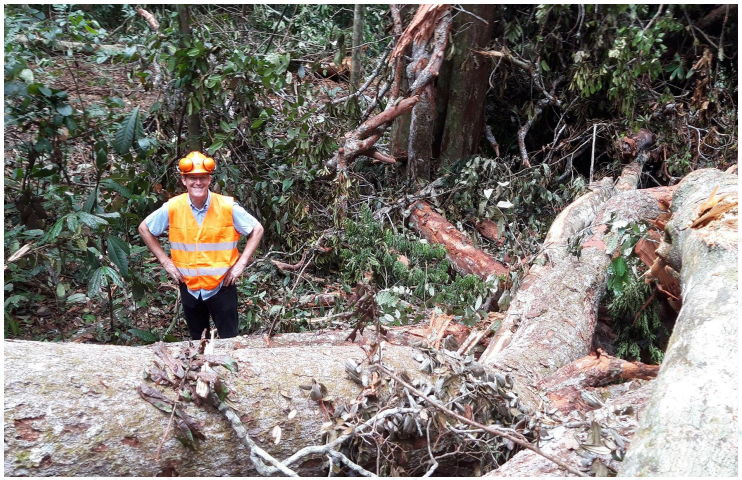
African Pellets… and Briquettes?

A Presentation for the World BioEnergy Association

Chris Fodor, Founder
Congo Basin Pellets GmbH and Gabon Pellets SARL
April 12, 2022

A short history of Congo Basin Pellets



2019
- Market analysis and pellet-making equipment overview
- Trip to China for equipment selectiion

2020
- June: extruders arrive in Gabon and are installed for testing
- September: investor comes on board

2021
- February: remainder of machinery arrives in Gabon
- March: discover that veneer waste cannot be handled; local machines developed
- April: first pellets produced
- Until September: factory commissioning
- September: first production director catastrophe

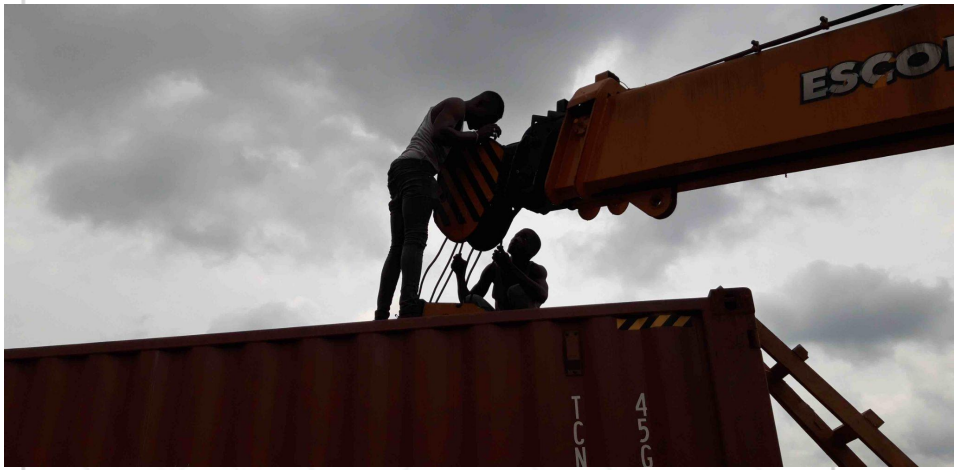
2022
- January: good production results with 8 mm ringdies
- Currently: set of 8 mm ringdies being ordered; second production line for briquettes being considered

WORLD PREMIERE: CENTRAL AFRICAN WOOD PELLETS

Pellets "50% Okume + 50% Belinga"
no. BEA2022031-1 as received

- The only other pellet plants in Africa use acacia or eucalyptus wood waste, or agri-waste (bagasse)
- Our waste: Okoume (soft wood); Azobe + Padouk + Belinga (hard woods)
- Ideal recipe: 50% Okoume + 50% hardwood
- 6 or 8 mm diameter (preference for 8 mm)
- 10% more calorific than normal pellet
- ENPlus quality (BEA Institute in Vienna does our testing)
- SBP certification applied for (ENPlus also)
- Excellent carbon footprint (short supply chain in Gabon)

Current situation: bumps in the road, risks ahead…



What have we achieved?

- produced the first Central African wood pellets, ENPlus A1 With 10% higher energy content
- developed local means to manufacture simple, inexpensive (but short-lived?) machines
- employed mostly women, namely single mothers

What remains to be done?

- acquire more 8mm ringdies
- stabilize production at higher and longer production volumes
- introduce a production line for briquettes
- open a second plant in Port Gentil
- open briquette production in the hinterland sawmills (700 kms inland)
- deliver biomass for old thermal power plants that will be upgraded in 2024

A glimpse at our costs: For your eyes only! ;-)

Some of our costs per ton for our Nkok plant in Gabon. These are simply indicative.

Raw materials:	€ 10,65
Energy:	€ 7,50
Labour:	€ 10,65
Rental hangar:	€ 1,35
Equipment (depreciation):	€ 3,35
Outbound transport to harbour:	€ 6,55
Harbour charges:	ca. € 25,00
Sea freight:	not included
Total per ton:	ca. € 65,05

Recommendations for African pellet dreamers

1 - Start by assessing demand properly

2 - Do not hesitate to invest in thorough field research on your exact biomass (wood waste) sources, the wood species and the humidity levels;

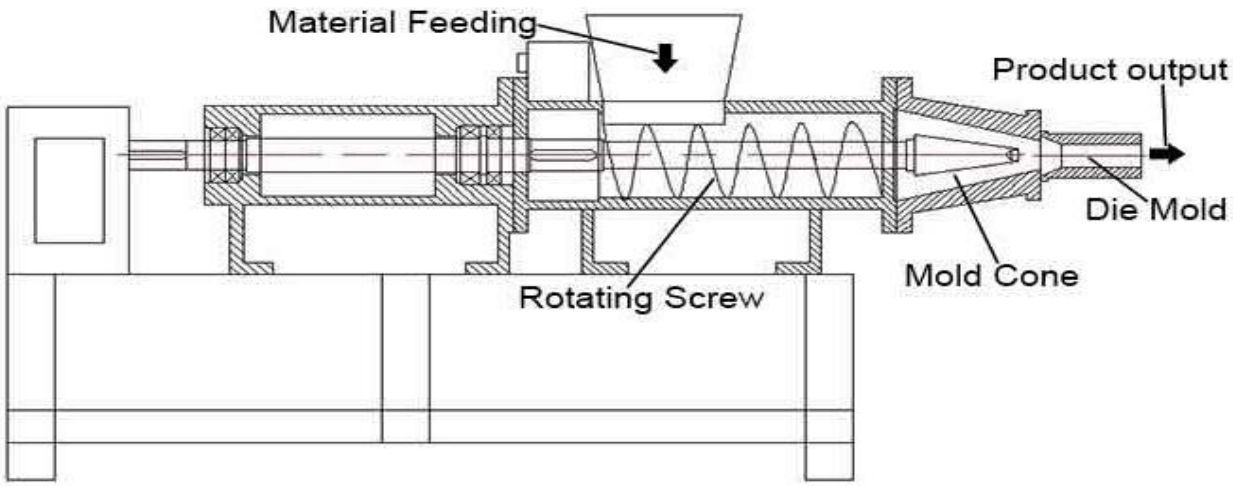
3 - Consider investing in shipping some sawdust to Europe for preliminary pelletizing tests, namely in order to assess proper compression ratios;

4 - Think small to start; instead of ordering jumbo-sized equipment (e.g. hammer mill, drum dryer)

5 - Manufacture what you can locally; find supportive welders, electricians, mechanics. Get your hands dirty please.

Do briquettes provide a simpler alternative?

How the briquette is made



Some of the advantages of briquettes:

- simpler technology, therefore better adapted to emerging market conditions
- lower maintenance costs, simpler spare parts list
- more flexibility on input humidity levels (especially for local users not requiring ENPlus standards)
- more flexibility on input “recipes” and less rigour on component proportions
- less sensitive to irregular power supply
- far easier to commission

Comparing pellets to briquettes

Comparison of Pellet vs. Briquette Making		
	Pellets	**Briquettes**
Technology	Ringdie and rollers	Direct compression - mechanical/piston - screw extruder
Equipment cost	EU/USA: ca. 300,000 euros? China: ca. 50,000 euros	EU/USA: ca. 50,000 euros China: ca. 5,000 euros
Energy use	Approx. 125 KW	Appox. 25 KW
Capacity	Approx. 2,000 kgs/hour	Approx. 300 to 900 kgs/hour

How Congo Basin Pellets plans its future

Looking in a crystal ball?

What some of our future options might be

		Pellets	Briquettes
Nkok plant	**2022**	* If the 8mm rindies hold their promise: acquire more extruders and increase production	* test one or two briquetting machines for local wood species
	2023 and beyond		* verify that our pellet recipe works for briquettes also
Port Gentil plant	**2022**	* choose between pellets and briquettes	* choose between pellets and briquettes
	2023	* setup the production facility	* setup the production facility
Hinterland options	**2022**		* Analyze production and sales options
Power plants	**2023 or 2024**		* Analyze production and sales options

If you know someone who is thinking of starting up in Africa, have them speak to me first...

MERCI, DANKE, THANK YOU.

Chris Fodor, Founder
chris.fodor@gmail.com
www.congobasinpellets.com