

CHARCOAL PRODUCTION

- A Sub-Sector Analysis -

INTRODUCTION

The "direct" charcoal production process is simple, requiring low capital investment and little technical know-how. The direct method uses heat from the incomplete combustion of the organic matter (wood) which then becomes charcoal.

The "indirect" method uses an external source of heat to cook the organic matter contained in a closed chamber (retort). This is a more sophisticated process requiring substantial know-how and high capital investment. Some of the leading South African charcoal manufacturers use the indirect method to produce charcoal.

The production of charcoal is mainly concentrated in the Natal Midlands area and south-eastern parts of Mpumalanga, stretching from Ermelo to Pietermaritzburg. A few small plants are operating in the Eastern Cape and in the Limpopo province; the latter supplying mainly in the requirements of Silicon Smelters.

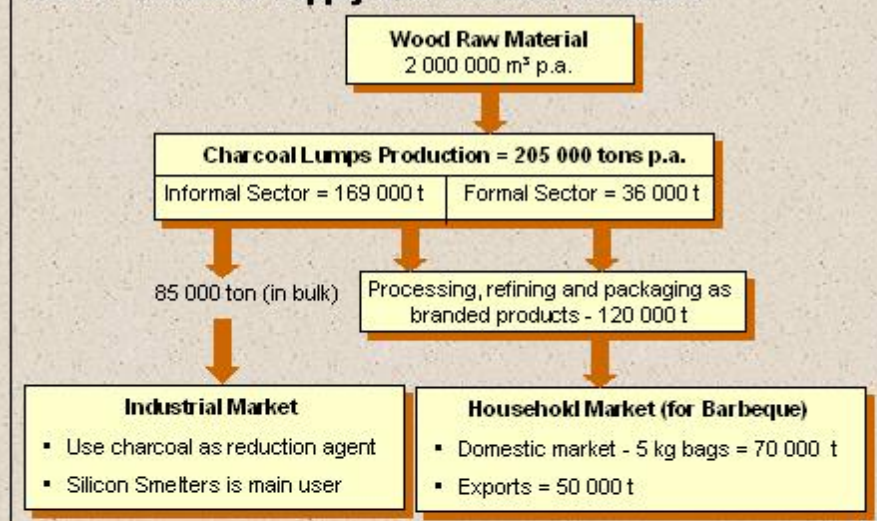
Wattle and hard gums (*Paniculata* and *Cleoziana*) are the preferred raw material for charcoal production in South Africa. The industry is labour intensive, employing an estimated 6 000 people.

CHARCOAL SUPPLY AND DEMAND

A schematic presentation of current supply and demand in South Africa is presented in Box 1. About 80% of all primary charcoal (lumps) is produced by small-scale operators.

South Africa produces an estimated 205 000 tons of charcoal annually at an ex-factory value of R300 million. The household market, which uses briquettes and charcoal lumps for barbeques, dominates the demand.

Box 1: Charcoal Supply and Demand Structure



The industrial market uses natural charcoal lumps as a reducing agent in non-ferrous melting processes. The household market is supplied by a few small operators and four large industrial companies which supply branded products through established retail chains, petrol stations and small retailing groups. This market is competitive but prices achieved (ex-factory) are more than twice as high as that obtained for industrial charcoal. About 25% of total domestic production is exported as packaged branded products for the overseas barbeque market.

PRODUCTION ARRANGEMENTS

There are between 120 and 160 small-scale producers, providing unrefined charcoal to large industrial users and to the manufacturers of branded products for the barbeque market. Contractors' activities consist of timber harvesting, transport to kilns and burning of wood to form charcoal. A typical small-scale contractor produces 120 tons of charcoal per month, employs between 30 – 40 people, has a monthly turnover of R80 000 with a net income of R7 000/month. Such a production unit includes two or four kilns, each with a capacity to produce 2 to 3 tons of charcoal per burn. The most popular size is a 6 m kiln, although kilns are also produced in sizes of 9 and 11 m. The total capital investment for a production unit (with a capacity of 120 tons/month) consisting of four 6 m kilns, chain saws for harvesting and a small tractor-trailer combination could be R150 000 to R200 000.

VALUE-ADDED IN CHARCOAL PRODUCTION

One cubic metre of semi-dry hardwood yields 100 kg of primary charcoal. Primary charcoal consists of charcoal lumps, fines and ash. Charcoal producers cannot afford to pay much for standing timber as the production process and the final prices do not allow for expensive input materials. Most raw material is obtained free of charge from clearing wattle jungle and wattle infested areas; through the Work for Water Programme and as a service to land owners for clearing their land.

About 85% of all employment opportunities are in the first levels, including mainly harvesting and transporting of timber and burning of charcoal. The packaging, screening and briquetting are costly processes and add an estimated R600/ton to the value of primary unprocessed charcoal.

Box 2: Small-scale Production Plant



Box 3: Charcoal Value Chain

| Processing Level | Wood Value (R/t) | Per ton of charcoal (R/t) |
|--|------------------|---------------------------|
| Standing timber | 10 | |
| Harvesting | 30 | |
| Transport | 35 | |
| Delivered kiln | 75 | 450 |
| Primary charcoal unprocessed | - | 700 |
| Final packed/branded product (ex-factory) | - | 1 850 |

BUSINESS OPPORTUNITIES IN CHARCOAL PRODUCTION

There is a good market for industrial charcoal and primary users in this market are very keen to form joint ventures and to assist prospective small-scale operators in becoming part of the supply chain. The local market for value-added barbecue charcoal is very competitive but growing at a rapid rate. Major players in this market are also looking for additional sources of lump charcoal supplies.

The production of lump charcoal is seen as an ideal SME activity. This conclusion is primarily based on the fact that small-scale production is economical, little capital is required for a small-scale unit, activities are decentralised and located in rural areas in close proximity to major timber resources.

The configuration of a small-scale production unit makes it ideal for operation by a local community, a rural cooperative or as a small business unit. In many cases production units are run by families. It would therefore seem that all the ingredients are available for successful SME development and the involvement of poor rural people and communities in the sustainable production of charcoal. These key ingredients include:

- Potential raw material supply
- Available capital from large market players to become involved with small-scale producers on a joint venture basis
- The availability of captive markets, both in terms of large industrial users and producers of value-added and branded packaged products.
- The availability of a local supplier of kilns at reasonable prices. The current kiln producer indicated its willingness to provide the necessary training and technical back up to small-scale operators entering this market.

A copy of the full report on charcoal production can be obtained from the WFSP office at telephone (012) 336 7421 or e-mail: jacobe@dwaf.gov.za