

LATIN AMERICA

Ample resources and **STRONG DEMAND** spur construction projects

ALEXANDER H. TULLO, C&EN NORTHEAST NEWS BUREAU

FOR CHEMICAL COMPANIES aiming to build petrochemical plants close to raw materials, the Middle East is the destination of choice. For chemical companies that want capacity near the fastest growing markets in the world, Asia is the place to be. But not to be overlooked is Latin America, where both good growth and pockets of hydrocarbon availability are spurring ambitious chemical plant construction plans.

Strong, sustained economic performance has been one of the key drivers of the region's burgeoning chemical sector. Gross domestic product (GDP) growth in Latin America's largest economy, Brazil, was 3.6% in 2006 and is forecast as 4.0% in 2007, according to the International Monetary Fund. Argentina grew 8.0% in 2006 and is expected to increase 6.0% in 2007. Chile continues to post strong results, with 5.2% and 5.5% growth projected for 2006 and 2007, respectively, IMF says.

Venezuela, which is enjoying high prices for its oil exports, is also posting strong economic results. After GDP growth of 17.9% in 2004 and of 9.3% in 2005, Venezuela is expected to post a 7.5% GDP growth in 2006, tapering off to 3.7% in 2007, according to IMF.

Mexico has been seeing moderate economic growth, according to IMF. Its output rose 4.0% in 2006 and is poised for 3.5% growth in 2007.

Financial results for the region's companies remained strong in 2006, though they weren't as stellar as they were in 2005. Brazil's largest private-sector chemical

company, Braskem, posted a 3% decrease in sales to \$4.1 billion for the first nine months of 2006, while its before-tax earnings decreased by one-third to \$530 million.

In Mexico, state oil company Pemex reported that petrochemical sales for the first

which can be acquired more cheaply than natural gas in the U.S. "The key driver for a lot of these new projects is advantaged ethane and other feedstocks," Bauman says.

One of the region's biggest undertakings would have been the Phoenix Project, a \$1.9 billion ethylene cracker, aromatics, and derivatives complex led by Mexico's state oil company, Pemex, with the partners Nova Chemicals and Mexico's Grupo Idesa and Indelpro. The project was canceled in 2005 because of the Mexican government's unwillingness to agree to favorable terms for the natural gas condensate feedstock.

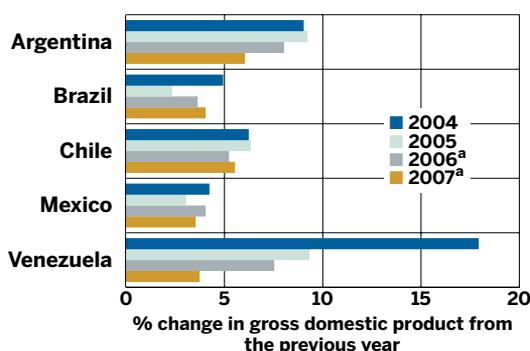
But Arturo García, a Pemex executive who oversees new chemical projects, says his company is close to firming up plans for a series of petrochemical expansions in the wake of the Phoenix cancellation.

Slated to come onstream in 2009, the new projects will be based on a petroleum-derived stream of pentane and hexane instead of natural gas condensate. The pentane will be used for 50% expansions at Pemex' crackers in Morelos and Cangrejera to 900,000 metric tons per year apiece. The hexane feedstock stream would support a \$350 million, 700,000-metric-ton aromatics plant near the other projects.

The additional ethylene capacity in Morelos will feed a recently completed linear low-density polyethylene plant, and thus is very likely to proceed. The Cangrejera project depends on the formation of a joint venture among Pemex, Nova, and Grupo Idesa for a downstream polyethylene plant. "We will need to reach an agreement with the partners to build the new polyethylene facility," García says. "The projects are dependent on each other."

Pemex is sweeping away the obstacles for that project as well, García says. "We already have a price arrangement for the contract to supply ethylene to the new venture with

GDP
Growth in Latin America is expected to cool somewhat



^a Estimates. SOURCE: International Monetary Fund

11 months of 2006 increased 5% versus the same period in 2005, hitting \$2.04 billion.

Alpek, a Mexican producer of polyester and polypropylene, reported a 6% increase in sales for the first nine months of 2006 to \$2.6 billion. Earnings over the same period declined by 17%, to \$187 million. The company, it should be noted, derives about half its sales outside of Mexico.

Latin America has even more projects in the works, or at least under study, than Asia, points out Robert J. Bauman, a consultant with Nexant Chem Systems. The projects are predicated on healthy demand and abundant feedstocks, particularly ethane,

PRODUCTION

Results for basic petrochemicals were mixed again in 2006

THOUSANDS OF METRIC TONS	ARGENTINA			BRAZIL			MEXICO			VENEZUELA		
	2004	2005	2006 ^a	2004	2005	2006 ^a	2004	2005	2006 ^a	2004	2005	2006 ^a
Benzene	145	158	152	958	947	919	106	161	120	28	13	3
Ethylene	749	774	774	2,702	2,700	3,005	1,007	1,085	1,135	272	379	341
Ethylene oxide	na	na	na	297	297	289	300	321	337	4	7	7
Propylene	na	na	na	1,347	1,745	1,843	427	385	343	112	164	144
Styrene	112	102	78	445	326	395	162	142	130	na	na	na

^a C&EN estimates. na = not available. SOURCES: Country chemical trade groups

Nova and Idesa," he says. Nova says it is still awaiting word from Pemex and the Mexican government on several outstanding issues.

In Brazil, meanwhile, state oil company Petrobras is trying to spur petrochemical growth through joint ventures. Most ambitious among these is a plan with Grupo Ultra, the parent of ethylene oxide maker Oxiteno. Planned for 2012, the \$8.3 billion

project would have 1.3 million metric tons of ethylene capacity and make the derivatives polypropylene, polyethylene, styrene, ethylene glycol, and polyethylene terephthalate.

Among its smaller undertakings, Petrobras is planning a 160,000-metric-ton acrylic acid complex with specialty chemical company Elekeiroz in Minas Gerais. And it is working on a joint venture with

Braskem to make 300,000 metric tons of polypropylene in São Paulo. That complex, to be 60% owned by Braskem, is slated to start up in 2009.

One project that Petrobras isn't likely to build is an ethylene/polyethylene complex based on Bolivian ethane. The project, also involving Braskem, is all but dead because of the nationalization of Bolivia's gas industry by Bolivia's newly elected president, Evo Morales.

Petrobras isn't the only chemical company investing in Brazil. Petroquímica União, the chemical arm of Brazilian industrial conglomerate Unipar, plans to increase capacity of its ethylene cracker in São Paulo by 40% and build a 200,000-metric-ton polyethylene unit by the second quarter of 2008.

Venezuela is looking to model itself on Middle Eastern states like Saudi Arabia and Iran that are building large petrochemical complexes based on abundant hydrocarbon resources. The efforts have hit some bumps. Last year, state petrochemical company Pequiven ousted ExxonMobil Chemical from plans to build an ethylene and polyethylene complex in Jose.

Pequiven soon signed on Brazil's Braskem to study a similar project, a 1 million-metric-ton ethylene cracker and derivatives complex. Braskem expects to create the joint venture and carry out engineering studies later this year. The project is expected to open in 2011.

Braskem is also studying a 400,000-metric-ton polypropylene joint venture with Pequiven in El Tablazo, Venezuela, slated to open in 2009.

POTENTIALLY, there are two more ethylene projects that could be built in Venezuela, Bauman points out. One from Pequiven affiliate Polinter would make ethylene and derivatives from ethane. The other would make petrochemicals from feedstocks provided by a refinery in Paraguana. "They will all go ahead; it is just a question of timing," he contends.

In Peru, according to Bauman, the Argentine oil company Pluspetrol is looking for partners for an ethylene complex based on ethane from the Camisea gas fields. Bauman says this project is more likely to be completed than a project being studied by Chile's state oil company, ENAP. He says there isn't enough demand for the two plants, which would both be situated on the Pacific Ocean, to go ahead. "The project that has the best economic position will most likely proceed," he says. ■

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