officials estimate that, for basic demand to be met once the

transmission line is operating, the region would have to spend a minimum of US\$8 billion to increase generating capacity.

Currently, Central America has about 5,000 megawatts of installed production capacity, but demand is growing at a rate of 300 megawatts per year. Moreover, only a minority of the population in most of the region have access to electricity. In Guatemala and Panama, for example, 70% and 66% of the local populations, respectively, do not have access to electricity.

Although public investment in electrical infrastructure will continue, SIEPAC will rely primarily on the private sector to construct new power plants and upgrade those currently operating on the isthmus. Indeed, a fundamental goal of the project is to open the energy market to private investors, which complements the push by most of the governments to either partially or completely privatize their energy sectors (see [EcoCentral, 07/25/96](#)).

The regional governments are now discussing the terms and conditions of a new electrical interconnection treaty that will be signed by the presidents and then sent on to the legislatures for approval. The treaty will create an open Central American energy market whereby all the countries will authorize the free flow and sale of energy among their countries, and it will establish a multilateral organization, or superintendency, to oversee the treaty's implementation and resolve disputes.

The treaty, which will be written in conformance with the legislation of each country, will promote construction of new generating plants in any country where conditions provide for the cheapest energy. Moreover, the SIEPAC directorate will produce technical studies of investment projects that emphasize the use of sustainable resources to encourage private investors to favor hydroelectric and geothermic electricity plants over oil-based thermoelectric production.

"Private firms like to invest in the construction of thermoelectric plants because there is less risk involved, but the regional governments will specifically advocate the construction of hydroelectric and geothermic plants," said de la Torre. "To do that, we will produce portfolios of potentially profitable hydroelectric and geothermic projects that would be cheaper than oil-based thermoelectric plants."

According to de la Torre, currently at least a dozen foreign companies have expressed interest in constructing such plants as part of the SIEPAC project. In fact, August 12-13, the ministers of transportation, public works, and energy from the six Central American countries met for a two-day seminar, sponsored by the US Embassy in San Salvador, dubbed "Investing in Central America: attracting US investment for energy generation and distribution." Among others, the president of the US company Coastal Corporation and specialists from the US Department of Energy participated in the conference.

[Sources: Reuter, 04/13/96; Prensa Libre (Guatemala), 05/20/96, 05/21/96; Tiempo (Honduras), 06/25/96; Inforpress Centroamericana (Guatemala), 03/14/96, 07/25/96; Tico Times (Costa Rica), 07/26/96; Inter Press Service, 07/17/96, 08/02/96; Notimex, 08/02/96; Prensa de Honduras, 08/09/96; Agencia Centroamericana de Noticias-Spanish news service EFE, 07/25/96, 08/11/96, 08/12/96, 08/13/96]

