

South American wind

Attracting the smart money



BRIC NATIONS BUILD NUCLEAR POWERHOUSE

While in many parts of Europe nuclear new build projects have stalled, Brazil, Russia, India and China are making significant strides in the sector



AFRICA FOCUS: THE EVOLVING MARKET OF THE SUB-SAHARA

In the first of a two-part focus on Sub-Saharan Africa, we spotlight the power challenges and opportunities in some of the region's fastest-developing economies



The 43 turbines of the Rawson wind farm should contribute 320 MWh each year to Argentina's power supply

Source: Vestas

Wind rush sweeps across South America

It is an understatement to say South America's wind development market is hot. We examine what is driving the activity, who is investing where and how long this 'gold rush' might last.

Dino Barajas has represented renewable energy companies in Latin America for 15 years and these days finds himself increasing fielding inquiries from new players venturing for the first time into the region.

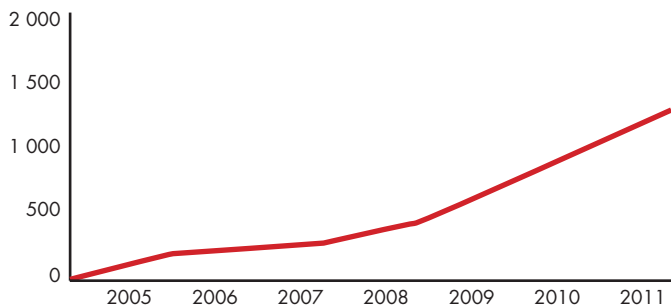
"Within the last three months, it has multiplied exponentially," said Barajas, a partner with the international law firm Akin Gump Strauss Hauer & Feld. "You are seeing even the small wind developers looking at the Latin American market."

Both external and internal forces are spurring the growth. Wind often proves to be a low-cost way to meet the continent's rising demand for power. Plus, key industry players often active in the US and China such as Alstom, Gamesa, GE Wind, Iberdrola, Impsa Wind, Siemens, Sinovel, Suzlon, Vestas and Goldwind seek geographic diversification as near-

term prospects grow dubious in those countries.

"South American economies are seeing growth in recent years, and with economic growth comes increased demand for power. With this new demand comes an ideal opportunity to integrate sources of renewable power generation," said Tim Rosenzweig, chief executive of Goldwind USA, a unit of China-based Goldwind, one of the world's largest wind turbine manufacturers. "Many countries in South America are capitalising on that opportunity and Goldwind has already experienced success there with three projects in Chile and Ecuador. We are well positioned for continued growth throughout the region."

Not surprisingly, much of South America's action is in Brazil, the region's largest and most populated country, and the Americas' third largest electricity market behind the US and Canada. Over the last



Brazil's installed wind capacity growth

Source: GWEC

decade, economic growth has driven up Brazil's energy consumption by nearly a third.

Overall, Latin America is expected to add at least 8.6 GW of wind power over the next four years, more than doubling its current wind capacity. Of that, Brazil will provide about 7 GW, signalling that it is "becoming established as a major international market", according to the Global Wind Energy Council's (GWEC) most recent annual forecast. Global developers are striking deals with Brazilian partners and manufacturers are setting up shop, with an eye on not only Brazil, but also countries such as Argentina, Chile, Ecuador and Uruguay.

"They are looking for niche opportunities," said Roger Rosendahl, a partner in DLA Piper's Corporate and Finance practice. And these developers are finding them in a market that until a few years ago had counted its wind power megawatts in only the double digits.

MARKET-SAVVY BRAZIL

Part of Brazil's allure comes from its move toward a more sophisticated power market. "It is a very well thought-out rationalised system. They looked at California as an example of what not to do," said Rosendahl, referring to California's troubled attempt to liberalise its retail and wholesale power markets a decade ago.

Brazil has tried to spur renewable energy development with two approaches. The first, called the Programme of Incentives for Alternative Electricity Sources, or PROINFA, was largely a government-managed strategy. The second, and more recent, is a market-based approach.

PROINFA began in 2002 with the creation of quotas for wind, biomass and small hydroelectric supply under government defined prices and long-term supply contracts between developers and utilities. The feed-in tariff style programme was slow to achieve its initial goals, partly because of bureaucratic delays, obstacles in connecting projects to the grid and a lack of domestic equipment, according to a joint report by the Brazilian Wind Energy Association and GWEC. Later modified, PROINFA eventually picked up pace, with Brazil installing 1000 MW of wind power by June 2011.

The second approach, a more competition-based strategy, began in 2009 with auctions held by the Brazilian Ministry of Mines and Energy. Auctions conducted from 2009 through 2011 netted more than 6500 MW of project bids.

In Brazil, the alternatives to wind are often impractical and expensive:

imported natural gas or new transmission lines. "It is much more cost-effective to build a wind development," said Barajas.

Unlike in North America, where natural gas is more readily available, wind power undercuts natural gas, which makes up only 7 per cent of Brazil's energy supply, according to the US Energy Information Administration (EIA).

Wind also nets a higher price for developers than it might in a region where other resources provide more robust competition. The scarcity of competing resources, especially natural gas, and the cost of wheeling power long distances become embedded in the wind energy prices, creating a strong incentive for developers to do business in the region. As a result, private investors are striking deals outside government-led auctions. By 2011, 18 wind farms, totalling 546 MW, were being built through this non-regulated market, according to the report.

Electricity from large hydro facilities, which provide most of Brazil's power, can out-compete wind power on price. But the country is attempting to diversify and become less dependent on hydropower, in part because of environmental concerns, said Rosendahl.

"Brazil has an increased need for energy in a growing economy, and a sensible, rational regulatory system, where wind is competitive with natural gas. Voila you have a formula for a very attractive market, and people are rushing there," he said.

CHILE, CHINA AND RAW MATERIALS

Meanwhile, Chile's rich supplies of metals are prompting a surge in wind development. The mining sector is booming as China's global search for raw materials such as copper, iron and gold focuses in on Chile's abundant resources. But mines are often in mountains far from population centres and electricity grids. So, instead of attempting to build long and costly transmission lines, operators are opting for quick-to-construct wind farms.

"From a government point of view, promoting renewable energy is much more cost efficient than trying to wire up the entire country," said Barajas. "Rather than building a 300 mile [480 km] transmission line, you can site a 100 MW wind project and augment it with a solar development or some other technology to smooth out the production curve. This makes a lot more sense than building a transmission line to a remote part of the country to power a mine that that may be in existence for only 20 to 30 years".

Chile also sees wind power as a way to boost its energy security. The country's precarious dependence on fossil fuel imports was made plain in 2007 when Argentina cut off its natural gas exports to Chile. While local hydropower supplies about a third of the country's electricity, the rest comes from coal and gas fired power plants that mostly burn imported fuel. Meanwhile, Chile's power needs are growing by 6 to 8 per cent each year, according to GWEC.

"A large copper mine wants a dependable source of energy at a predictable price and from a resource that isn't going to be subject to global politics," said Barajas. Wind power also offers the advantage of being modular, so mines can build the wind farms in stages, adding turbines as the operation grows, he added. And the mines are so profitable, it is fairly easy to secure financing for the wind farms.

By the end of 2011, about 5000 MW of new renewable energy

Wind investment in South America



Cash windfall: external and internal forces are driving growth in South American wind power. It is a low-cost way to meet the continent's rising demand for power, plus developers often active in the US and China are seeking to diversify

projects were in some stage of development in Chile, with three fifths of the capacity from wind. How much of that will be built remains unclear but GWEC expects about 260 MW of wind to come on line this year.

END TO ARGENTINA'S FINANCING WOES?

Argentina's \$95 billion debt default in 2001–02 has plagued the country's attempts to borrow money and has hampered wind farm financing. But the country saw a large turnaround in July when China Development Bank Corporation agreed to loan \$3 billion for a 1350 MW project to be built by Beijing Construction Engineering Group using Chinese wind turbines. This is Argentina's largest single wind project to date and represents a huge boost for the country that installed only 79 MW in 2011.

Argentina allows supply contracts between private enterprises in the form of power purchase agreements. Private companies own about 75 per cent of generation, according to Ernst & Young. The country's energy comes mostly from natural gas and hydroelectricity. Like other parts of South America, its need for power is accelerating rapidly – about 6 per cent annually.

Under a government mandate, by 2016 renewables must supply 8 per cent of the country's electricity. Further, the GENREN programme obliges state utility Energia Argentina Sociedad Anonima to contract for at least 1 GW of renewable energy to be sold into the grid under fixed rates for 15 years. Wind power is expected to provide about half of the capacity.

GENREN's two auctions have drawn about 2500 MW in wind project bids. The utility awarded contracts totaling 754 MW in 2010 from the first auction. But at present only 98 MW is in operation from two wind farms: Rawson I and II. "Most of the other participants are still looking for investors," said Erico Spinadel, president of the Argentine Wind Energy Association. Awards have yet to be announced from the second auction.

While both Rawson I and Rawson II use turbines from Vestas, some firms also plan to use Alstom turbines. IMPSA Wind and NRG Patagonia both manufacture turbines in the megawatt range from within Argentina, said Spinadel. IMPSA is a multinational enterprise, which also has facilities in Brazil, India and other countries.

US AND CHINA SLOWDOWN

Wind developers are focusing on South America in part because the market is already slowing in China and may well do so in the US.

China's government is now easing the blistering pace of its wind development. In 2011, China added 18 GW – more wind capacity than any other country – to bring its total capacity to more than 62 GW, the highest in the world, according to GWEC. But transmission development has failed to keep up.

"They were putting turbines in the field at a very high rate, at a higher rate than could be attached to the grid. So at present there is a great deal of turbines in the field that aren't even attached to the grid. So this is obviously an issue," said Brendan Andrews, vice president of sales and Marketing at IOXUS, a New York-based manufacturer that sells its ultracapacitors into the Chinese wind market.

Meanwhile, the US market is plagued by uncertainty as wind's key subsidy, the federal Production Tax Credit (PTC) risks expiring at the end of the year. With election year politicking running high, Congress has failed to extend the credit and time is running out.

"A lot of development companies were focusing on the US and putting all of their eggs in one basket. Now they are facing uncertainty in their prime target market," said Barajas. "They know they will have idle hands in their development team if they don't look at another market".

	Built	Under Construction	With EIA	In Progress (EIA)
Wind	202	220	1628	1103
Solar	0	0	435	93
Biomass	219	0	286	35
Geothermal	0	0	0	50
Mini Hydro	228	0	87	204
Total	6	220	2436	1484

Chile's renewable energy development, 2011

Source: GWEC

In his view, South America offers a "mini gold rush in the near term because of the prices being offered in some of these markets". But he warns that the market may not be as deep as some of the markets already in full swing, such as the US and Europe. While he sees a strong window of opportunity in South America for at least the next five years, he cautions that taking advantage of the opportunity requires a strong understanding of the region, its languages, culture and terrain.

Elizabeth Salerno, the American Wind Energy Association's director of

industry data and analysis, noted that – unlike the US – South America "has emerged with very unique policies in terms of how they are going to develop renewable energy. A clear signal is very attractive to those trying to make capital intensive investment".

But there is an overriding belief that the US PTC will eventually be restored and that the US market will burgeon – as will China's market, once it recovers from its over-heated boom. Both are wind power behemoths that will remain front and centre attractions, along with Europe, for several years.

The GWEC's annual forecast notes "great interest and excitement in new, fast growing markets" like South America. But the council adds that "the majority of the global market remains in Asia, Europe and North America, and that's not going to change substantially over the next five years". While Brazil is well on its way towards becoming a 1000 MW or more annual market, the other markets in Latin America are just not big enough to put up large numbers.

To put Latin America's growth in perspective, installations in the region are expected to reach 11–19 GW by 2016, compared with 100 GW in North America and 200 GW in Asia. But until those larger markets right themselves, South America is the place to go for wind development teams in search of strong prospects.

BEFORE THE GOLD RUSH

Developers and manufacturers worldwide are rushing into Latin America now. But Denmark-based Vestas was there long before the market heated up. The equipment supplier entered in the 1990s and has since delivered 700 MW of product with 2000 MW of additional firm orders.

Healthy economies, competitive costs, and government interest in diversifying the energy mix are driving wind power growth in South America, according to Marcelo Tokman, vice president of Vestas South America.

"Regional GDP is outperforming that of major developed countries in Europe and the United States, a trend expected to hold over the next years. This together with competitive results for wind power tenders in Argentina, Brazil, Mexico, Peru and Uruguay and high electricity prices (in some cases) have driven regulatory support for renewables," said Tokman.

"Competitive tenders for long-term PPAs are a favourite. But other support mechanisms such as an RPS [renewable portfolio standard] in Chile have also shown strong results. According to GWEC, total installed wind capacity in Latin America could reach 19 GW by the end of 2015, a five-fold increase from 2011, not a bad outlook," he added.

Vestas, which began operating in Brazil a decade ago, now employs 130 people in Latin America. The company supplies a range of products and services from turbines to full turnkey wind power plants, and operates in three hubs in Latin America: Vestas Mexico, Central America & the Caribbean, based in Mexico

Mexico	103 MW
Costa Rica	51 MW
Peru	0.25 MW
Chile	117 MW
Cuba	4 MW
Caribbean Islands	10 MW
Dominican Republic	25 MW
Jamaica	39 MW
Aruba	30 MW
Brazil	204 MW
Argentina	87 MW
Uruguay	32 MW

Vestas delivered wind capacity in the Latin American region

Source: Vestas

City; Vestas Brazil, based in São Paulo; and Vestas South America (excluding Brazil) with offices in Buenos Aires (Argentina) and Santiago de Chile (Chile).

"A healthy economic growth in South America and Central America combined with an increasing interest in wind energy have helped shift developers' interest to this continent and other emerging markets. Vestas has been operating in Latin America since the beginning of the 1990s, and we would be in the South American and Central American markets regardless of the status of the PTC in the United States," said Tokman.