

BRAZIL: Bioelectricity and energy cane positioned well for future*By Bob Moser*

New advances in energy-cane breeding and biomass-to-electricity have peaked investor interest near the end of a tough year, but Brazilian bureaucratic hurdles may limit the success of producer/distributor partnerships in 2010—and beyond—if something isn't done.

CPFL Energia, one of Brazil's largest private electricity purchasers and distributors, announced last week the expansion of its generating capacity to 199.2 MW, 40 MW of which will come via a newly built bagasse-burning power plant at Farias Group's Baia Formosa mill in Rio Grande do Norte. This is CPFL's second deal involving biomass electricity, and will have the potential for commercialisation of carbon credits.

CPFL believes it's on its way to cornering Brazil's best major growth market. Bioelectricity currently accounts for just 3% of Brazil's energy matrix, but analysts expect that to double in the next five years. CPFL is strategically strong in Sao Paulo state, where more than 80% of Brazil's sugarcane is grown, placing the company in great position for future cogeneration projects.

The year 2009 was a tough one for Brazil's sugarcane-related industries, but the bioelectricity sector was one of the worst affected by the global economy. Given the drop in the number of auctioned projects and the caution of plant owners to invest in cogeneration, UNICA is now in support of energy distributors entering into exclusive agreements with sugarcane mills. They argue that this will provide many mills with a level of security and investment aid they haven't been able to scrounge up in the past two years. On the downside, laws currently stifle competition by putting regional boundaries on what energy distributors can link up with mills. "We'd have to do a reform to increase competition," said Zilmar de Souza, UNICA's bioelectricity adviser.

The Farias Group will use 15% of the Baia Formosa plant's energy for its sugar and alcohol production. CPFL's investment was BRL127 million, and the plant, which already has its environmental permit and authorisation by national energy agency ANEEL, should come online in July 2011. Seventy percent of the project's energy has already been contracted in a 2005 auction, at the price of BRL162.72 per MWh. The other 30% will be sold on the open market.

While not the native territory of sugarcane, Brazil has risen to become the world's largest producer of products from the crop, thanks largely to the cutting-edge study and breeding of new cane varieties tailor-made for Brazil's climate.

Two new varieties of cane were presented in October by Brazil's Centro de Tecnologia Canavieira (CTC). Named CTC19 and CTC20, they offer better sugar content, disease resistance and adaptability to mechanical harvesting in ways Brazilian cane has never had before. The Center is also working on breeds that maintain a high sucrose level while increasing biomass production. These new varieties will allow Brazilian cane farmers to coordinate planting with harvest in a strategic way to maximise product when it's needed most, says Walter Maccheroni of CTC. Different breeds will be planted based on products' peak demand throughout the year, so for example energy cane breeds can be harvested first for customers who need biomass early on in the season.

CPFL's entry into biomass-fueled energy operations via its UTE Baldin plant (45 MW, scheduled for March 2010 and nearly 70% complete now) has spawned a broader expansion plan for the company in this area of renewable energy. It's currently considering investments in several co-generation mills that together would generate 500 MW annually. UTE Baldin, budgeted at BRL98 million and located in the city of Pirassununga, Sao Paulo, is the first project where CPFL bears the costs of construction for the plant. Surplus power will be split between the company and the plant owner – CPFL is left with 53.33% of total installed capacity, about 24,000 MW per harvest.

The Equipav Group has also been showing Brazilian producers the profit potential of collecting and burning sugarcane straw along with bagasse. The company's mill in Promissao, Sao Paulo, increased from 58 MW (two boilers and three generators) to 138 MW (four boilers and five generators) in generation capacity this past year.

The plant in Promissao has the capacity to export 430,000 MWh annually, and Biopav, which started to export electricity in October and has focused from the start on successfully burning straw (140 MWh), has the potential to increase production to 500,000 MWh at maximum grinding capacity. Approximately 20% of the plant's energy will be generated during the offseason.

Straw yields more energy than bagasse because it has a potential heating value that's 70% higher, according to Leonardo Caio Filho, planning engineer of the Associação da Indústria de Cogeração (COGEN). Energy production per hectare has the opportunity to almost double, and the harvest process could be sped up if cane is collected differently from the fields to keep stalk and straw together.

Even with its advantages, straw presents some challenges that prevent its use for power generation in many Brazilian mills today. The cogeneration potential that straw adds for electricity production may require mills to amend their permits with Brazil's national energy agency, ANEEL, a frustrating, lengthy process, even with Brazilians' high tolerance for bureaucracy.

Straw also needs more storage space – one tonne can occupy the space of eight tonnes of bagasse. You can't get around that problem by eliminating bagasse, because the best energy yield occurs when burning a mix of 70% bagasse and 30% straw. There's also heightened risks of spontaneous combustion and groundwater contamination with straw storage.

An improved world economy in 2010 could draw rapid investment back to Brazil's sugarcane industries, with the bioelectricity sector a likely candidate for top draw. Companies like Equipav, CPFL are positioning themselves well now to offer some of the healthiest investment opportunities down the line.