A new concept of kraftliner

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The statements hereby noticed within this presentation are solely projections or statements regarding future expectations. Such affirmations are subject to known or unknown risks and potential uncertainties that may or may not realize such expectations, or in turn, make them substantially different from what was expected.

These risks include, among others, changes on future demand for the products commercialized by the company, modifications on factors that affect domestic and international prices, changes on cost structure, modification on seasonality of markets, changes in the prices of the competitors, currency fluctuations, changes in the domestic political-economic scenario or in emerging and international markets.

Klabin cannot ensure the expectations here presented will materialize.
• Degree in Chemical Engineering, MSc in Paper Manufacturing and MBA in Business Management;

• During his 20-year career, he held several leadership positions in the company, which include Planning, Logistics, Engineering, Production, Quality and Customer Services areas;

• Currently responsible for Klabin’s paper sales, production and purchases (kraftliner, paperboard, LPB, sack kraft and recycled) for the domestic and external markets.
Agenda

1. A bit about Klabin
2. Brazilian Forestry Industry
3. Innovation in P&P
4. Kraftliner market overview
5. What about Eukaliner
6. What comes next? Puma II
Klabin 120 years
Transforming the future is our raw material.
19 Plants
18 Brazil
1 Argentina

Integrated Business Model
FOREST PULP PAPER PACKAGING
PLANTED FORESTS

- Pine: 155 k hectares
- Eucalyptus: 91 k hectares

PRESERVED FOREST

- 216 k hectares (>40%)

FOREST PULP PAPER PACKAGING

- Bleached pulp: 1.5 MM tpy
  - Short fiber: 1.1 MM tpy
  - Long fiber / fluff: 0.4 MM tpy
- Integrated pulp: 1.7 MM tpy
- OCC: 275 k tpy

COATED BOARDS
- 750 MM tpy

CONTAINER BOARD
- 1.250 MM tpy

TOTAL PACKAGING

- Corrugated box: 750 k tpy
- Industrial bags: 175 k tpy
- 925 K tpy

SHORT FIBER
- 0.4 MM tpy

LONG FIBER / FLUFF
- 1.1 MM tpy
This is Brazilian Forestry Industry
Brazilian forest management

Land Use

- **Brazilian territory**: 850 MM ha
- **Preserved area**: 66%
- **Preserved area in public territory**: 424 MM ha
- **Preserved area in private territory**: 140 MM ha
- **Planted forestry area**: 7.8 MM ha

Certification

Brazilian forest management

Land Use

Planted
7.8 MM hectares

13.4 MM ha forest land

Preserved
5.6 MM hectares

>40%

Brazilian forest management

Carbon Storage

Planted: 1.7 bi t CO₂
Preserved: 2.5 bi t CO₂

3.2 bi t of CO₂ storage

Source: Ibá 2018.
Brazilian forest management

Mosaic
Brazilian forest management

Mosaic

- Preserves river springs
- Protects fauna and flora
- Creates green corridors
Brazilian forest management

Assets

Distribution per type

- Eucalyptus
- Pinus
- Other

Source: Ibá
Innovation in P&P Industry
5 ROUTES

- Wood quality
- New products in pulp
- New applications in packaging paper
- New technologies
- Environment and Sustainability
Started up nov/19

Production capacity of 300 kg/8h

Lignin and MFC

Pilot Plant
Pioneer in CNC extraction technology
100% renewable sources

One of the largest start-up accelerators in the world
Market overview
Virgin Containerboard
Kraftliner Global Markets

CAGR 2.2%

Global Outlook

Increment per region

Kraftliner Global Markets

Global Outlook – supply/demand

2020’s enough room for new capacity

CAGR 2.2%

Source: Pöyry.
What about Eucalyptus in Kraftliner
Sustainability

- Pine or Spruce (Long Fiber): 80 years
- Birch (Short Fiber): 40 years
- Pine (Long Fiber in Brazil): 14 years
- Eucalyptus (Short Fiber in Brazil): 7 years

12x smaller Area
Steam Saving

Caliper Preserved
Less nip pressure

Energy SAVINGS

10 to 15% steam saving

Higher ECT / BCT due to preserved caliper

Eucalyptus
Better heat transfer
Printing

- Better Print Quality
- More compact and homogeneous surface

Pinus  Eucalyptus
Yield Optimization

Regular Kraftliner

Basis weight reduction of >10%

Compared to leading European and North American suppliers
Cold Chamber

Box Compression Test, kgf

Harwood absorbs less water

Residual BCT > 10% above average results

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Melon boxes
What comes next?
Project PUMA II

Largest investment in our history
2.2bi USD

920k Tonnes of Kraftliner Paper per year

+10k Jobs generated in the construction phase
**Project PUMA II**

- **PUMA II**
- **Start up:** 2021
- **450 kt/a**
- **KLB and WTL**
- **80-200 g/m²**
- **Phase 1: MP 27**
  - **Tonnes of Kraftliner Paper per year:** 920k
  - **Start up:** 2021
  - **450 kt/a**
  - **KLB and WTL**
  - **80-200 g/m²**

- **Phase 2: MP 28**
  - **Start up:** 2023
  - **470 kt/a**
  - **KLB**
  - **150-300 g/m²**
Klabin
After Puma II

Global leading kraftliner producers – Top 20

6th largest
Global manufacturer

3rd largest
supplier of KLB for open market

Unbleached
White-top
Fully bleached
Upcoming capacity (decided and planned)

Source: Pöyry.
PROJECT Timeline

1st Phase
- Main non-bleached fiber line
- Support Facilities
- Recovery and Utilities Areas
- 1st Kraftliner Machine

2nd Phase
- Secondary non-bleached fiber line
- 2nd Kraftliner Machine

Timeline:
- Preliminary License Issued: Oct/2018
- Installation License Issued and Board Approval: Apr/2019
- Start up of 1st Machine: Oct/2018
- Start up of 2nd Machine: 2024
DEBARKING Line
DEBARKING Line

- 8.9% of physical progress
- 18 months from start up
- ~2.5k working personnel

Histogram – phase 1
A new concept of KRAFTLINER

100% eucalyptus