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Financial and economic feasibility of sugar cane production in northern La Paz

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A sugar boom could either accelerate deforestation or slow it down in the Bolivian Amazon, depending on how it unfolds. We have studied the financial feasibility and deforestation impacts of such an investment in the department of La Paz near the Madidi National Park. While there is a possibility of cane planting reducing deforestation, this result is only possible under a set of atypical conditions.

During the last three decades, the North of La Paz has seen the arrival of colonists who have converted forest lands to agriculture. Now there is a large scale proposal under consideration to produce sugar and alcohol in the municipality of San Buenaventura. The sugar mill would be owned by the national government and operated under the supervision of the departmental government of La Paz.

The initial investment would be over US$ 90 million. An additional US$ 40 would be needed for full implementation, including the financing costs and the supply of agricultural machinery to farmers. This project has been considered and discarded many times in the past because soil studies showed negative results. However, these results were based on small numbers of samples.

A soil study with 20 times more samples than the previously was conducted for this research. The main finding was that much of the area meets the required biophysical conditions for sugarcane production with acceptable levels of yield (55 tons/ha) and sucrose content (12%). However, a robust soil management system would be needed to guarantee long term yields.

The proposed mill will be supplied with sugar cane grown in indigenous and rural communities' lands within a radius of not more than 85 km and close to the main road between San Buenaventura and Ixiamas. The mill would

require 11,000 hectares of sugarcane initially, increasing annually and reaching 20,000 hectares after 20 years.

If sugarcane replaces traditional crops and causes no new migration to this area, impacts on the forest coverage could be positive. This is because sugar cane does not require the clearance of new land each year, as do the region's other main crops in, rice or corn. The constrained availability of labor is important to avoid the simultaneous development of sugar cane and traditional crops.

Figure 1 – Net accumulated deforestation

More than 1,200 families could be involved in supplying the mill. Currently, each family requires around 2.25 hectares of newly cleared land every year, which adds up to 2.800 hectares annual deforestation. That deforestation could be reduced if current crops destined for sale (i.e., not subsistence) is replaced by sugar cane, because it could last 20 years if soils are managed properly. Avoided deforestation due to crop replacement could reach 19.000 hectares in 20 years, which would generate a regional and national economic benefit. As illustrated in Figure 1, the greatest share of deforestation will take place during the first years of the project. Later, sugar cane would require significantly less deforested land than the traditional crops it will have displaced.

Considering the environmental benefits of reducing deforestation, the sugar investment could yield a positive net present value of US$ 12.1 million. This is a best-case scenario and is valid only if the following conditions are met: i) the agricultural production system is community based; ii) the substitution of traditional crops occurs; iii) no additional sugar mills are installed after the first one; iv) land tenure rights are respected; v) the project does not attract new settlers to the region; and vi) the Bolivian government maintains its position against bio-fuels. If the conditions do not hold, the sugar project will increase deforestation and would generate a loss of at least $U.S. 13.6 million to the Bolivian economy.

By separating the analysis between farmers and the mill, we observed that agricultural producers would win while the mill's investors could lose. Even if the yields and sucrose contents achieved are higher than those expected according the soil studies, the sugar mill would lose money and require indefinite public subsidies and/or concessions from farmers.

Finally, another aspect that must be evaluated for the investors is the market. The production of sugar will be for markets that are already well supplied. Therefore, unless the region offers important competitive advantages in terms of the biophysical capacities for sugar cane production, market penetration of the new operation would be very uncertain. Bolivia's existing sugar industry has more than half a century of experience, making entry into the market challenging.

In conclusion, while sugar has the potential to both benefit farmers and slow deforestation, it could very easily fail to deliver on these goals unless a series of rather challenging conditions are met.

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