

## Will the SIEPAC Transmission Project Lead to a Vibrant Electricity Market in Central America?

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### New Opportunities for Central America<sup>1</sup>

Following years of debate, study and delay, the Sistema de Interconexión Eléctrica de los Países de América Central or SIEPAC transmission line project was largely completed earlier this year. With a mere 300 MW of transfer capability, SIEPAC might seem an inconsequential project at first glance, but it could be a milestone in the economic development of the region. It also presents an interesting test for cooperation within this region.

With the 1,800 km 230 kV transmission project, the electricity grids of Panama, Costa Rica, Honduras, El Salvador, Guatemala, and Nicaragua are now interconnected into a single transnational grid with an independent system operator, or EOR.<sup>2</sup> The project is owned by Empresa Propietaria de la Red or EPR -- a public company with private participation whose shareholders include the transmission network operators from the six SIEPAC countries as well as Endesa (Spain), CFE (Mexico), and ISA (Colombia). A regional electricity market (Mercado Eléctrico Regional or MER) has been established.<sup>3</sup> An adjacent and complementary project – the Mesoamerican Information Highway – supplements SIEPAC with an advanced fiber optic communications infrastructure. In theory, this should lead to improved reliability of service and lower overall electricity and telecommunications costs for consumers in Central America. This should, in turn, improve the region's competitiveness in attracting manufacturing operations and lead to a higher standard of living.

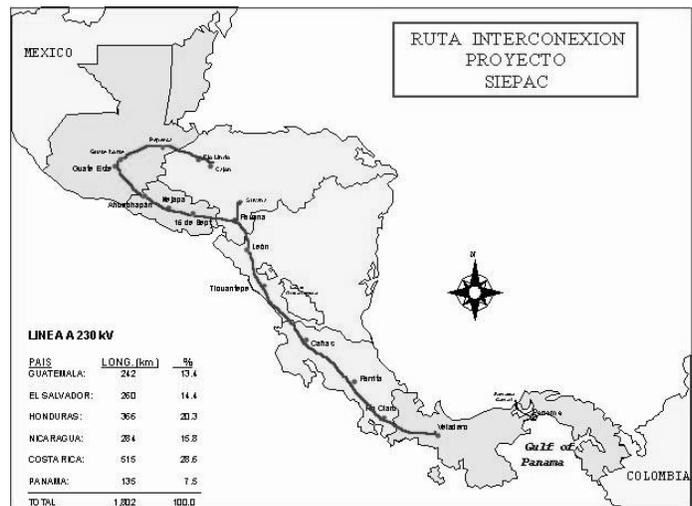
The interconnection could also affect the regional generation mix and perhaps enhance investment opportunities for large-scale renewable energy projects. Nearly half of the region's generation requirements are presently satisfied with hydroelectric power. Although the region has enormous potential for the development of wind, solar, and geothermal generation as well as additional hydro (see Johnson, 2012), the share of power production from renewables has increased very slightly in recent years. During the 1990s, the share of total generation from oil-fueled plants increased. More recently there has been some expansion in coal-fired capacity. The net results of these changes include a rise in carbon emissions from the Central American electricity generation sector and increased exposure of the various national electricity markets to volatile imported fossil fuel prices. A transnational electricity market could open opportunities for larger renewable energy projects in this region of high energy demand growth. It may also reduce the dependence of some nations on high-cost and high-emissions oil-fueled power plants.

An existing link between Guatemala and Mexico is being expanded to carry 200 MW north to south and 70 MW south to north, according to the CEAC regional generation plan. This is likely to be integrated into the SIEPAC system, and proposals exist for the construction of a link between SIEPAC and the Colombian grid. The SIEPAC system has been built using towers capable of carrying a second 300 MW circuit.

### But, Challenges Remain

The physical infrastructure has been largely in place since June 2013. But the establishment of effective energy policies is lagging.

Complicating matters, each of the six nations has different electricity industry structures with different degrees of government ownership and control. Guatemala's generation sector is competitive. At the other extreme, electricity service in Costa Rica is provided through a vertically-integrated monopoly. Existing regulatory bodies at the national level are being retained. Private investment in the power sector is welcomed in some countries, but not possible in others. Thus,



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the market-wide rules being established through the Regional Electric Interconnection Commission or CRIE must recognize these differences in ownership and energy policies. And the regional governments must in turn harmonize their domestic policies, pursuant to the 1998 Central American Market Treaty.

As is common when barriers to trade are removed, winners and losers will emerge. A new low-cost generation project in one nation with the ability to sell to consumers in other nations in the transnational market may lead to less power production in other nations. Protectionist measures are a common response from the potential losers, unless the overall benefits to consumers from a more-efficient lower-cost regional electricity supply are appropriately recognized. These protectionist impulses must be resisted if the market is to succeed.

Success also hinges on the progress of the member countries in reaching an agreement on the terms and conditions of transmission access. The regional electricity market officially opened on June 1st, 2013 when the final set of regulations outlined by the CRIE took effect. However, implementation issues such as allocation of long-term transmission rights to firms and guarantees of capacity in contracts still need to be worked out. Investments in new power plants and long-term wholesale transactions may hinge on the availability of long-term transmission rights.

The magnitude of transactions of electricity across national borders remains low due to these ongoing regulatory and policy uncertainties. Yet, the substantial economic benefits which would accrue if the policy challenges are overcome may provide one with some optimism.<sup>4</sup>

### **Conclusion**

Regional electricity markets that integrate several national markets are becoming common and Central America provides an interesting case study. SIEPAC has the potential to contribute to economic development and political stability in this region if the remaining policy and regulatory challenges can be successfully addressed.

### **Footnotes**

<sup>1</sup> In our research into this topic, we benefited greatly from discussions with Ross Pumfrey (The University of Texas and Texas Council for Environmental Quality), Jeremy Martin (Institute of the Americas), Soll Sussman (Texas General Land Office), Silvia Alvarado (Comisión Nacional de Energía Eléctrica de Guatemala), Robert Zerrner (AES), Ignacio Rodriguez (TetraTech), Matt Cullinen (Carbon War Room), and Lorenzo Mauricio Meyer Falcon (Mexico Comisión Reguladora de Energía). We of course remain responsible for any errors.

Tragically, we recently lost the leader of our research team, Prof. Shama Gamkhar. We will forever be grateful for her leadership and friendship.

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<sup>3</sup> Note that there has been some limited interconnection between the utility grids among these countries since 1976. See Bickford (2012).

<sup>4</sup> For a discussion of market operations, see: Economic Consulting Associates Limited (2010).

<sup>5</sup> See Martin (2013).

### **References**

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