



Suez/Electrabel From coal to biomass

Biomass, the oldest form of renewable energy, has been used for thousands of years. However, its relative share of use has declined with the emergence of fossil fuels. Currently some 13% of the world's primary energy supply is covered by biomass. With environmental effects such as climate change coming to the forefront, people everywhere are rediscovering the advantages of biomass. Potential benefits include:

- Reducing fossil carbon emissions if managed (produced, transported, used) in a sustainable manner;
- Enhancing energy security by diversifying energy sources and utilizing local resources;
- Providing additional revenues for the agricultural and forestry sectors;
- Reducing waste. (World Business Council for Sustainable Development. *Biomass Issue Brief*. 2006.)

The situation

In 2002, the Belgian utility Electrabel decided to convert a 50-year old coal-fired power plant into one firing only biomass. In doing this, Electrabel aims to:

- Manage its carbon dioxide emissions;
- Encourage the production of electricity from renewable energy sources;
- Obtain 300,000 green certificates that allow Electrabel to fulfill the obligation established by the Walloon Region and avoid paying penalties of some € 100 per lacking green MWh;
- Create the possibility of offering customers green electricity;
- Recycle the residual raw materials from forestry (the cultivation of forest trees for timber or other purposes);
- Diversify the fuels used to supply energy;
- Save fossil fuel reserves;
- Increase the share of green electricity from 15% to 18% within Electrabel Group.



Based in Belgium, Electrabel, 98.62% owned by SUEZ, has four main activities: sale of electricity, natural gas and energy products and services, electricity generation, electricity and natural gas trading, and operating electrical and natural gas networks at the request of distribution network administrators. In 2005, Electrabel had 15,794 employees and revenues of € 12.2 billion (US\$ 15.5 billion).

All of Electrabel's strategic decisions take full account of environmental protection and sustainable development. The company puts great effort into reducing greenhouse gas and acid pollutant emissions, and promoting renewable sources of energy. Electrabel is



continually modernizing its power stations with the implementation of new technologies. The proportion of electricity derived from renewable sources is steadily increasing.

The plant

In Les Awirs, near Liège in Belgium, Electrabel has retrofitted a pulverised coal power plant for using biomass as its sole fuel. This biomass is made up of pelletized wood dust that is again pulverised at the power plant. This method of producing electricity, which requires, among other items, retrofit storage silos, conveyor belts and burners, as well as the installation of filters, hammer-mills and safety devices, is a world premiere.

The production process comprises the following stages: production and supply of wood pellets, grinding these into wood dust on site and burning the wood dust using dedicated burners in the former pulverised coal boiler.

The biomass used is recycled forestry/wood conversion waste which otherwise would be lost and create useless greenhouse gas (GHG) emissions. The allowance of “green certificates” is subject to a certification process done by an independent organism appointed by the Walloon government. This certification process ensures that the power station is actively contributing to avoiding natural resource depletion and additional GHG emissions.



The stakeholders

The stakeholders who benefit from the conversion of the power plant include:

- Forestry businesses (better recycling of waste)
- Consumers of green electricity
- Public authorities (to reach their social objectives).

The biomass used in the plant comes from producers worldwide, but with a particular focus on local Belgian production in order to avoid transportation costs and environmental burden.

Results

The modification of this site has had a substantial impact on the surrounding communities and those involved in supplying the plant with wood pellets. It has:

- Created direct (local) employment on site for at least 10 years (duration for the grant of green certificates);
- Created indirect employment and economic development (forestry, wood pellets producer, shipping companies);
- Improved the quality of the local environment by reducing emissions in the air and road traffic required for waste product disposal;
- Recycled an industrial site, thereby maintaining local electricity production and creating the option to supply green electricity;
- Recycled the residual products from forestry, up to 350,000 metric tons per year;
- Avoided CO₂ emissions of around 500,000 metric tons per year;
- Saved some 280,000 metric tons of coal annually;
- Added additional products to the company’s portfolio available to about 200,000 household customers (green electricity) while enhancing the company’s image (creating “goodwill”).

The nominal electrical power of the plant is 80 MW and its annual production reaches 600 GWh of electricity production. The total capital expenditure of the plant was US\$ 10 million.

The plant has a net electric efficiency of 34% and is not a cogeneration plant that would have required getting access to a potential customer for the residual heat. This electric efficiency compares fairly well with modern dedicated biomass plants like the Cuijk power plant in Essent in the Netherlands (25%) as well as classical biomethanation plants (28%) using digestion.

The market price of wood pellets today is about € 130/ton which makes it comparable to natural gas, but twice as expensive as coal.

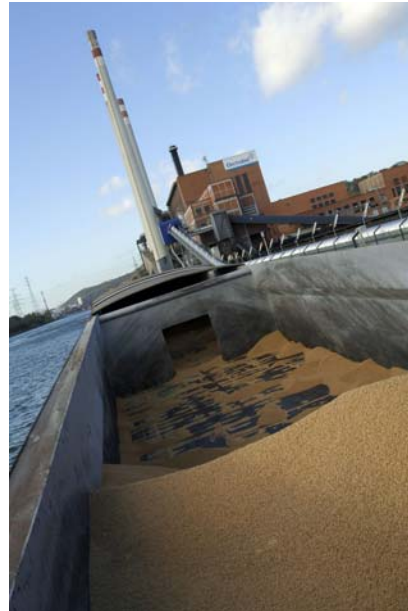
More information

SUEZ

www.suez.com

Electrabel

www.electrabel.com



About the WBCSD

The World Business Council for Sustainable Development (WBCSD) brings together some 180 international companies in a shared commitment to sustainable development through economic growth, ecological balance and social progress. Our members are drawn from more than 30 countries and 20 major industrial sectors. We also benefit from a global network of 50+ national and regional business councils and partner organizations.

Our **mission** is to provide business leadership as a catalyst for change toward sustainable development, and to support the business license to operate, innovate and grow in a world increasingly shaped by sustainable development issues.

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