



Furfural From Bagasse ..

... diversification: exploring new revenue streams

About DalinYebo (Since 2001)



■ Technology Development & Transfer:

- Commercialisation of award-winning process to make biobased chemicals, sold to Australia and licensed in India.
- Successful VC exit in 2007



■ Biorefinery/Co-gen Business Owners:

- Secure biomass supply chains
- Production facilities for chemicals & energy



- Top: **\$30million** Biobased chemicals plant (Australia), integrated into a sugar mill that has a **16MW** co-generation plant.
- Middle: **\$20million** greenfields biorefinery (India) with **±2MW** co-generation plant.
- Bottom: **\$10million** greenfields biorefinery (SA) with **±2MW** co-generation plant.

Purpose Driven & Focused Team



■ Philipp Steiner, CEO: Built teams for successful project and business start-ups; International IP/technology transfers.

■ Brent McKeon, Marketing: Several global chemical product start-ups; Commodity marketer.



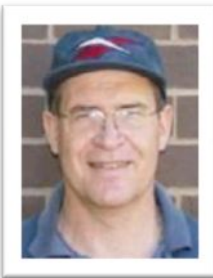
■ Harvey Wilson, Projects: Multi-million \$ turnkey contracts.

■ Gianluca Marcotullio: 2011 PhD thesis on furfural process developments for new generation biorefineries

■ Planet Earth Bio Power:

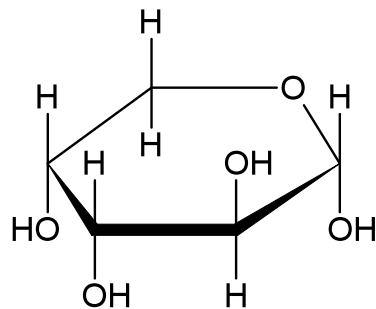
■ Mzwandile Sithole: Biotechnologist, Project Developer, Entrepreneur (Green products); Planet Earth Bio Power

■ Prof. Mark Laing: Director, African Centre for Crop Improvement, Professor and Chair of Plant Pathology, School of Biochemistry, Genetics, Microbiology and Plant Pathology

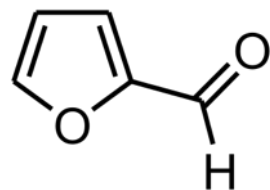


Network of Specialists & Associates: Energy conversion experience, biomass combustion, EIA, farming, IPP/PPA expertise

Bio-renewable Chemicals: Furfural



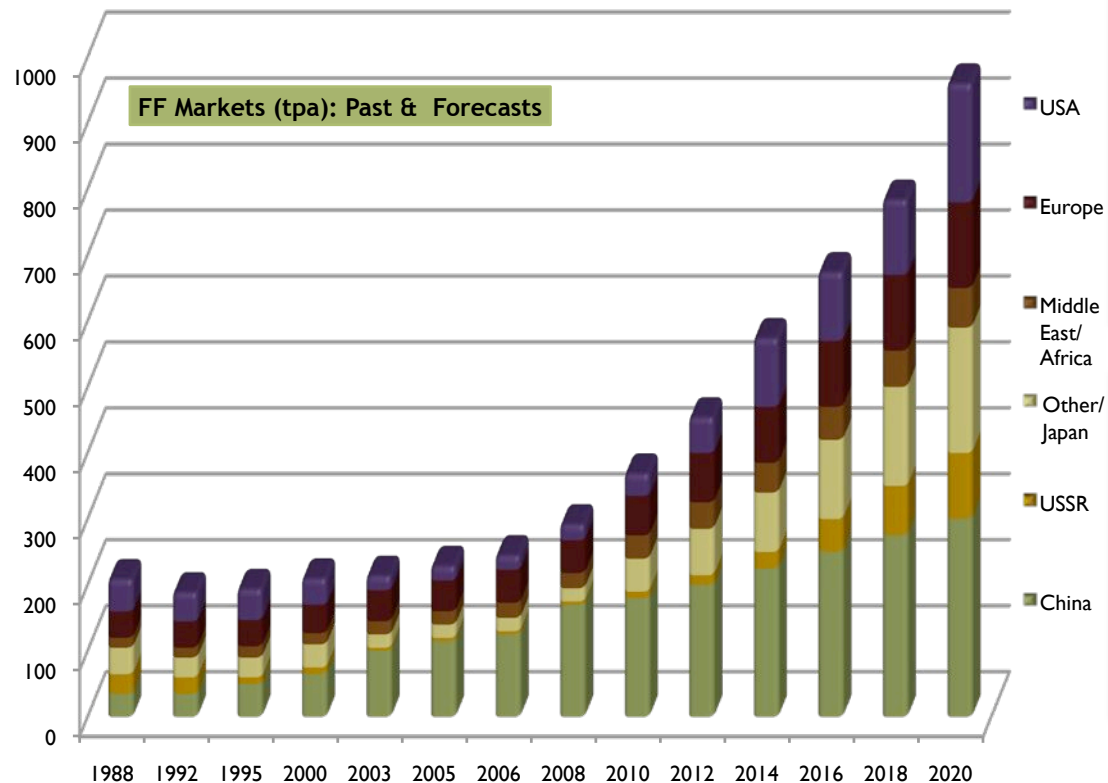
5 Carbon Sugar
±10 kg per 1 kg FF



Furfural
Industrial Chemical
±400,000 tpa

Used e.g. in
Agchem
Pharmaceutical
Elastomers
Industrial applications
Fragrance & Flavorings
Cosmetics
Catalysis
Other Intermediates

Growing Market - New Uses

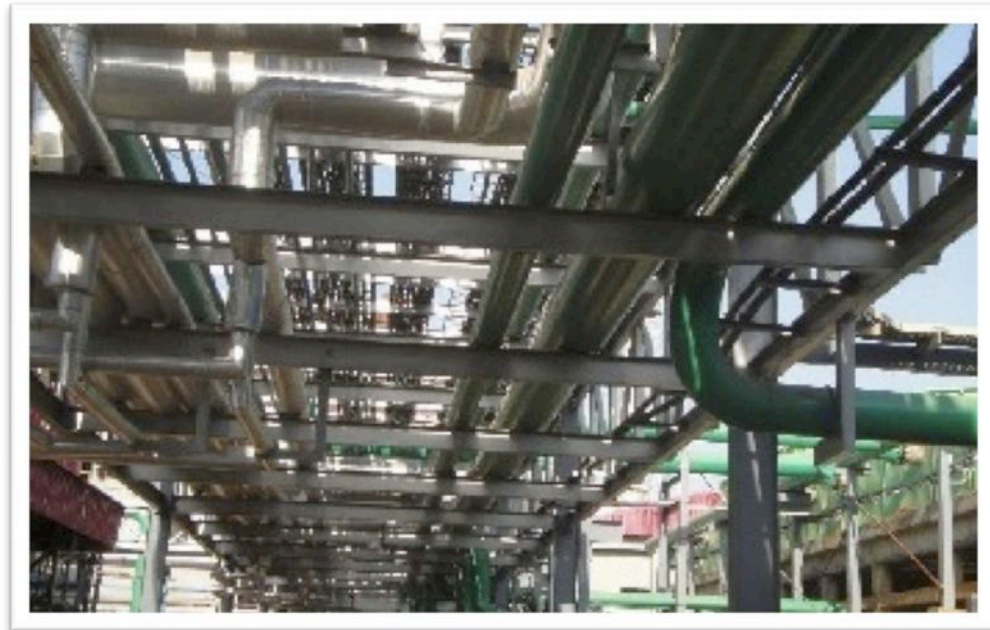


Long-term Off-takes for 35,000 tpa
Immediate: 10,000 tpa



Project Case

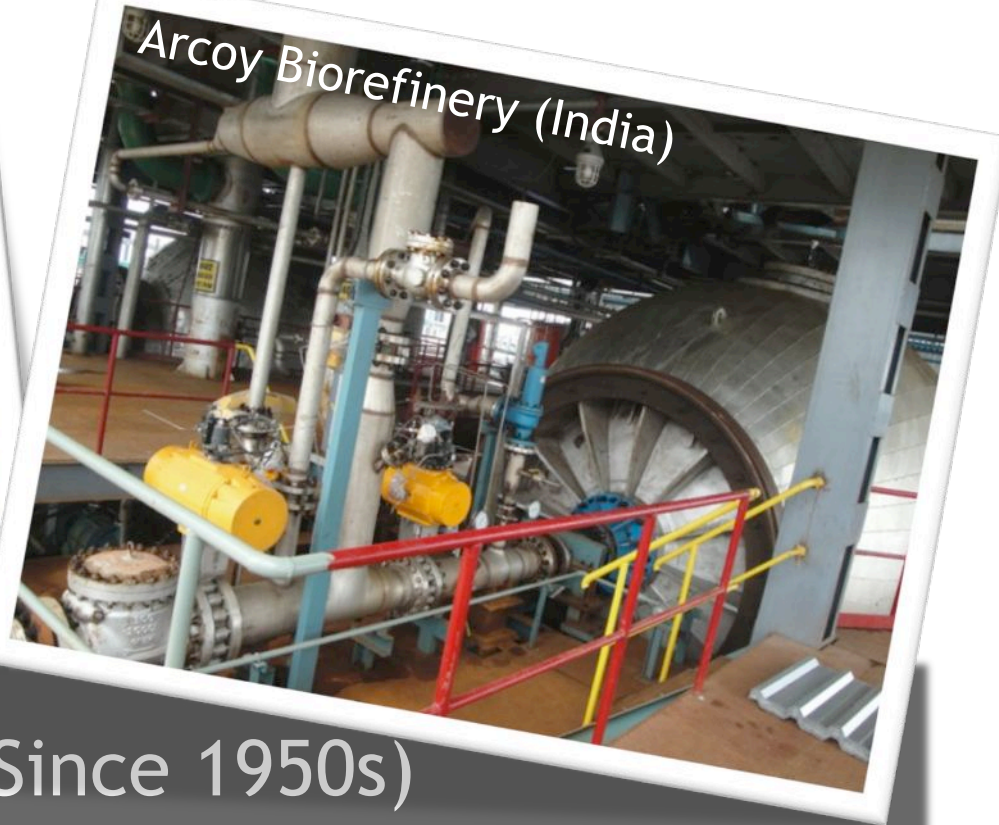
- ▣ 10,000 ton/year @ \$1500/ton (delivered)
- ▣ Guaranteed long-term off-take.
- ▣ For planning purposes:
 - ▣ \$200-300/ton conversion costs,
 - ▣ \$300/ton freight costs (from Brazil)
 - ▣ Expected capital under \$20 million



Central Romana (Dominican Republic)



Arcoy Biorefinery (India)



Bagasse to Furfural (Since 1950s)

Proserpine Biorefinery (Australia)





furfural and its many by-products
innovate • develop • trade • bio-renewables • globally

Philipp Steiner - Director

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DalinYebo

Innovative Minds: Converting Biomass to Chemicals and Energy