For further information on
EcoSecurities please contact

Tel: **+44 (0)1865 202 635**
Fax: **+44 (0)1865 251 438**
Email: **info@ecosecurities.com**

Celulose Irani
Biomass to Electricity

One man's pulp is another man's power: achieving sustainable development through Brazil's first pulp and paper CDM Project

What is Celulose Irani?

Located in Vargem Bonita, Brazil, the Celulose Irani Project demonstrates how one paper manufacturer is finding economic value in what was once considered waste. The facility uses by-product biomass from their paper production process to generate sustainable energy for their facility. Irani thus provides a model for biomass projects that reduce both waste and greenhouse gas emissions (GHGs), promoting sustainable development through the Clean Development Mechanism (CDM).

Why biomass?

Biomass is a renewable energy source which can be cleanly burned to generate electricity. Brazil has strong potential to encourage biomass energy, given that biomass producing sectors such as agriculture and timber constitute a significant portion of the economy. Yet while there is a great deal of potential in the country, less than 4% of total energy production in 2003 was derived from biomass.[1]

[1] IAEA EEDRB. Available at: http://www.iaea.org

What is biomass? Biomass is defined as an organic material such as wood by-product or agricultural waste that can be burned to produce energy.

One man's pulp…

Celulose Irani is a Brazilian pulp and paper manufacturing company which produces a diverse range of products. From 2000-2003, the company grew significantly, increasing production capacity 77% from 83,000 to 147,000 tons of paper/yr.[2] They also anticipated future growth requiring an increase in energy use from 125,353 MWh/yr from 2004-2007 to almost 145,000 MWh/yr from 2008-2024.

Irani has traditionally relied on small-scale on-site biomass and hydroelectric facilities for much of their power. This is logical, since the by-products from their processes can be used to fuel a biomass plant. However, they have also historically drawn a substantial amount (44%) of energy from the central grid. While Brazil generally relies on fossil-fueled energy for only about 9% of total production, the majority of this is generated in the South-South East portion of the national grid where the Celulose Irani facility is located.

[2] Celulose Irani, 2002 balance sheet.

Despite their growth, Irani had no plans to increase its installed power generation capacity. This would have led to increased reliance on the grid, and would have caused significant increases in GHG emissions. Therefore, the construction of additional biomass facilities was vital to ensuring GHG reductions and sustainable energy use for Irani's future.

The biomass facility at Irani.

…Another man's power

EcoSecurities partnered with Celulose Irani to generate CERs from the construction and operation of a new 9.43MW biomass generation plant. The plant's installation led to a reduction in grid energy use of 33,271 MWh/yr from 2004-2007, and is anticipated to generate further reductions of 52,035 MWh/year after 2008. Over the life of the project (2004-2025), the plant is expected to reduce emissions by 626,008 CO_2e.

In addition, the plant uses new technology, incorporating a shredder which makes it more efficient and able to utilize a wider range of biomass than the existing facilities. As a result, the plant ensures that 120,000 tons of biomass which would have been landfilled are now averted for use. Since the decomposition of biomass in landfills leads to the release of methane[3], the landfill avoidance component of this project is expected to prevent the emission of 3,076,038 tons of CO_2e over the life of the project. Total reductions are estimated at 3,702,046 tons CO_2e. Irani's first certified emissions reduction (CER) credits were issued in 2006. As of March 2007, 45,984 CERs have been issued.

Additional Benefits

In addition to supplying the needed energy for production expansion, the Irani biomass project displaced fossil-fueled grid electricity, and reduced GHG emissions. However, the project also promotes environmentally sound technology use and information dissemination, and will promote similar activities in the future. The technology used in the generator is also 100% Brazilian, thereby supporting local industry. In addition, the project benefits local people by increasing job opportunities in the area and reducing local smoke pollution.

After the 2001 Brazilian energy crisis, the government set a national target for diversification of energy sources. The Irani project helps to achieve this goal, as well as many of the goals set forth in Agenda 21 and the Sustainable Development Criteria of Brazil. In addition, the project helps Celulose Irani achieve its commitment to environmentally clean and friendly production methods, maximizes the utility of their natural resource inputs, and avoids costs from waste disposal.

Learning from Irani

The Celulose Irani Project provides a strong example of how producers of biomass can make use of a "waste stream" for economic value. This creates solutions for waste disposal, maximizes use of resources, and minimizes the company's dependence on fossil-fueled grid energy. It also generates meaningful GHG emissions reductions, reflected in the issuance of CERs for this project. By taking a more "cradle-to-cradle" approach production, Irani exemplifies the opportunities that exist through the Clean Development Mechanism (CDM) to profit through sustainable development.

Spontaneous combustion of landfilled biomass.

The new Irani biomass facility.

Irani's 16,800 ha plantation forest.

Irani at a Glance

Project Type	**Biomass**
Registration Date	**July 7, 2006**
Operational Start Date	**September 2004**
Time Span	**Initial 7 year crediting period for CERs, 30+ year lifespan overall**
Reductions	**173,486 t CO_2e per year**
Partner Organizations	**Celulose Irani**

[3] Methane possesses 21 times the global warming potential of CO_2.