









Charcoal Production – WHY?

- Main purpose is the responsible restoration of land use in Namibia.
- The Ministry of Industrialisation and Trade (MIT) supported by the GIZ, supports and facilitates the growth of the charcoal industry as one of its main industries.
- 45 million hectares are severely affected by bush thickening (encroachment).
- Bush thickening is still taking place at a growth rate of 3,2% year on year.
 - This has an adverse impact on groundwater replenishment, biodiversity is negatively affected and total production of agriculture is reduced considerably.
- The production of charcoal was a means of livelihood for many farmers during the severe drought experienced over the past couple of years.





What is required? (Getting Started)

*Forest management shall conserve biological diversity and its associated values, water resources, soils, and unique and fragile ecosystems and landscapes, and, by doing so, maintain the ecological functions and the integrity of the forest."

Getting ready (1)

- Forestry Harvesting & Marketing Permit issued.
- Legal access to the production area (Legal owner of land, Tenant with rent agreement of land or charcoal producer with "permission / agreement" of land to produce Charcoal only).
- Neighbours are informed of charcoal production and communication system is in place to report veld fires and medical emergencies.





Getting ready (2)

- Contract in place for all workers, including:
 - Social Security and Workmen's Compensation.
- All workers are trained (harvesting procedures; wood types as specified on permit).
- First Aid training concluded, and First Aid helpers identified.
- Proper facilities are available for workers.





Getting ready (3)

- A bush/tree count and vegetation composition survey has been conducted, containing encroacher bushes/trees, protected species, fodder & non-targeted species.
- A farm map is available (including all environmental areas, sites and locations).
- Charcoal production areas are photographed, and GPS coordinates are recorded.
- Roads are maintained for easy access to charcoal production area.





Getting ready (4)

- Fire prevention equipment is in place and workers are trained.
 - Effective fire breaks around camp & border fences.
 - An area of 15m cleared around each kiln.
 - Firefighting equipment ready fire slashers at charcoal site, village & homestead; mobile firefighters filled up and on stand-by.
 - After-care of extinguished areas, smouldering pieces on the brim of fire line, wind intensity & direction taken into consideration.





Getting ready (5)

Adhere to environmental rules not to disturb the natural habitat of protected species and controlling soil erosion.





The danger of Veld Fires

How do veld fires start

- Cooking
- Working with equipment that produces sparks
- Vehicles
- Malicious damage to farms arson
- Incorrect charcoal production procedure
- Lightning
- Glass bottles, shiny plastic bottles
- And many more





Charcoal production

- No supervision at kiln
- Strong winds
- Burning wood sticking out of kiln
- No clearing around kiln
- No cluster burning
- No fire fighting equipment
- No fire breaks
- No proper access roads
- No water reservoirs



How do we prevent this

- Cluster burning
- Proper clearing
- Supervision while kilns are active
- Fire-fighting equipment
- Training workers
- One-day burning technique
- Fire breaks and good infrastructure on farm







Cluster burning and Training



From To



Training Result

Statistics on output and quality of charcoal

- On average a kiln should not use more than 16% firing wood for the end result. (This is seen as excellent performance)
- Maximum of charcoal vs wood should be 34%. Everything below 29% is not optimal. Traditional drum kilns used to only deliver 21% - One-day burning delivers 34%!
- Ideal fixed carbon should be 75%, although we often find it to be an average of 72%.
- ♦ Volatility should not be more than 16%
- Ash content should be below 10%
- Moisture content should be below 5%









Byproducts: Wood vinegar, wood tar



Smoke condenser in operation – old technology



Without and with smoke condenser!







What's in it for the producer

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- An average of 30 litre of wood acid mixture is produced per traditional kiln using the one-day burning method.
 - On average 600kg of wood are used to produce between 200 and 240 kg of good quality charcoal using the one-day burn.
- We estimate that a producer will be paid N\$10 per litre.
- The producer will receive plastic drums from the processor in which he can store the wood acid mixture.
- The drums will be delivered to processor who will transport to the market.

The main markets currently identified are the big fertiliser companies in

Calculations on possible productions

- One smoke condenser kit can be used for 8 traditional drums or 4 rectangular kilns.
- If you use 3 burning cycles per week, then you can produce:
 8 x 30 x 3 = 720 litres. Calculated at N\$ 10, this means for one week using 8 kilns you could earn N\$7,200.
- The new kit is developed so that producers can build them themselves to minimise cost.
 - You will need a container similar to a traditional kiln which is closed at the bottom
 - 1,5 lengths of gutter downpipes per kiln
 - Two kilns need one chimney, if you have eight kilns then you need 4 chimneys
 - Chimney is built using 2,5 gutter pipes. (Refer to picture)



Usage of wood acid/vinegar

- lt is primarily used as an organic fertiliser and as a pesticide.
- Solution of the second state of the second
- ♦ The wood tar can be used as a replacement for creosote.
- We are awaiting final test results on our wood acid so that we can fix the price for buyers.
- Observations will be held at the Charcoal Village in Otjiwarongo toward the end of March 2022.

We foresee that this model will be operational by May/June 2022.

World Charcoal Exports

New exports opened for USA and South Korea





Southern Africa

- Before 2016 the bulk of charcoal was exported to South Africa and the UK.
- This is changing as direct
 imports to Europe and the
 UK now exceed export to
 SA.





FSC certified farmland growth?

- Charcoal is currently produced on 1,8 Million ha and the area is still growing
- Producers have realised the importance of FSC charcoal for the international market and are aligning their production to become FSC certified.
- FSC is presented in three chambers: Environment, Economic and Social.
- Responsible and sustainable harvesting of bush biomass.







Namibia Charcoal Association