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**keywords**

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**Abstract**

*The investment plan of Brazilian bagasse pellet comprehensively analysis advantages of bagasse pellet production and how to start business in Brazil. With comprehensive understanding, you can greatly benefit form bagasse pellet production! Brazil is suitable place for bagasse pellet fuel production. There are geographical advantages and government policy & economic support. Here we has provided you detailed*

*information about investment plan of pellet fuel production in Brazil!*

## **Investment Plan of Bagasse Pellet Fuel in Brazil**

### **I. Raw Material Advantages-Abundant in Bagasse**

Brazil is a country rich in sugarcane and timber where sugarcane and timber industry are two major components of its financial success. Sugarcane bagasse and sawdust from these industries are main and perfect materials for pellet fuel production. With enormous raw material market, it is feasible to start pellet fuel business in Brazil!

Sugarcane bagasse business is the prosperous project due to intensive sugar mills in Brazil. In a sugar mill, bagasse from sugarcane production in one day can be 1000 tons: 500 tons as fuel for factory boilers to produce electricity; another 500 tons become overflow material including a small portion for other industry purposes like inferior quality papermaking and artificial board, but still large quantity of bagasse which are not used. So these overflow bagasse could be treated as raw materials for pellet production. Please note that overflow bagasse are sold in different prices: bagasse, in pressed square of 60\*60\*60cm, is 40.49USD/ton, and in the bulk form it is 16.20 to 19.44USD/ton. For pellet making, the bulk bagasse are good enough for us.



In five months' sugarcane bagasse seasons, just having large enough place you

can effortlessly store masses of bagasse as raw material for pellet production in half year or more. Moreover, there are abundant sawdust which are mainly from half-finished timber processing factories. You can easily collect 1000 tons every month. The timber factories are grouped near the town, so only two workers can finish sawdust collection.

In sugarcane off-season if the sawdust can not meet your requirements, there are still lots of wood chips from wood chip processing factories. Just a crusher machine can help you grind large quantity of wood chips and twigs to produce raw material for pellet production. Most importantly, twigs are almost for free and can be collected for thousands of tons in one month. The main costs you should pay are only personnel cost and electricity cost. Therefore with abundant raw materials and low price bagasse efficiently convert to high quality fuel pellets, which you can make great profit and benefit to meet the growing demand of pellet fuel on the market!

## II. Characteristics of Fuel Pellet Products

Fuel pellet is increasingly favored by people as heating and burning fuel due to its specific advantages. However, with different raw material pellets are featured with different characters.



### 1. Stalk pellets

Raw materials are corn stalks, wheat straw, rice straw, peanut shells, corn cobs, cotton stalks, soybean pole, weeds, twigs, leaves, sawdust, bark and other solid waste.



## 2. Bagasse pellets

Sugarcane bagasse has a high energy content and burning quality. The production procedure of sugarcane bagasse is drying materials, pelletizing and package. Bagasse pellets are with high calorific value of 3400 to 4200 kilocalorie.



## 3. Sawdust pellets

The pellet production line of sawdust : purchasing raw materials, collecting materials, drying, pelletizing and packing. The moisture content of sawdust is around 30%-45% and price is 21.05 to 24.29USD/ton. The calorific value can reach 4000-4500 kilocalorie.



## 4. Twig pellets

The pellet production line of twigs: purchasing raw materials, collecting materials, crushing, drying, pelletizing and packing. The cost of raw material is around 16.19USD/ton. The calorific value of twig pellets is lower than that of sawdust pellets.

### III. Bagasse Pellets Application

The bagasse pellets is new kind of bio-energy. It can be employed in heating, living stoves, hot water boilers, industrial boilers, biomass power plant and so on to replace firewood, coal, fuel oil, liquefied petroleum gas. Its merits are in the following aspects:

1. Civil heating and domestic energy: high pellet energy efficiency and easy storage
2. Biomass industry boiler: instead of coal, the main fuel for industrial boilers which avoids the environmental pollution
3. Electricity generation: used as fuel for thermal power generation

### IV. Site Selection & Investment Budget of [Bagasse Pellet Plant](#)

Many pellet production factories in Brazil are currently located in developed area where there are inadequate but higher raw material, higher management cost, labor cost and workshop rent. The suitable factory site should be in the place with abundant & cheap raw material. And it would be better that the factory is near the port for convenient transportation. With such conditions, there are no problems in raw materials and related costs can be saved a lot.



The initial investment for pellet production factory is about 112413.68USD (with biomass pellet plant capacity of 1 ton/h). According to subsequent pellet

production, you can decide whether add equipments (max capacity is 6ton/h). The investment of factory building is around 19270.92USD with floor space of 6000m<sup>2</sup>.

Initial investment of capital equipment is about 72265.94USD including a dryer of 24088.65USD, a stranding cage of 1927.09USD, an electric cabinet of 1927.09USD, a pellet mill(1 ton/h) of 25694.56USD and so on.

40147.74USD working capital is needed for pre-storage of raw material and pre-sale products.

If the market and operation are stable, you can increase investment. A dryer of 24088.65USD can work for three pellet mills, so you only add investment for stranding cage, pellet mill and conveyor. If more than three pellet mills, a dryer should be added and a fork-lift truck may be needed. Depend on the production situation, the cooler machine can be taken into consideration.

## **V. Wide Foreground Market and Competitive Advantages**

The government has banned raw coal for boiler burning and encourage to use diesel and gas as burning raw materials. But energy poverty and high price of diesel fuel, boiler burning costs get higher. Biomass pellets, renewable energy source, used as raw materials of boiler burning can lower the cost and benefit environment. With government incentives policy for renewable energy, more and more enterprises currently adopt pellets instead of coal, oil, and natural gas. For biological environmental protection enterprises, government also give support and subsidies. Due to the rise in oil price, the market for biomass pellets increasingly gets promising. Now it is the best chance to invest biomass pellet business!

## **VI. Cost & Profit Analysis of Bagasse Pellets and [Sawdust Pellets](#)**

1. Business target: initial monthly output is 500 tons. If normal operation,

monthly output can increase to 1500tons or 3000tons. The annual output is around 30000tons.

## 2. Estimated cost & profit

### A. Bagasse Pellets RIO(Return on Investment)

| Item   | Cost         | Cost description  |
|--|--------------|---|
| Raw material<br>(sugarcane bagasse)  | 19.45USD/ton |   |
| Transportation cost  | 3.24USD/ton  | packing the car and discharge fee                           |
| Crushing   | 0            |   |
| Electric charge for drying   | 1.39USD/ton  | 7.5KV electric machine can dry 0.70ton/h                    |
| Electric charge for pelletizing  | 11.67USD/ton | 90KW electric machine can pelletize 1ton/h                  |
| Package  | 5.19USD/ton  | 25kg/bag 0.13USD/bag  |
| Direct labor   | 8.10 USD/ton | one equipment for 8 workers, 11.34USD for 1 worker in 1 day |
| Site fee   | 5.33USD/ton  | 19434.14 USD for 10-year use                                |
| Equipment fee  | 3.25USD/ton  | 80975.59 USD equipment for 26 days/month in five-year use   |
| Maintenance cost   | 4.86USD/ton  | the die wear cost   |
| Total cost   | 62.48USD/ton |   |
| <p>According to valuation at market price, the calculation of profit is as follows:<br/>           Total cost is 62.48USD/ton; factory price is 97.17USD/ton; net profit of one ton is 34.69USD. If the monthly output is 500tons, monthly net profit is 17345USD.</p> |              |   |

### B. Sawdust Pellets RIO(Return on Investment)

| Item  | Cost         | Cost description   |
|---|--------------|--|
| Raw material (sawdust)  | 22.67USD/ton |  |
| Transportation cost   | 4.86USD/ton  | packing the car and discharge fee                              |
| Crushing  | /            |  |
| Electric charge for drying  | 2.08 USD/ton | 7.5KV electric machine can dry<br>0.70ton/h                    |
| Electric charge for pelletizing   | 15.16USD/ton | 90KW electric machine can pelletize<br>1ton/h                  |
| Package   | 5.18 USD/ton | 25kg/bag 0.13USD/bag   |
| Direct labor  | 8.10 USD/ton | one equipment for 8 workers,<br>11.34USD for 1 worker in 1 day |
| Site fee  | 5.33USD/ton  | 19434.14USD for 10-year use                                    |
| Equipment fee   | 3.25USD/ton  | 80975.59 USD equipment for 26<br>days/month in five-year use   |
| Maintenance cost  | 5.83 USD/ton | the die wear cost  |
| Total cost  | 72.46USD/ton |  |
| <p>According to valuation at market price, the calculation of profit is as follows:<br/> Total cost is 72.46USD/ton; factory price is 137.65USD/ton; net profit of one ton is 65.19USD. If the monthly output is 500tons, monthly net profit is 32595USD.</p> |              |  |

Bagasse pellets are the important renewable energy source in Brazil that benefit the environment, provide jobs to local and national economies and is easily manageable in small-scale industry systems. The pellets can be sold to companies in industries like textiles, dairy and brewing that generate steam to power turbines in their manufacturing process. Bagasse pellets' features of automatic heating process, easy

storage, not easy to degrade, relatively low cost compared with fossil fuels bring potential opportunities to many biomass industry investors.