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# How Advanced Are Smart Grids in Latin America?

Inter-American Dialogue's Latin American Energy Advisor

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***Q and A: How Advanced Are Smart Grids in Latin America?***

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U.S. President Barack Obama last year announced the largest single energy grid modernization investment in the country's history, valued at some \$8 billion. Other nations have similarly prioritized large-scale investments to modernize energy infrastructure by incorporating information and communication technologies to create a "smart grid" that uses two-way communications to better coordinate supply and demand, reduce costs and enhance efficiency. How advanced is the build-out of smart grids Latin America and the Caribbean? What challenges do smart grids face in the region and how do they factor into the overall context of the energy sector? How will regional integration factor into the development of more energy efficient infrastructure?

**A: Hermes Figueroa, head of service sales for Latin America for Nokia Siemens Networks:**

"A smart grid is the new generation of electrical networks, which thanks to a two-way communication layer, is capable of analyzing appliances at consumers' homes. Smart grids measure energy usage in real time and communicate the data to centralized premises, which makes it possible to dynamically respond to changes in grid condition. Smart grids are in an early phase globally, and the same applies for Latin America and the Caribbean. Currently, the whole industry is joining forces to speed up the required regulatory, technological and financial analysis. Latin America has historically been an important energy-generating region thanks to its natural resources, and trends indicate it will remain so or even increase in the long term. We see some early efforts in the region to start testing the required components and begin parallel discussions with regulation entities. An example is the Brazilian government's initiative to regulate the metering part by a public consultancy launched in March 2009. In general, we can say the energy sector is facing similar challenges as the telecom sector: a highly competitive environment, pressure on tariffs, customer retention issues and a tight financial situation. Smart grids represent opportunities to increase customer retention, generate operational efficiencies, reduce impact to the environment and enhance financial results. They also present challenges since they require investments that pay off in the medium-to-long term, making government incentives necessary. The entire industry and government must join forces to set a clear regulatory environment, provide government incentives to promote its adoption and facilitate a multi-vendor, standardized technological framework. The more globalized or regionalized the

approach, the shorter the investment returns, due to larger economies of scale and thus a shorter adoption curve. The deep knowledge developed for the telecom world will be very useful to extrapolate to energy, and we are convinced that Nokia Siemens Networks will play a key role in developing the energy revolution with smart grids in Latin America."

**A: Pablo Hernán Corredor Avella, CEO of XM Compañía de Expertos en Mercados in Medellín:**

"The smart grid is still a far-reaching concept in most parts of Latin America and the Caribbean. We have seen efforts concentrated in the most developed markets, like Brazil, Chile, Uruguay and Colombia. Some utilities in these countries have started different kinds of smart grid related programs, reaching from phasor measurement unit technology deployment at the transmission level, to small hydro and wind farms on the generation side, to smart metering allowing for prepaid energy supply services on the consumer side. But, in order to achieve wide ranging implementation, a coherent way to integrate all of these efforts into one smart grid initiative is still needed. Challenges like access to technology, implementation costs and slow changing market regulation could impair the penetration of smart grids in Latin America, but we think that is true for any other country in the world. However, the benefits that the technology could bring for empowering the role of the customer inside the market, improving power system reliability, securing underdeveloped power grids and alleviating high energy losses at the distribution systems will, in the end, make economical sense for its deployment. Additionally, once regional energy integration is established, the benefits of each country's energy advantages will reach the entire region."

**A: Ferdinando Guerra, CEO of Mobix Brazil:**

"Smart grids are coming out from behind the desks to practice at an advanced pace, and it is about time. Historically, South American countries have focused less on energy efficiency and combating wastefulness than have the United States and Europe, but this has been changing. Brazil's blackout in 2009 drew attention to the inefficiency of the country's electric sector. The government mobilized quickly and several debates occurred to check the security of the electrical system, motivating it to create a national program about these technologies, adapt to the local realities and create incentives for the scientific and entrepreneurial community to meet regional and global demand. It also prompted the Agência Nacional de Energia Elétrica (Aneel) to direct efforts toward the modernization of electricity infrastructure oriented to: a tariffs plan, regulation of the use of programmable language controllers (PLC), public polling about electronic metering and the substitution of 63 million electricity meters. With regard to challenges, there are no data complaints at this point. The smart grid and advanced metering infrastructure world is too complicated for single technology solutions, as both PLC and radio frequency (RF) do not answer all the needs of multi-resource metering singlehandedly and use competing standards. Using the mix of technologies will begin with a logistical nightmare and end up with an unmanageable infrastructure, but hybrid technology can use both RF and PLC simultaneously. Data is streamed over both power line and RF channels simultaneously and recombined at the junction points. Data hops from one medium to another, thereby creating a three-dimensional communication (3DC) mesh network. The immediate construction of an integrated program that is oriented to local needs and government incentives are necessary to meet demand and reduce production costs. This is especially true in Brazil, which is facing an unprecedented economic moment and where the reduction of risks of new blackouts and demand

management is urgent and pressing."

**A: Michele de Nigris, senior consultant to the U.N. Economic Commission for Latin America and the Caribbean on smart grids:**

"Smart grids represent the evolution of electricity networks toward modern infrastructure able, by means of the close integration between power and information, to better include nonconventional renewable energy sources such as wind and solar, to give the final user an active role in the management of energy (through the dispersed generation and the demand participation) and thus enhance the security and quality of supply. Latin America may receive great benefit from the application of smart grid technologies, especially in all cases where it is necessary to reduce technical and nontechnical losses. Smart grids, thanks to the widespread use of the electronic meter, allow a dynamic verification of the energy balances in all portions of the system, a closer control of the system configuration and the integration of variable generators closer to the loads. The consciousness of the potential of smart grids is rapidly increasing in Latin America and initiatives are being planned and implemented also thanks to the local operators (often connected to very experienced European operators) than can leverage strong technical skills and favorable investments conditions.

*The Energy Advisor welcomes responses to this Q&A. Readers can write editor Gene Kuleta at [kuleta@thedialogue.org](mailto:kuleta@thedialogue.org) with comments.*