

**REGIONAL INTEGRATION
IN SOUTH AMERICA
AND THE ROLE OF ELECTRIC ENERGY**

1. Introduction

- South America in position to compete in international markets and reignite engines of growth required for prosperity.
- Requires integrated economic space capable of using underexploited comparative advantages: abundant and diverse resources, political stability and social cohesiveness.
- From all perspectives - economic, demographic, continental or geographic - Brazil in privileged position to play a decisive role.
- The electric energy sector can be a catalytic factor.

2. Integration background

- Latin America: different integration models to gain scale of production and competitiveness:
- ALAC (1960) and ALADI (1980) - customs union to enlarge regional market and production;
- MERCOSUR (90's), Andean Pact, Center-American Common Market: ambitious common market mechanisms focusing on regional chains of production and with embryonic supranational trade arbitration.

2. Integration background

- Integration-inducing regional industrial production chains remain few with little perspective of achieving global scale and productivity. During economic downturn, intra-regional regional trade and investment does not act as cushion, but falls faster than with overseas partners
- Why has the integration strategy stalled?
- Why have regional success stories - Itaipu Dam (Brazil-Paraguai) and Gas Pipeline (Brazil-Bolivia) not been replicated?

3. UNASUL

- UNASUL establishes strategies for infrastructure integration (via IIRSA) on South American level; counted greater regional geographic and economic compactness: “local solutions for regional problems”.
- Brazil offers financing for projects via either MERCOSUL and its Structural Convergence Fund (FOCEM) or directly through BNDES.
- Examples:

3. UNASUL

Funding for Infrastructure Development Projects for selected Countries

Country	I	Project	Value (in US\$ millions)
Argentina:		Building and enlargement of gas pipeline network:	1,9
		Export of 20 EMB-190 airplanes	646
Bolivia:		San Ignacio de Moxos-Villa Tunari Highway	332
		Hacia Norte-Rurrenabaque-El Chorro Highway	199
		Tarija-Bermejo Highway	179
Chile:		Export of buses	350
Cuba:		Maríel Port	381 *
Equador:		San Francisco Hydroelectric Dam	242,9
Guiana:		Bridge over the Tacutu river (operational)	17,1
Nicaragua:		Tumarín Hydroelectric Dam	342
Peru:		Assis Brasil-Iñapari Bridge	17,1
Dominican Republic:		Duarte Highway	100

Source: BNDES

(*) proposed funding of over US\$ 300 million under evaluation

4. Challenges to an Integrated South American Energy Market

- Electric energy most promising to promote regional integration.
- Brazil has structural deficit in energy generation while most neighbors have generation potential beyond with their domestic demand;
- Comparative advantages: low cost, well-known or innovative and sustainable (wind and solar) technologies. Technical specificities favor networks of low cost transmission lines allowing for continuous and uninterrupted supply over long distances at reduced rates and volatility on the wholesale market;
- Hence incentive to efficiency via greater competition and guarantee of supply.
- Why has a European-style common energy market not been adopted?

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- Economic and social asymmetries/variation in norms for energy commercialization hinder sub-regional markets offering competition in buying/sale of energy at competitive rates:
 - i. Brazilian model idiosyncratic: continent-size market, high dependence on hydropower and high fixed costs leads to closed optimized system, centrally operated based on “physical guarantee” (long term commitment to supply energy); provides encouragement for investment in installed capacity, while fostering expansion at low cost through auctions for the regulated market;
 - ii. for neighbors, buying/selling of short-term physical energy contracts allows use of subsidies/regulated prices for electricity or components;
 - iii. Resistance to submit domestic energy security to outside factors, given long history of political rivalry and ideological confrontation; and

4. Challenges to an Integrated South American Energy Market

domestic and regional institutional conflicts involving environmental, indigenous, land issues.

- Outcome: no plans to negotiate medium to long term energy import contracts under the present Brazilian regulatory framework:
 - i. Illogical given Brazil's heavy dependence on hydropower and its present drought conditions;
 - ii. Underscores conflicting agendas: environmental protection vs. energy security; uncertain transition to “run of the river” type dams (“fio d'água”) as against traditional reservoirs with large storage capabilities.

5. Enlarging Integration

- What can be done? Existing physical links already in use for trading surplus energy under different modalities:
 - i. Simplest technically/complex binational hydropower dams, such as Itaipu, with commercial treaty establishing conditions for sale of surplus generation to Brazil (Bolivia);
 - ii. energy import model (ex: border thermo-power plants);
 - iii. more complex option, building hydropower dams (and transmission lines) in neighboring countries,
 - iv. provision for export of surplus generation to Brazil (Guyana and Peru). Presents difficulties associated with Brazilian commercial regulation (required to take part in energy auctions) and dispatch criteria; and selling surplus energy, as Brazil has done sporadically with Uruguay, Venezuela and Argentina.

5. Enlarging Integration

- Result is limited to spot market and intermittent commercial operations that result from specific opportunities rather than long-term strategic policies geared to regional energy integration.
- Though appropriate legal, juridical and trade commercial framework, these exchanges can become more frequent and productive, so as to allow for the exchange of larger energy blocks with longer contract terms.
- This recommends creating the political conditions via high level political dialogue for which the institutional framework is already available (Mercosul, UNASUL).

6. Brazil as catalyst

- Technical-commercial and political-historical challenges to making South American energy integration a reality.
- Brazil can be a catalyst in putting in place policies that foster effective integration of regional energy infrastructure:
 - i. it borders on 10 of its 12 continental neighbors;
 - ii. the Brazilian energy model allows for flexible planning for generation expansion. Brazil's domestic market integrates complex options on continental scale in a commercially sustainable manner.

7. Academic exchange

Important lessons and comparisons from regional energy integration models:

- i. EU proposal for regional energy agency; working of sub-regional energy markets *Nordpool* (Scandinavia)
- ii. and *Mibel* (Portugal and Spain).
- iii. Brazil has unique model facing challenges; possibilities for greater South American integration; and
- iv. Multi-source energy matrixes; commercial viability of sustainable sources; options for auction system.



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