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Where is the future of hydro projects in Latin America headed?

Inter-American Dialogue's Latin American Energy Advisor

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Q and A: Where Is the Future of Hydro Projects in Latin America Headed?

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Colbún, the Chilean power company holding a 49 percent stake in the controversial HidroAysén project, announced last month that it is "indefinitely suspending" the environmental impact assessment for the project's transmission line. It is one of many regional projects that have faced local and environmental opposition, but have also been cited as necessary to meet growing energy needs. Are mega hydropower projects like this doomed in Chile and elsewhere in Latin America? What energy sources will fill in the void if such projects don't come to fruition? How are anticipated consequences of climate change, such as drought, going to change the region's current and future hydropower infrastructure?

A: Deborah Bleviss, professor in the energy, resources and environment program at Johns Hopkins University:

"While South America has had a long and proud tradition of relying on major hydropower projects to meet its rising electricity needs, this strategy necessarily is going to have to change in the future. As is being played out in Chile, the environmental consequences, including moving of human populations, of such projects are increasingly understood and opposed by large factions of the population. And, even more importantly, climate change will mean more frequent and prolonged droughts, which is anathema to a strategy of overwhelming reliance on hydropower. Ironically, a strategy to cope with greater frequency of droughts would be to build larger hydro reservoirs, which will garner even greater political opposition. So a more diversified strategy is needed that consists of: 1) Slowing the growth of electricity demand by improving the efficiency with which electricity is generated, transmitted and used. Utilities in the United States have become quite expert in using this relatively inexpensive strategy to forestall building additional generation plants. 2) Diversifying generation to include natural gas and other renewables. The region is rich in renewable sources of energy, including wind, solar, small hydro (especially run of-river hydro) and geothermal. And there are other renewable that are potentially on the cusp of being commercially viable and cost-effective, including ocean tidal, ocean thermal, wave power and offshore wind. 3) Moving toward a 'distributed' electricity system. Rather than having distant large central station power plants, smaller generation units are deployed throughout a community, such as cogeneration from an industrial facility, photovoltaics from a building rooftop or wind machines perched above a shopping center. Distributed electricity systems offer the advantages of being able to capture and use the heat from generation plants that is normally

exhausted to the environment from central station plants and they reduce dependence on expensive new transmission lines."

A: Johanna Mendelson Forman, senior associate in the Americas Program at the Center for Strategic and International Studies and co-chair of the Latin America and Caribbean Council on Renewable Energy: "

"In 15 years, Chile will need to triple its current capacity to meet both industrial and consumer demand. For a country with solid economic potential, but no domestic oil or gas, Chile will have to diversify its energy matrix without delay. Hydroelectricity seemed to be President Piñera's solution but both domestic advocates and international environmental groups disagree. The decision to suspend environmental impact studies is a victory for advocates. While hydropower remains an essential and renewable resource to meet the growing energy demand in South America (Brazil gets 80 percent of its power from hydro), there is also a growing need to find alternative forms of clean renewable energy that do not have the same massive environmental consequences that building dams requires. In addition, existing hydroelectric generating power has been compromised in countries like Venezuela and Colombia, where droughts have been frequent. Climate change is taking its toll as water flows have been reduced in the dry season leaving some cities like Caracas with terrible power shortages. Hydropower is still a viable renewable energy resource. It should not, however, be treated as the only answer to Chile's energy needs. Today, the energy generated from hydro-plants helps carry much of the base load energy needs for mineral extraction. But an energy policy that fails to invest in other forms of alternative energy in sufficient quantities is underestimating the potential for using natural sources of energy to supplement existing hydro-generation. The Piñera government would do well to create a long-term vision for Chile's energy future that embraces the realities of the moment—an active environmental movement that seeks wider options for citizens than destroying the Patagonian wilderness. Tapping the sun in the Atacama Desert or using offshore wind power are no longer options; they are essential for meeting increased demand for clean energy sources that are less risky and less expensive than the construction of huge infrastructure projects."

A: Amanda Maxwell, Latin America project director at the Natural Resources Defense Council::

"The future of large hydropower in Latin America may seem to be clear, since so many projects are planned throughout the region. In Panama, Brazil and Ecuador—among others—companies are indeed looking to build large dams to meet countries' growing electricity needs. Yet as the climate continues changing and droughts become more frequent and intense, the economic justification for these projects will be ever more questionable, as rivers dry up and less electricity can be generated from them. We are also seeing increasingly informed populations reject these projects. People understand the environmental and social impacts that dams cause, and they are refusing to stand idle as their ways of life are destroyed. Their opposition is already affecting how and if large dams are approved. An example of all of the issues at play is HidroAysén, the company planning to build five dams on two of Chilean Patagonia's wildest rivers, plus a 1,900 kilometer transmission line. Colbún, one of two owners of HidroAysén, recently halted all work on the project, recognizing that it did not have an appropriate political climate to proceed, or the

support of the populace. Well over half of Chileans—up to 72 percent— reject the project, and they have repeatedly taken their opposition to the street, attracting worldwide attention in the process. Chile has amazing natural resources for truly sustainable renewable energy, such as solar, geothermal and wind plus energy efficiency, and people there understand that those are better technologies to develop for a secure energy future."

A: Genaro Arriagada, nonresident senior fellow at the Inter- American Dialogue:

"What is happening in Latin America with hydroelectricity is bad for both the region and the environment. One of the most positive features of the region's energy matrix is that hydroelectricity represents 26 percent of the total, while worldwide that contribution is just 6 percent. Now the growth of the sector is stagnating, which is demonstrated by the fact that growth in the last five years has only been one percent per year. The cause of this curtailment is not the limitations of the resource, since it is estimated that no more than 25 percent of Latin America's hydroelectricity potential has been exploited, but rather the opposition of very active environmental organizations that are absolutely opposed to large dams. The result is bad for the environment because Latin America has the cleanest energy matrix among all of the world's regions. This is a result of the high contribution of hydroelectricity and because the contribution of fossil fuels to the matrix is the lowest in the world: 72 percent versus the world average of 87 percent. Within that, coal represents a mere 4 percent while the global average is 30 percent. In this context, the maintenance of a clean matrix is almost synonymous with maintaining the current levels of hydroelectricity. Where this doesn't happen, its decline will be supplanted by fossil fuels and, in some cases, the cheapest of those, which is carbon. Chile is an illustrative example. Between 2003 and 2011, imports of fossil fuels quintupled and since 2004, all of the relevant power stations that have been inaugurated are gas or carbon. This problem is not just in Chile but all of Latin America."

A: Craig Kelly, vice president of The Cohen Group in Washington:

"The HidroAysén project must be seen within the complicated context of Chile's energy matrix. President Piñera has called for a doubling of Chile's electricity capacity by 2020—and this in a country that is poorly endowed with non-hydro conventional sources of power. Chile has had a frustrating experience with gas supplies from Argentina and has built two regasification plants for imported LNG—a relatively expensive source of energy. Chile continues to explore non-hydro renewables—solar, wind, geothermal—and Chilean legislation calls for Chile to derive 10 percent of its electricity generation from these sources by 2024. But it is clear that hydro power must continue to play a key role in Chile's power supply for many years. Chile is by no means alone in this. Brazil, for example, gets 81 percent of its electricity from hydro. The Chilean government is working to meet environmental concerns with respect to the hydro facilities themselves and the related transmission lines, and the large amount of national and international press shows that Chile is doing so transparently and with open debate. Colbún's decision to suspend impact studies for the transmission lines pending greater clarity on national policy is part of that national debate. The board of HidroAysén has expressed its desire to continue with the project assuming that appropriate conditions are met. This sort of deliberation on a long-term,

high-impact project is positive and should help reassure environmental groups that sustainability issues are playing a key role in the process."

The Energy Advisor welcomes responses to this Q&A. Readers can write editor Gene Kuleta at gkuleta@thedialogue.org with comments.