

Small scale farmers ownership model for a sustainable agro-energy market value chain

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Brazil recently launched a major bio-diesel programme due to start in 2008 where 2% bio-diesel will be added to fossil fuel derived diesel. In its current format this programme will have a severe negative impact on the very poor in rural areas, as well as on small farmers in general. This is due to the fact that the vegetable oil to be mixed in with the conventional diesel is bought through auctions that require the availability of such large volumes that only corporations with large scale production can participate. This in turn forces small farmers to become suppliers of raw material to oil extraction corporations who are in a position to push prices down at will. A similar situation occurred at the beginning of the National Ethanol Programme (PROALCOOL), which resulted in a major concentration of income and property in rural areas, and a massive exodus of small farmers, heavily contributing to the formation of shantytowns in metropolitan areas. No effective initiative for counterbalancing this trend has been taken by the government, nor has there been any attempt at establishing an agricultural zone to ensure compatible policies for both energy and food security.

With the objective of examining opportunities for ensuring a higher level of protection, social organisation, and income generation for small farmers, a project was conceived and implemented by the LaGuardia Foundation, with funds from REEEP, Blue Moon Fund, and the National Fund for the Environment (from a Dutch donation for environmental protection initiatives in the arid back lands of north east Brazil).

Initial stages

Initially, a major study on the market for castor bean derived products was commissioned to provide broad guidelines for future work. The study demonstrated that the price of refined castor bean oil is historically so much higher than fossil diesel that at present there would be no point in producing the oil to sell as fuel. However, a small scale facility for the production of castor bean bio-diesel was established as there was an immediate local demand for it, while the market for refined castor bean oil seemed far from the small farmers short-term needs. The focus of the project was on increasing income generation and establishing grounds for cooperative work among small farmers within a region jointly defined in cooperation with the rural extension and technical assistance services of the State of Ceara, regionally known by its acronym – Ematerce.

Initial field work focused on three main areas:

- (i) training of small farmers for cooperative work and legal support for the creation of the association,
- (ii) the engineering of a small, decentralised oil

production facility, and (iii) financial analysis. This work demonstrated that the mere capacity to jointly sell their castor bean production – wholesale, as opposed to individual sales – would result in at least a 15% increase in the small farmers' income from this product.

Training was provided by professionals already experienced in working with other already successful associations of small farmers.

Engineering was provided by Urso Branco, a company with a long tradition in manufacturing equipment for oil extraction and ethanol production. Urso Branco was kind enough to provide the engineering free of charge due to the social dimensions of the project.

As all attempts to catch the attention of the regional development bank (BNB) had so far failed, a financial analyst with expertise in agricultural projects was hired. Financial analysis of the project demonstrated that if the small farmers were paid a slightly higher price than the foreign companies already established in the region, then this would result in an internal rate of return of no more than 10.5%. This first assessment did not put a price or value on the use of residues as organic compost in a region where the land is very poor. Residues correspond to about 55% of total volume of production (considering a 45% oil content) and the transportation of the oil (instead of the whole castor bean) also resulted in small scale added value.

As no further governmental support was obtained, the project came to a temporary halt.

A few months later, an Italian company with an increasing involvement in the area of renewable energy – ASJA – decided to provide additional financial support and recommended moving forward with the addition of a refining unit to the oil extraction facility. This required a review of the engineering, but based on FOB prices of refined castor bean oil in the Sao Paulo stock market, financial analysis demonstrated that the internal rate of return would increase to 25.7% (and could be even higher if some level of governmental support was ensured).

At present, ASJA is prepared to provide up to 40% of the equity needed if a deal structure assures that an association of small farmers is the shareholder of the new company created to operate and commercialise castor bean oil type. There is no foreseeable obstacle to this sound approach.

Other sound initiatives

During the implementation of the project it was possible to review other similar initiatives in Southern Brazil where there is a much wider spectrum of opportunities available, due to the high quality of agricultural land and favourable climate – as opposed to the arid regions of the north east.

One such initiative has already proved its benefits in a pilot project, and is now moving towards the manufacturing of small size facilities that can be easily displaced on top of a rack no larger than 10sq meters. The concept of the initiative is the extraction of cold pressure vegetable oil from different sources such as sunflower seeds, soya, peanuts, and others. Cold pressure oil attains a higher market price, while leaving a residue that is rich in oil and in proteins. The residue can also attain a high market price as it is used by both the

food industry and for animal feeding. The overall internal rate of return of this approach is also much higher, and does not leave the small producers vulnerable to large oil and bio-diesel producers. In addition, the proposal includes the alternative use of the vegetable oil as a motor fuel, with only minor adjustments necessary to the motors of vehicles. The oil is already being used in the motor vehicles of members of the cooperative, with the added bonus that as self-producers there is no added value tax to pay (which may go up to 18% of the end price of diesel and other fossil derived fuels).

Current opportunities

Currently the dissemination of the decentralised production of vegetable oil to be added to fossil diesel is slow, with insignificant support from the government. A much faster dissemination of this approach would surely contribute to an increase in small farmers' income and aid their self-reliance, local empowerment, and reduce the costs of transportation in comparison to other government supported policies, as well as ensuring a sound compatibility of food and energy security.

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