

Biomass in Costa Rica: A clean source for electricity generation

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Presentation structure

- Energy sector in Costa Rica
- Electricity sector in particular
- Biomass as a non-conventional source for electricity
- Rio Azul Biotermic energy project
- Conclusions



Energy Sector in Costa Rica

According to the energy Board, the energy structure have changed quite dramatically during the last decade.

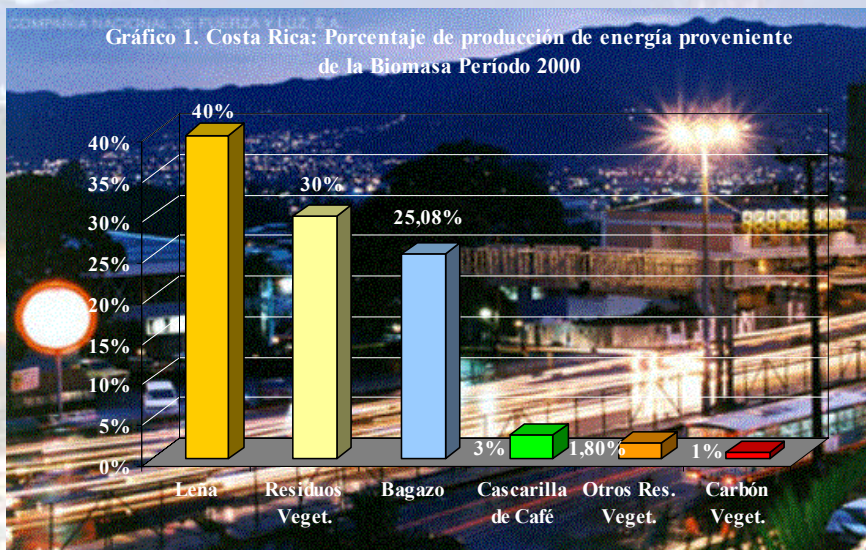
Energy sources in Costa Rica

	1990	2000
Biomass	39	7,8
Electricity	15	19,1
Fuels based	46	72,1
Others	0	1
total	100	100

Source: DSE, 2001

Biomass role in energy sector in Costa Rica

Gráfico 1. Costa Rica: Porcentaje de producción de energía proveniente de la Biomasa Período 2000

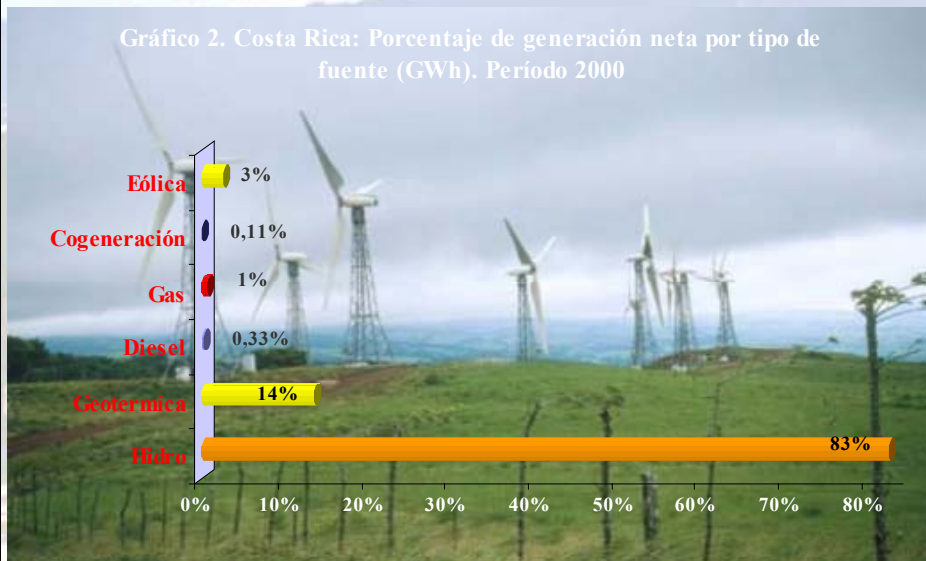


Energy sector in Costa Rica

1. Public owned and regionally decentralised
2. Electricity from hydro is dominating the generation mix.
3. There are interest in the promotion of non-conventional sources
4. Prices are defined by average cost structure of the system
5. New project conected to grid are only possible under contract with distributers

The electricity sector

Gráfico 2. Costa Rica: Porcentaje de generación neta por tipo de fuente (GWh). Período 2000



Biomass as a non-conventional energy source

Solid waste is a critical pollution problem in Costa Rica.

Generally, there are alternatives to treat and process but institutional and organizational aspects made it difficult to reduce those residuals.

Collecting and disposing of those residuals are becoming an important stress factor for local municipalities all over the country.

However, those residuals are having an important quantity of energy that could be reused and generated with different purposes, as for example electricity generation. This is exactly what the Rio Azul project is about.

Biogenic Rio Azul project

Deposit started in 1973. From then till 2003 there are about 4 millions of tons of solid waste at the place.

More than 12 local municipalities are using the place as a solid waste disposal.

additionally, most of the time the deposit of waste was done without major technical considerations. For example, in 2000 year, about 1.300 thousand tons were sent by day to the place.

Because of local actors' pressure, since 2000 various organizations work on having a recuperation of the place and the idea of the project was developed. Those organizations are Municipality consortium FEDEMUR, waste company WWP and local electricity company CNFL.

Biothermic Rio Azul project

FEDEMUR is accomplishing the conditions for biogas extraction, which is mainly compactation and stabilizations of the landfill.

The deposit is going to be closed soon and the organizations are building the infrastructure needed for liquid disposals as well as managing other pollutants.



Technical characteristics of the project

It should generate until 4000 Kwh

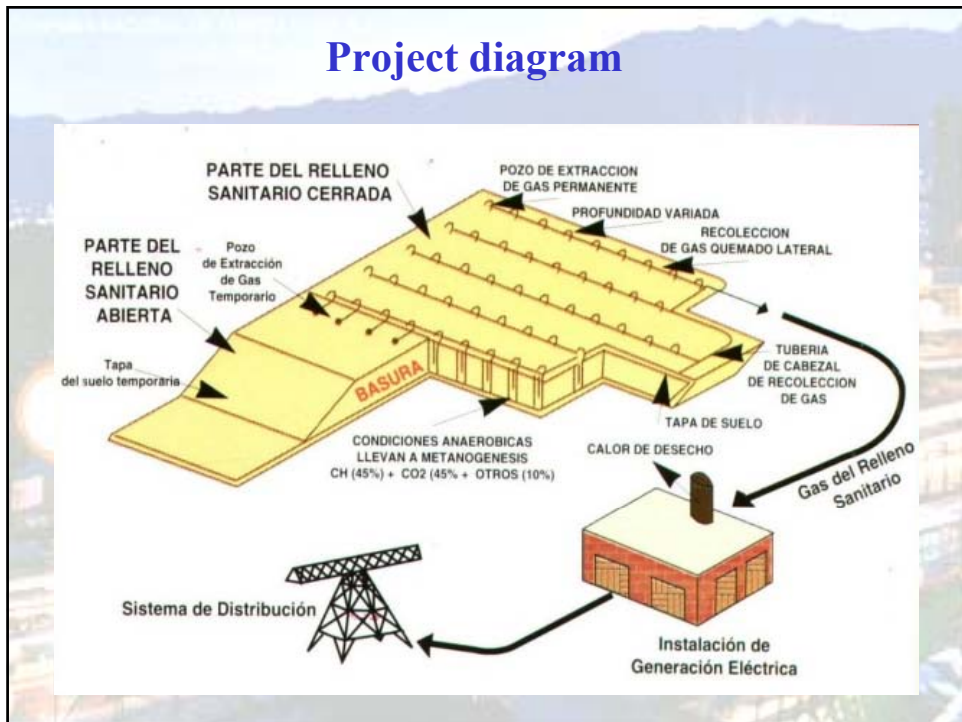
Timetable is for 10 years with a cost per Kwh of around \$0.49 US dollars.

Total cost of the project is about \$3.6 US millions.

The project is also including a treatment plant for liquids and a total management of the disposal material. Communities around are also quite well incorporated in different sustainability aspects of the project



Project diagram



Conclusiones

Bio-electricity is a technically positive activity in waste managements.

It is also economically profitable under certain market conditions

Institutional constrains are quite important in bio-electricity in Costa Rica