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# To Tackle CO<sub>2</sub>, Start with H<sub>2</sub>O: How Latin America's Water Problems Could Affect Climate Change Negotiations

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Ask the mayor of a city in the Andes Mountains about the outcome of the December 2009 climate negotiations in Copenhagen and you may be met with a shrug. Ask about the drought that has left parts of his city without drinking water, and you will almost certainly get an earful.

The notion that climate change and local water supplies may be connected comes as no surprise to mayors, governors, and presidents in Latin America. But like politicians everywhere, they must respond to immediate problems while keeping an eye on the polls. Not surprisingly, the plummeting level of a local freshwater reservoir can seem like a higher priority than rising concentrations of atmospheric CO<sub>2</sub>.

This perennial tension between immediate and long-term priorities was one of several factors that prevented a more ambitious agreement out of the United Nations Climate Change Conference in Copenhagen. The tasks of negotiating an emissions-reduction framework and finding ways to finance mitigation and adaptation measures were daunting in and of themselves. But delegates from developing countries faced an additional challenge. Simply put, they had to persuade their citizens that the abstract risks of climate change were just as important as the tangible imperatives of health, food, education, jobs, and safety in countries where millions of people still lack these essentials.

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Very few leaders were willing or able to make that argument last December, but this may be starting to change. In Latin America, water issues may soon bring climate change policy into municipal politics and local elections. Moreover, the intersection of water and climate could help to reconcile some of the disagreements that emerged in Copenhagen, opening a new path towards North–South collaboration on climate issues.

### **THE BLESSINGS OF ABUNDANT WATER**

Water is more tightly linked to human potential and economic competitiveness in Latin America than almost anywhere else. If water were petroleum, Latin America would be considered a hydrological Middle East. While holding only 8 percent of the world's population, Latin America and the Caribbean control roughly 31 percent of the planet's freshwater resources.

This vast water advantage has yielded benefits on several fronts. Latin America as a whole gets around 68 percent of its electricity from hydroelectric sources, compared to a global average of less than 17 percent. The steady expansion of this clean, renewable, and comparatively inexpensive energy source has been crucial to the region's economic expansion over the past half century.

Latin America's lucrative commodity exports—primarily in mining and agriculture—depend on extraordinary quantities of water. The region exported nearly \$68 billion worth of metals and minerals in 2008, including more than one-third of the world's copper. As mining executives in Chile's copper-producing northern region are quick to point out, their industry could not exist without the millions of cubic meters of water that are used to process ores and to refine metals.

Latin America has cemented its role as a global breadbasket over the last decade, with the value of its agricultural exports doubling to more than \$100 billion in 2008. Millions of people in Asia, Europe, and Africa now depend on Latin American food imports. The region dominates the production of crops like soybean (60 percent of global exports in 2008), sugar (51 percent), and coffee (52 percent) that require vast quantities of predictable rainfall. And Latin America has become the leading exporter of animal protein, such as beef (50 percent of global exports) and poultry (36 percent), partly because countries like Brazil, Argentina, and Uruguay have abundant rain-fed grass and can cheaply grow the grains needed for animal feed.

In contrast to geographic regions where land and water for agriculture are severely constrained, Latin America has the potential to vastly

expand food production. For example, while the Near East/North Africa region uses 53 percent of its water resources for irrigation, Latin America can rely almost entirely on rain. In fact, barely 1 percent of the region's freshwater is used for irrigation.

### THE DANGERS OF WATER VOLATILITY

Latin Americans are so accustomed to cheap and abundant water that they have been stunned in recent years to see how quickly this blessing can turn into a vulnerability.

In 2001, the Brazilian state of São Paulo, the country's industrial heartland, was hit by a drought that sharply reduced power generation at critical hydroelectric complexes. The government was forced to impose restrictions in order to cut electricity consumption by 20 percent, which had steep consequences on economic output.

In 2008 and 2009, one of the worst droughts in half a century killed an estimated 1.5 million head of cattle in Argentina and destroyed nearly half of the country's normally prodigious wheat crop. Across the Andes Mountains, the same drought crippled hydroelectric facilities in Chile's central region, where most of its population is concentrated. Hydroelectricity production plunged by 34 percent, forcing the government to rely on diesel—and gas—powered generators at a time when fuel prices were reaching historic highs.

At various points in 2009, major cities in Venezuela, Ecuador, Colombia, and Paraguay were forced to ration water, cut electricity generation, or both. Large sections of Mexico City, home to some 17 million people, survived without water for days at a time, and the country's corn and bean harvests were severely affected. In Guatemala, President Álvaro Colom was forced to declare a "state of calamity" because of hunger and malnutrition in parched rural areas.

Unfortunately, some countries have also been plagued by hurricanes or torrential rains, which have further damaged water supply and sanitation systems, among other infrastructure. Meteorologists cite linkages between these extreme weather events and quasi-periodic climate patterns such as *El Niño* and *La Niña*. But climatologists also warn that in a warmer planet,

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these extremes will become more frequent and more severe. In other words, today's droughts and hurricanes may portend what is to come.

Though long-term changes in rainfall patterns are notoriously difficult to predict, there are concrete signs that climate change is starting to threaten Latin America's water wealth. Annual measurements of tropical glaciers in the Andes Mountains of Peru and Ecuador show that these glaciers have lost around 30 percent of their total mass in the last 30 years, and the melting rate appears to be increasing. In 2006, for example, glaciologists monitoring Bolivia's Chacaltaya glacier estimated that it would survive until at least 2015. But by the summer of 2008, this glacier—once the location of the world's highest ski resort—had disappeared altogether.

Glaciers are a vital component of the hydrological systems that supply water for drinking, agriculture, and electricity to some 80 million people in the Andean region. The glaciers act as reservoirs, building up mass in the form of snow and ice during the rainy season, and then slowly releasing meltwater that feeds rivers and springs during the dry summer months. If the glaciers continue to shrink, water supplies could be severely disrupted, particularly in the arid Pacific coastal regions of Peru and Chile.

In addition to their negative effects on exports and employment, these disruptions could exacerbate the inequality and the social exclusion that have long characterized the distribution of Latin America's water wealth. An estimated 115 million people—around one out of every four Latin Americans—still live without a water connection in their homes. With some exceptions, the public utilities that supply water and sanitation services to around 90 percent of the region's people are inefficient and underfunded. The average utility loses 50 percent of its water production to wasteful events such as leaks, theft, or non-payment. Furthermore, should climate change threaten their water supplies, many of these service operators would not be able to finance the development of alternative public utility sources.

### **MAKING THE GLOBAL-LOCAL CONNECTION**

All of these factors are gradually convincing Latin America's leaders that water can no longer be treated as a free and limitless commodity, and that changes in water supplies may be the first and most disruptive consequence of climate change.

This shift is evident in the demand for more detailed estimates of the potential impact of climate change at the local level. Over the past two years, Mexico, Brazil, and Chile have sought assistance from the United

Nations, the Inter-American Development Bank (IDB), and Great Britain to carry out the first country-level studies of the regional economic impact of climate change. Similar studies are now underway in Colombia, Peru, Bolivia, Ecuador, and most Caribbean and Central American countries.

As these studies are completed, governments can begin to anticipate the impact of various climate change scenarios within their territories and to determine how individual industries and populations may need to adapt.

In some cases, adaptation may imply building new infrastructure to redirect water from places where it abounds to places that are increasingly dry. In Peru, for example, the IDB is underwriting a project to divert water from a small mountain river that currently drains into the water-rich Amazon basin. A percentage of the river's water will soon flow instead to the country's dry Pacific coastal region, where it will be used to irrigate up to 150,000 hectares, generate hydroelectricity, and meet the needs of local communities.

In other cases, adaptation may require a shift to smarter water use in existing agricultural sectors. Latin American farmers have only begun to apply technologies such as drip irrigation that enable producers to get "more crop per drop." Some specialists estimate that the region could easily double its total food output—using the same amount of water—by investing in efficient irrigation systems.

For the cities in which 80 percent of Latin America's population lives, adaptation will likely mean prioritizing investments and reforms in public utilities in order to reduce waste, extend coverage to those who lack utility services, and eliminate water-borne diseases among the poor.

But if they seek to adopt a truly strategic approach to protecting their water wealth, Latin American governments will also need to make concessions regarding global emissions reductions. A political shift on emissions will reduce the risk of water crises in the decades ahead.

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## CLIMATE CHANGE NEGOTIATIONS GOING FORWARD

This is where water offers an opportunity to bridge some of the disagreements that crippled negotiations in Copenhagen. In the months leading up to the next UN Climate Change Conference, to be held this

November in Cancún, Mexico, the international community will wrestle with how to make progress on emission reductions without alienating poor and developing countries.

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to persuade people in the Global South that the North cares as much about the near-term health of children as it does about the long-term health of the planet. Developing nations, for their part, will have to show that they are willing to share in the sacrifices necessary to mitigate climate risk.

The government of Spain has been a pioneer in showing how these divergent priorities can be reconciled. Spain has become a leading international investor in wind and solar power as a part of its national strategy to develop green energy companies and preemptively meet emission targets.

But last year, Spain also created a \$1.5 billion grant fund that finances water and sanitation projects in the poorest communities in Latin America and the Caribbean.

These grants are helping to jump start critically needed infrastructure projects in countries such as Paraguay, Guatemala, and Bolivia, and have leveraged hundreds of millions of dollars in additional funds from the IDB. In Haiti, a \$39 million grant for water and sanitation projects, jointly financed by Spain and the IDB, is being reprogrammed to help rebuild Port-au-Prince’s shattered water and sanitation infrastructure.

The highland city of La Paz, Bolivia, offers another example of the benefits of this approach. Spain, the IDB, and other donors are helping to finance the expansion of water and sanitation networks to low-income neighborhoods that primarily house Aymara Indians in the city’s outskirts.

Since the glaciers that supply a significant percentage of the city’s water supply are melting rapidly, some of this aid will also be used to help the city plan ahead, secure new sources of water, and reduce leaks in the existing network.

As a country with large tropical forests, Bolivia could be an important participant in future programs to reduce CO<sub>2</sub> emissions caused by

deforestation. By honoring the aspirations of Bolivians who wish to have water in their homes today, international donors may improve the odds that Bolivia, like other developing countries, will help forge a global climate pact in the future.

There is no reason why this kind of climate-focused international aid cannot be practiced on a much larger scale. Despite the disappointment that greeted the Copenhagen Accord last year, the agreement included a commitment by developed countries to provide \$30 billion in financing for the 2010–12 period, and a pledge to mobilize \$100 billion by 2020. These funds will be used to help developing countries cope with the impacts of climate change and to achieve the deep cuts in global emissions required to hold the increase in global temperatures below 2 degrees Celsius.

Money, though important, will not necessarily be the biggest obstacle. The challenge for donors is to effectively communicate the link between short-term investments in quality of life and the long-term sacrifices necessary to make that life sustainable. Only then will ambitious mayors in drought-stricken Andean cities start paying closer attention to climate negotiations that unfold on the other side of the planet. ■

