A feasibility study to assess the viability of bamboo processing and product manufacture in South Africa.

Currently almost all bamboo products in South Africa are imported. Bamboo boards and flooring are great alternatives to wood-based equivalents. They are similarly priced and equate to or beat hardwoods in specification.

A Joint Venture between the Industrial Development Corporation of South Africa (IDC) and Brightfields was established to investigate the viability of establishing bamboo processing and product manufacturing facilities in South Africa.

Intentions

To test the hypotheses:

1) South African processed-bamboo products will be competitive with imports.
2) With cost reduction, the demand for bamboo products will increase and stimulate bamboo growing and processing industries.

The desired result is employment across the board, from farming to factory.

The JV began with a feasibility study. The cost of the study was split between Brightfields and the IDC with Brightfields paying the larger share. The proportions were congruent with the envisaged shareholding of a proposed “Newco” that would be established to undertake manufacturing.

If the feasibility study was positive, one of the requirements was to produce a bankable business plan.

Study areas

Availability and suitability of local bamboo species

Current import volumes per product type

Modelling the present market, and growth scenarios

Machinery requirements and factory commissioning

Detailed financial modelling to determine viability

Trips to China and Taiwan vising growing areas and processing-machinery manufacturers

Origin: China and South Africa

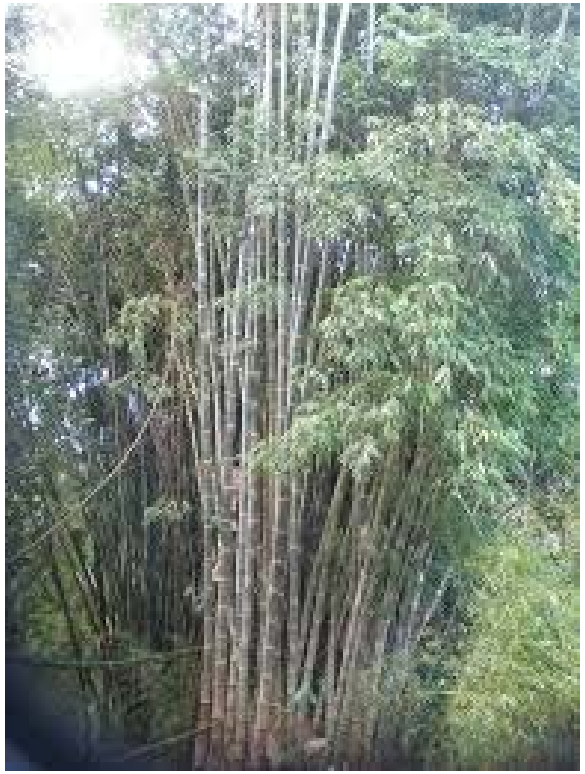
China: 竹 zhú, the symbol for bamboo. Anji, about 150km inland from Shanghai is the centre of the main bamboo growing region of china.

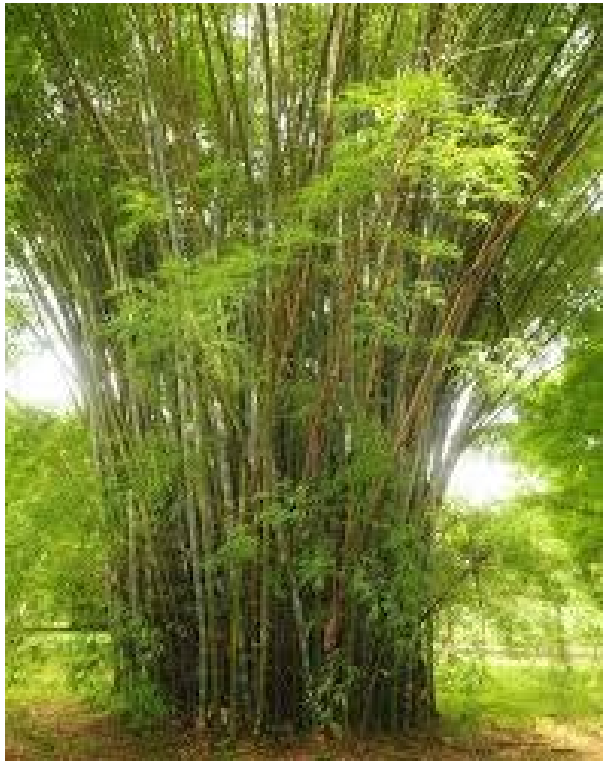
Moso is the most common commercial variety and is characterised by its uniform and straight culm. It is a cold, hardy variety and suitable for the climate in that region. It is a runner (monopodial) and considered a prohibited invader in South Africa.

South Africa: **Bambusa Balcooa,** is the species predominant in Kwazulu-Natal. To a large extent it is naturalised in South Africa. With its clump-type (sympodial) growing it is not viewed as an invader. Existing Balcooa plantations in KZN were be exploited until new plantings matured sufficiently. Growth cycle is about 6 to 7 years.

Balcooa is not as suitable for strip boards as the species popular in China, Moso.

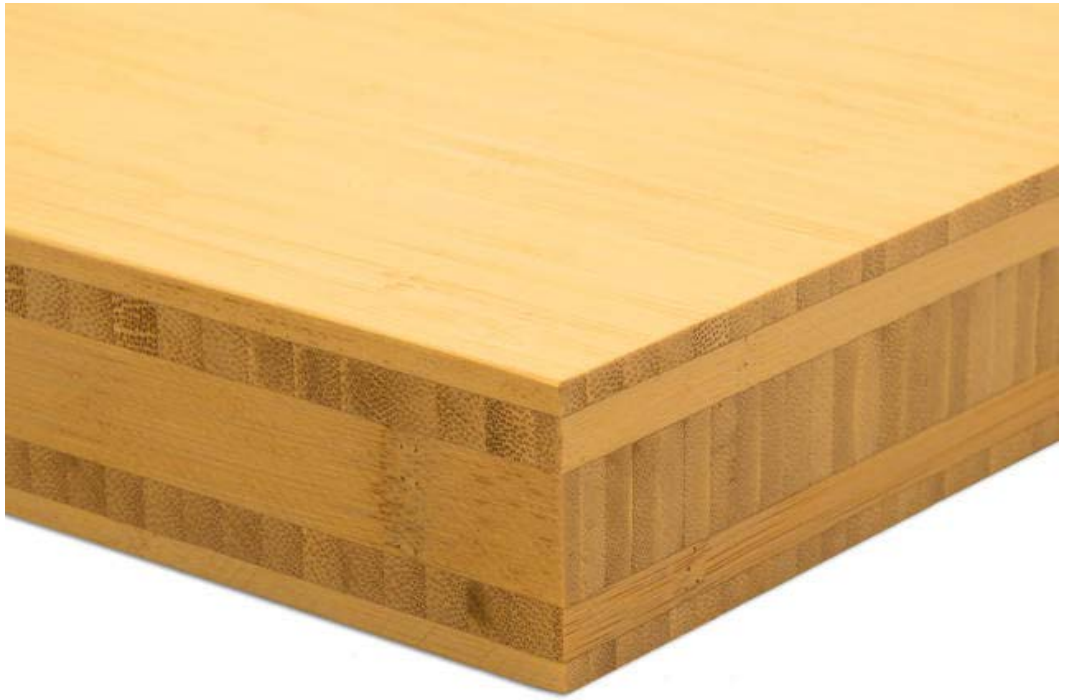
A KZN farmer has planted about 10 Ha of Dendrocalamus Asper which has just reached maturity. Brightfields has used the first harvest for processing and manufacture of horticultural products (trellises, garden edging etc), and some craft items.





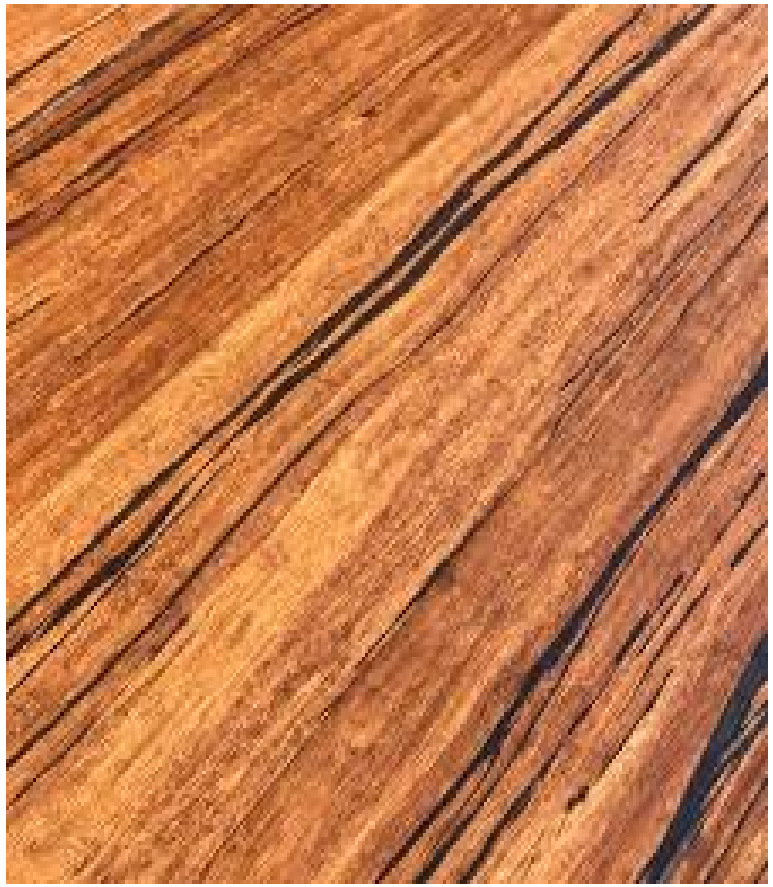
Two types of processing: Strip & Strand

Strip board is made by splitting the culm longitudinally and then planning the “scooped” lengths into geometrically regular strips. These strips are assembled in various formations, then glued and pressed together. They can be finished into plank or board in a range of configurations and sizes.



Strand Woven.

Strand woven products are made from crushed bamboo strips, impregnated with resin and then compressed under high heat and pressure into larger beams, from which planks can later be cut. This process involves significant CAPEX and is generally undertaken on a fairly large scale.



IDC joint venture first phase

- Current Market volumes by product
- Current Import pricing by product

Four key sources of information:

- Review of previous/current market, and industry publication and reports
- SARS import numbers
- Further desktop research
- Retail, industry and supply chain role-player interviews

Market size. Annual average up to 2012

Confirmed data:

Boards 650 ton

Strand woven 3500 ton

- % split between the two, strand woven 84% and strip boards 16%.
- This correlates closely with importers interviews estimating flooring and boards are 80% vs. 20%.
- 90-95% of strand woven was flooring, some boards also being strand woven
- Current opinions point to a drop-off in strand-woven volumes and an increase in strip boards.

Manufacture

Bamboo processing machinery is a well -developed industry, with suppliers in China, Taiwan and India.

Processing losses of bulk raw material.	Strip board	Strand woven
Useable percentage of cut bamboo	40%	70%
Dry to wet moisture loss	30%	30%
Strip making/stranding loss	40%	10%
Final board processing loss	10%	10%
% of original culm in final product	15%	40%

Production and material

	Conservative		Aggressive		
	Strip	**Strand**	**Strip**	**Strand**	
Monthly production	23	29	29	58	m3/month
Basic model plant capacity	29	88	29	88	m3/month
Density	775	1000	775	1000	kg/m3
Dry material required	18	29	23	58	ton/month
Bamboo raw material required	120	73	150	145	ton/month
Yield from 1 Ha	150	150	150	150	ton/Ha
Ha equivalent harvested/month	0,8	0,5	1	1	Ha/month
Plantation size, 6 year cycle	60	36	72	72	Ha

Financials

Investment (approximately)

Boards 7 mil

Strand woven 15 mil

Cashflow

Positive in year 3, aggressive model.