Bamboo Charcoal

a. Introduction

Even before being activated, bamboo charcoal has a 600:1 surface area-to-weight ratio. That means every 1 gram has a surface area of roughly 600 sq meters. Once processed and active, that number jumps to an impressive 1200:1. Besides its ultra-porous surface, bamboo is an environmentally friendly, sustainable resource. Because it's a grass, it quickly regrows from its original root system, so harvesting doesn't "wipe it out" as some naturally sourced products are infamous for.

Bamboo charcoal has been used throughout Asia for centuries and is known there as the "black diamond" of healers. Bamboo charcoal has many great benefits. It can help detox and cleanse important organs such as your kidneys, liver, and intestines. Works great on the skin too! It also acts as a purifier for both water and air and act bamboo charcoal are 4-5 times more absorbent than regular wooden charcoal if activated, so it works far better than non-activated varieties.

b. Market Demand

Based on application, the global bamboo charcoal market can be divided into food, medical, cosmetics, and others. The others segment includes chemical, laboratories, and agriculture. Depending upon requirement, different grades of bamboo charcoal powder are used in industries. In terms of usage, food, medical, and cosmetics industries account for large share of the bamboo charcoal powder market. However, demand for bamboo charcoal is increasing at a rapid pace in the industrial sector. Demand for bamboo charcoal powder in the industrial sector is likely to rise at a faster pace than that in the overall market.

c. Production Target

Bamboo charcoal manufacturing involves higher investment as well as certain experience and technical expertise. A bamboo charcoal unit may be established on a larger scale as a Bamboo farmers' cooperative or government enterprise, may be in PPP mode. Especially peoples, who are involved/experienced in Bamboo pre-processing, Bamboo stick manufacturing, manufacturing other wood-based charcoal are prefeed to establish a bamboo charcoal manufacturing unit.

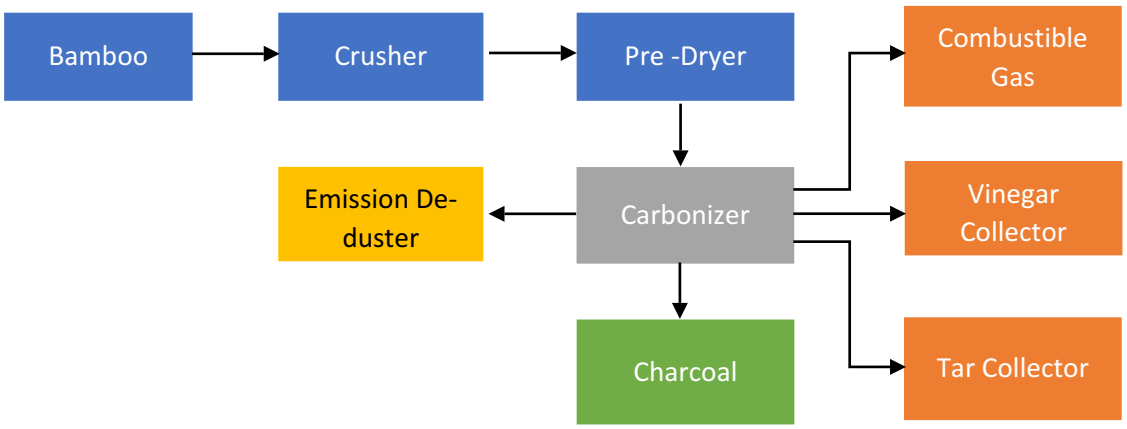
d. Assumptions, if any

The essential requirements for a successful unit are:

- Regular supply of bamboo culms (especially matured bamboo 4-5 yrs)
- Advanced pyrolysis or carbonization process
- Unskilled and skilled labor
- Adequate amount of start-up capital; and
- Market access.

e. Production Process

Bamboo charcoal is manufactured using the pyrolysis or carbonization process, which usually consists of heat treatment at the temperature of 800°C to 1200°C. Fine bamboo charcoal is fitted into a boiler furnace where it is activated by gas like steam at a temperature of 850 degree Celsius. The process of making activated bamboo charcoal follows;



f. List of machinery required along with quantity with Unit Price.

Sl. no	Tools & Equipments	Nos.	Unit Price in INR)
1	Combined gasifier and charcoal production unit (Crusher, Dryer, Carbonize reactor, Combustible gas purification system, Condenser)	1	55 Lakh

Bamboo Vinegar

a. Introduction

When bamboo is heated at very high temperature in an airless vessel, it becomes charcoal. The vapour that comes off the heated bamboo is condensed to produce a liquid known as bamboo vinegar. In the pharmaceutical world there has been a lot of talk about the properties of Bamboo vinegar regarding diabetes, skin, hair, cosmetics, however, the scientific biography has not corroborated the supposed benefits that they say that the famous bamboo patches provide to detoxify the organism

b. Market Demand

Based on application, bamboo vinegar is recognised as having many health benefits; eliminating foot odour, softening the skin, relieving itching and insect bites and improve blood circulation. Diluted, it's also used as a skin toner and hair conditioner. In the West, bamboo vinegar is more commonly seen in form of foot detox pads. The pads are applied to the feet overnight. Bamboo vinegar detox pads score quite highly in the Amazon customer reviews. So, demand for bamboo vinegar is increasing at a rapid pace in the industrial sector.

c. Production Target

Bamboo vinegar manufacturing involves higher investment as well as certain experience and technical expertise. A bamboo vinegar unit along with bamboo charcoal may be established on a larger scale as a Bamboo farmers' cooperative or government enterprise, may be in PPP mode. Especially peoples, who are involved/experienced in Bamboo pre-processing, Bamboo stick manufacturing, manufacturing other wood-based charcoal/vinegar are prefeed to establish a bamboo vinegar manufacturing unit along with charcoal.

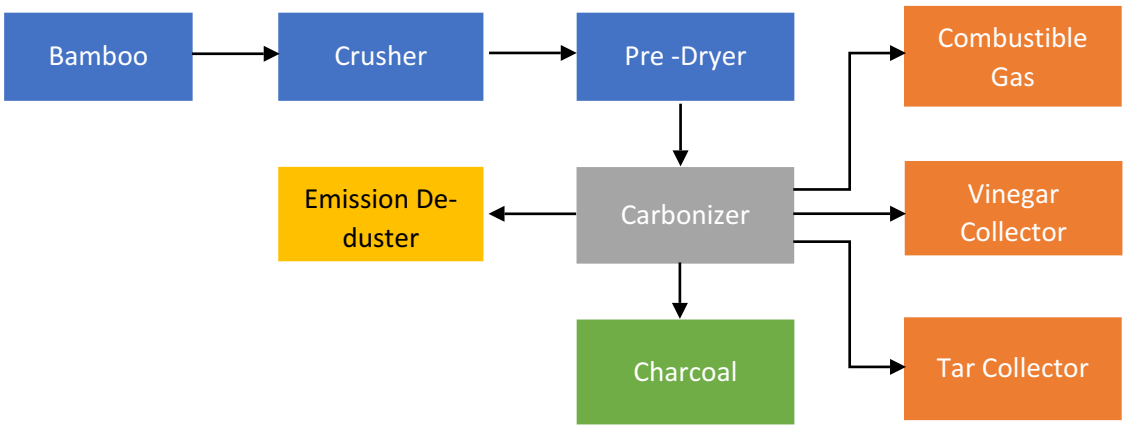
d. Assumptions, if any

The essential requirements for a successful unit are:

- Regular supply of bamboo culms (especially matured bamboo 4-5 yrs)
- Advanced pyrolysis or carbonization process
- Unskilled and skilled labor
- Adequate amount of start-up capital; and
- Market access.

e. Production Process

Bamboo Vinegar is obtained as a by-product during bamboo charcoal manufacturing and is manufactured using the pyrolysis or carbonization process, which usually consists of heat treatment at the temperature of 800°C to 1200°C. The process of making vinegar along with bamboo charcoal follows;



f. List of machinery required along with quantity with Unit Price.

Sl. no	Tools & Equipments	Nos.	Unit Price in INR)
1	Combined Carbonization Plant with gasifier and charcoal production unit (Crusher, Dryer, Carbonize reactor, Combustible gas purification system, Condenser)	1	250 Lakh

Bamboo Activated Charcoal/Carbon

a. Introduction

Even before being activated, bamboo charcoal has a 600:1 surface area-to-weight ratio. That means every 1 gram has a surface area of roughly 600 sq meters. Once processed and active, that number jumps to an impressive 1200:1. Besides its ultra-porous surface, bamboo is an environmentally friendly, sustainable resource. Because it's a grass, it quickly regrows from its original root system, so harvesting doesn't "wipe it out" as some naturally sourced products are infamous for.

Activated bamboo charcoal has been used throughout Asia for centuries and is known there as the "black diamond" of healers. Bamboo charcoal has many great benefits. It can help detox and cleanse important organs such as your kidneys, liver, and intestines. Works great on the skin too! It also acts as a purifier for both water and air and activated bamboo charcoal is 4-5 times more absorbent than regular wooden charcoal, so it works far better than non-activated varieties.

b. Market Demand

Based on application, the global activated bamboo charcoal market can be divided into food, medical, cosmetics, and others. The others segment includes chemical, laboratories, and agriculture. Depending upon requirement, different grades of bamboo charcoal powder are used in industries. In terms of usage, food, medical, and cosmetics industries account for large share of the bamboo charcoal powder market. However, demand for activated bamboo charcoal is increasing at a rapid pace in the industrial sector. Demand for activated bamboo charcoal powder in the industrial sector is likely to rise at a faster pace than that in the overall market.

c. Production Target

Bamboo activated charcoal manufacturing involves higher investment as well as certain experience and technical expertise. A bamboo activated bamboo charcoal unit may be established on a larger scale as a Bamboo farmers' cooperative or government enterprise, may be in PPP mode. Especially peoples, who are involved/experienced in Bamboo pre-processing, Bamboo stick manufacturing, manufacturing other wood-based charcoal are prefeed to establish a bamboo activated charcoal manufacturing unit.

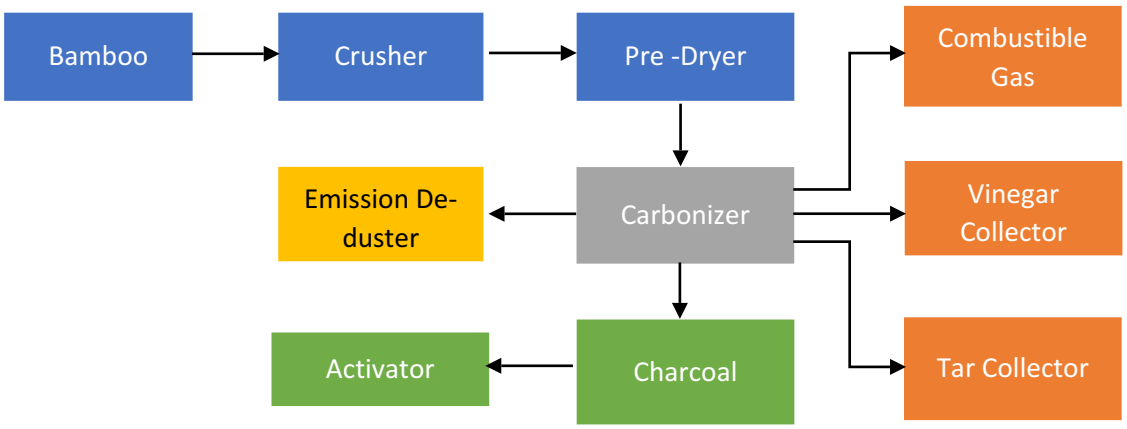
d. Assumptions, if any

The essential requirements for a successful unit are:

- Regular supply of bamboo culms (especially matured bamboo 4-5 yrs)
- Advanced pyrolysis or carbonization process
- Unskilled and skilled labor
- Adequate amount of start-up capital; and
- Market access.

e. Production Process

Bamboo charcoal is manufactured using the pyrolysis or carbonization process, which usually consists of heat treatment at the temperature of 800°C to 1200°C. Fine bamboo charcoal is fitted into a boiler furnace where it is activated by gas like steam at a temperature of 850 degree Celsius. The process of making activated bamboo charcoal follows;



f. List of machinery required along with quantity with Unit Price.

Sl. no	Tools & Equipments	Nos.	Unit Price in INR)
1	Combined Carbonization Plant with gasifier and charcoal production unit (Crusher, Dryer, Carbonize reactor, Combustible gas purification system, Condenser)	1	250 Lakh

ONE PAGER SUMMARY OF BAMBOO ACTIVATED CARBON, LUMP CHARCOAL AND VINEGAR

Sl. No.	Particulars	Description				
A. Project Description						
1	Proposed Project	**Bamboo Activated Carbon, Lump Charcoal and Vinegar**				
2	Capacity of the machine (at 100% capacity utilization)					
3	Year wise capacity utilization	**Year- 1**	**Year- 2**	**Year- 3**	**Year- 4**	**Year- 5**
		70%	80%	90%	100%	100%
4	Raw Materials Required	Bamboo, Other bio materials, water				
5	Final Product	Bamboo Activated Carbon, Lump Charcoal and Vinegar				
6	Infrastructure Required	Shed (15000 sq ft)				
7	Plant and machinery	Combined Carbonization Plant with gasifier and charcoal production unit (Crusher, Dryer, Carbonize reactor, Combustible gas purification system, Condenser)				
8	Employment Generation	144 Hired labour – 30 semiskilled, 64 skilled and 50 Unskilled. Additionally, 3 Managers cum supervisors, 1 Store keeper, 2 Accounts and Admin Managers, Marketing Manager and 5 Security staff shall be on permanent rolls.				

B. Project Cost		**(Figures in Rs. Lakhs)**
1	Land (own)	0.00
2	Civil works and Buildings (500 sqft @200/sqft)	60.00
3	Machinery	253.70
4	Others	13.00
5	**Sub-total (A)**	**326.70**
6	Working Capital Margin @40% of Total WC Requirement	38.69
7	**Total Project Cost**	**423.42**
8	Total Working Capital Req **(B)**	96.72

C. Means of Finance		**(Figures in Rs. Lakhs)**
9	**Total Funds Required(A+B)**	**423.42**
10	TERM LOAN (75% of A)	245.03
11	WORKING CAPITAL (60% of B)	58.03
12	**Total**	**303.06**
13	Equity	120.36
14	**Total**	**423.42**

D. Financial Benchmarks					(Figures in Rs. Lakhs)
		Year- 1	**Year- 2**	**Year- 3**	**Year- 4**
1	Target Revenue (Lakh)	**1092**	**1248**	**1404**	**1560**
2	Break Even Point	**68.76%**	**58.02%**	**49.90%**	**44.08%**
3	DSCR including Principal repayment	**2.96**	**2.65**	**3.46**	**4.44**
E. Basic Assumptions					
1	Production of Bamboo Activated Carbon, Lump Charcoal and Vinegar	• Feeding Capacity of carbonizer – 2.5 MT bamboo/hr • 25 working days a month, 8 hrs per shift. • Conversion rate of bamboo to charcoal – 25% • 50% charcoal – lump charcoal, 50% will be powder • Powder will be used for making activated carbon • Charcoal to activated charcoal conversion ratio – 60% • Bamboo to bamboo vinegar conversion ratio – 20% • Cost of other input materials like steam, firewood, catalysts and enzymes will be at maximum 50% of the chief raw material bamboo • Bank Interest Rate – 11% PA			
2	Machinery	This is a profile of an industrial enterprise with about 150 hired labour.			
3	Interest rate assumed	11%			
4	Repayment period	5 Years with 6 months moratorium			
F. Others					
1	Training Institutes	CBTC Meghalaya, BCDI Agartala, IIE Guwahati			
2	Whether the service is in the Negative list under NEIDS and MSME?	No			