



# Value Chain in Development: Bamboo Charcoal

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15<sup>th</sup> Anniversary Year



# History of bamboo charcoal in China

- Due to harsh deforestation to natural forest, suffering from heavy floods and disasters, government has national natural forest protection program, wood charcoal production was prohibited, now wood charcoal export is also prohibited.
- Some charcoal producers started and tried to produce bamboo charcoal to replace wood charcoal for their livelihood
- Early stage, bamboo charcoal was only exported to Japanese market as no domestic market
- Later more and more consumers are aware that bamboo charcoal's functions, domestic market is booming up.
- Over 100,000 t bamboo charcoal production for a value of 1 bil US\$, more and more uses

# 4 Elements of bamboo charcoal value chain in China

- Production

Brick kiln, metal kiln

- Marketing

Fair/exhibition, advertisement, shop, supermarket, internet

- Research & innovation

Uni & institutes, enterprises

- Products and use

More than 8 series of products



Pressed rod from waste/residue from processing



carbonization

烧烤炭

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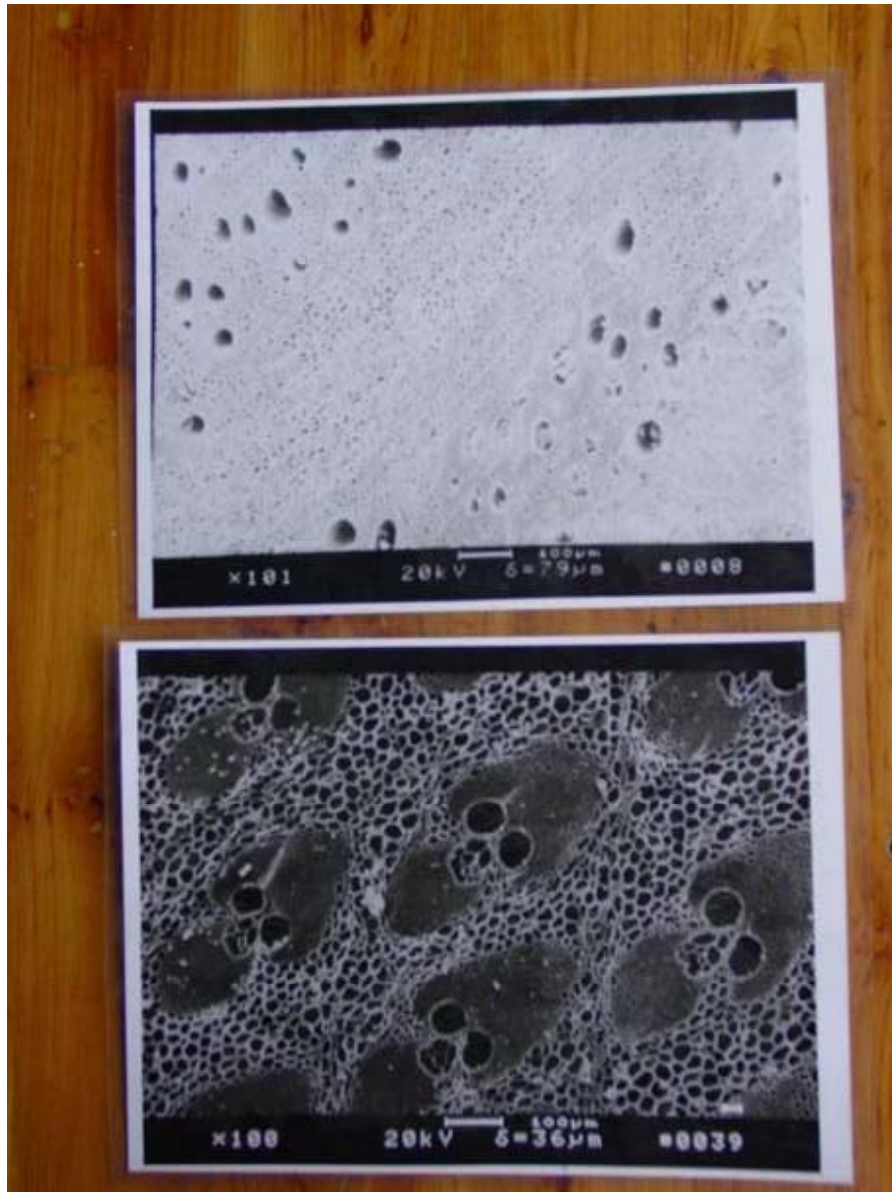
# Bamboo charcoal classification and uses

- Classification of bamboo charcoal
- Products classification based on uses
- 1. For humidity regulation in room
- 2. Charcoal particle for odor-absorbant, water purification
- 3. Charcoal mat etc. for daily life
- 4. Charcoal handicrafts
- 5. Charcoal for rechargeable battery
- 6. Charcoal for shade of electromagnetic wave



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specific surface area  
Wood charcoal  
<20m<sup>2</sup>/g

Bamboo charcoal  
200-600m<sup>2</sup>/g



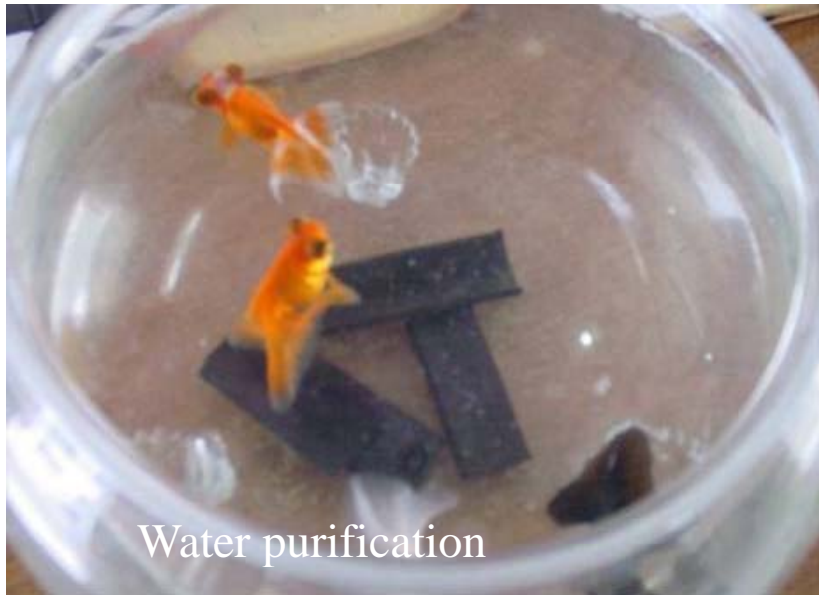
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Deodorant for refrigerator



Water purification

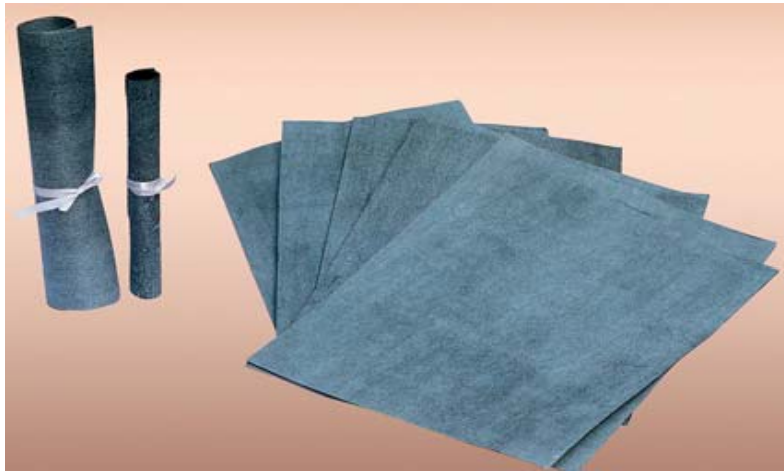


Mattress for car



Dehumidify air in room

# Charcoal board & paper



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Bamboo charcoal soap



Vinegar for bathtub



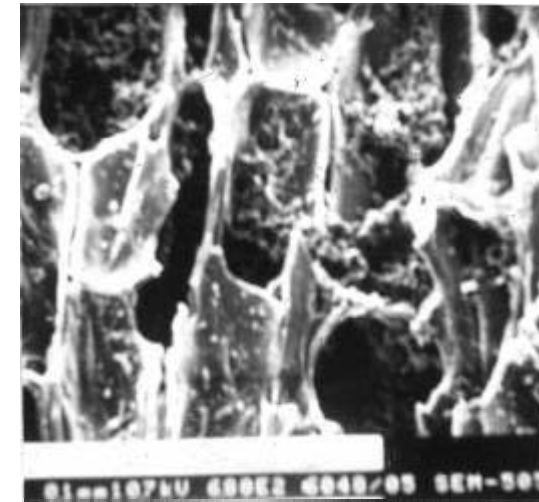
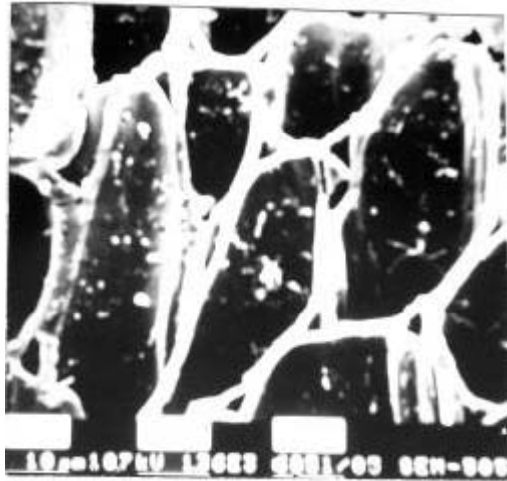
Bamboo vinegar soap





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# Bamboo charcoal in Ethiopia

- Production

Metal and brick kilns for carbonization; hand tool and machine for briquette production

- Research & innovation

INBAR, EREDPC & FeMSEDA  
Efficient stoves for charcoal, briquette and firewood

- Marketing

Direct sale, fair/exhibition;  
Very good market for charcoal and stoves

- Products and use

Bamboo charcoal, briquettes (ball, honeycom etc)

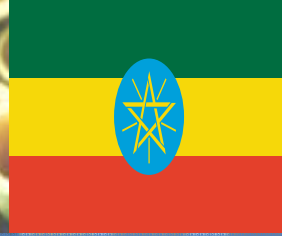
## Some Facts about Ethiopia

- 80 mil population, >80% city residents using wood charcoal for cooking
- Due to continuous deforestation, forest cover <3% in 2005, short of fuelwood (firewood and charcoal)
- 1 mil ha bamboo forest in 1997, Bamboo (charcoal) could replace wood (charcoal) totally in a sustainable harvesting.
- INBAR has launched an EU & CFC funded bamboo biomass energy project 2009 in Ethiopia and Ghana

# Bamboo charcoal as fuelwood

- 30,000J/g, smokeless charcoal
- Substitute of wood charcoal
- Save natural forest
- 4 tons bamboo produces 1 ton charcoal
- Simple technology
- Low investment
- Technology transfer





# **Bamboo as sustainable biomass energy:**

## **A suitable alternative for firewood and charcoal production in Africa**

2009-2013





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# Technology transfer



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# TRAINING USING THE METAL KILN



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# BAMBOO CHARCOAL BRIQUETTE MAKING



Used for honeycomb briquette as well as the carbon rod with six-edge shape by changing the die.

Honeycomb briquette

Output = 40 briquettes/minute

Power = 7.5 kW

Dia. beehive briquettes = 100mm

Height of briquettes = 70-80 mm





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# Comparison of wood charcoal products with bamboo charcoal products

Type of biofuel	Volatile matter (%)	Calorific value(cal/gm)
Bamboo charcoal	17	6959
Acacia charcoal	24	7780
Prosopis charcoal	27	6756
Bamboo charcoal briquette	13	7100
Cotton stalk charcoal briquette	18	4588
Chat stalk charcoal briquette	31	5100

## Bamboo charcoal

(briquettes) high heating value, as indicated by the calorific value, shows that it gives a good amount of heat per weight unit of fuel. This will result in efficient cooking, as long as the bamboo charcoal (briquettes) are burned using an appropriate stove, such as those introduced in Ethiopia and Ghana as part of the project.

The cause of smoke and pollution is moisture content and volatile matter. Moisture content does very much depend on the processing, not really on the resource used. The table represents figures for oven dried biofuels. Firstly the table illustrates that bamboo charcoal and briquettes are in general lower in volatile matter than other resources, which explains why bamboo biofuels in general burn cleaner.



## More and more MSEs involved in bamboo charcoal and stove production and sale in Ethiopia

### Bamboo charcoal MSEs:

- Adal bamboo charcoal factory(waste for charcoal briquette)
- Dar Biomass Briquette factory
- Green Charcoal Factory
- Stove MSEs:
- Admass Fuel Saving Stoves and Metal Work Enterprise
- Google Fuel Saving Stoves Producers and Metal work Enterprise
- G.A.H Fuel Saving Stoves producers and metal Work Enterprise
- Progress Tee(Over 30,000 for briquette and 5000 for firewood)



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# Advertisement


**ዳራ ከሰል ፋብሪካ**  
**Dara Biomass Briquetting Factory**



Dara Briquetting Factory is located at Gara woreda in Sidama Zone. The Factory produces highly efficient, sustainable fuel for rural, agricultural and household, industries and factories.

**Advantages of our High Fuel Briquet:**

- Pollution free because briquet is no sulfur, carbon free, no toxic, non-toxic substances and no fly ash when burning briquette
- Economical and cheaper than other solid fuels like coal & wood
- Higher calorific value around 2600-4000 kcal/kg
- Clean to handle and transport
- High burning efficiency at complete carbon substitution compared to coal
- Uniform in size and shape
- Can be efficiently used in industrial and household
- Industries, universities, hotels, industries, Government factories can efficiently use to replace coal, firewood & Furnace oil partially or fully

Has a capacity of more than 500 tones per month

**Available in bulk**

Address: Dara Briquetting Factory South Peoria Sidama zone Tel: +251 918 822 827 Fax: 822 82 36 Email: info@dara-briquetting.com, Ethiopia

Our factory aims to produce fuel briquet for environment protection, to support the sustainable, industrial development and fuel opportunities for its workers. We are ready to take business development of the country.



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# Fair and exhibition



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MEDIA COVERAGE REPORT FOR THE INTERNATIONAL NETWORK FOR BAMBOO AND RATTAN

# Bamboo Charcoal for Africa

## COP17 Side Event and Media Campaign

December 2011

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Thank you  
Vielen Dank  
Merci  
Gracias  
谢谢!



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