Investment
The Portuguese Case
January 2019
THE NAVIGATOR COMPANY
an integrated producer

TISSUE

130,000 ton Reels
+ 120,000 ton Converting
  3 Machines
  2 Sites

PAPER

1.6 M ton of UWF paper
  5 machines
  2 sites

ENERGY

2.5 TWh of electricity
  8 power plants

R & D

Leader in Eucalyptus globulus cloning
Co-production projects between industry and academia: Inpactus

FOREST

112,000 ha of forest (under management)

PULP

1.6 M ton of BEKP pulp
  (0.3 M market pulp)
  3 sites
EUROPEAN LEADER IN UWF

The Setúbal paper mill (2009) had a significant impact on the Portuguese economy:

It positioned the company as Europe’s leading manufacturer of uncoated woodfree paper (UWF), the category that includes office paper, and the 6th largest producer worldwide.

The Navigator Company is also the leading European manufacturer of bleached eucalyptus pulp (BEKP) and one of the largest in the world.

95% of pulp and paper sales go to 130 countries, over 5 continents.

It represents roughly 2.4% of Portuguese exports of goods and approximately 1% of national GDP. It is also the company that generates the most National Value Added- its products are obtained essentially from Portuguese resources and raw materials.

Many of the resources that the Company uses are produced in Portugal and purchased from more than 5,500 suppliers across all areas of the Portuguese economy.

Portugal’s largest producer of renewable energy from biomass.

PORTUGUESE NAVIGATOR BRAND, THE GLOBAL BEST-SELLER IN THE PREMIUM OFFICE PAPER SEGMENT

The Company manages around 112 thousand hectares of woodlands and is Portugal’s leading producer of plants.

Its forest management is certified by PEFC (PEFC /13-23-001) and by FSC® (FSC - C010852).
NAVIGATOR HAS INVESTED MORE THAN €2 BILLION

Investments in Portugal since the beginning of the century

Up to €260 M EIB financing in 4 investment projects

1) Improvements in Environmental Protection: Setubal, Cacia, Figueira  
   €220 M  
   2007-2009

2) Energy related projects, including power plants: Setubal, Cacia, Figueira  
   €176 M  
   2010

3) Modernization and Expansion of Cacia Mill  
   €50.6 M  
   2016

4) Figueira Mill Optimization  
   €81.5 M  
   2018

€260 M EIB FINANCING

1) Portucel Ambiente A - €80 M
2) Portucel Ambiente B - €30 M
3) Cacia Mill Optimization - €25 M
4) Figueira Mill Optimization - €40 M

PO3 Tissue (FIG)(Cac)
INVESTMENT

Paper mill
€ 525 million

Co-generation plant
€ 75 million

Capacity
600 thousand tons paper / year

8,800 solar panels
The Setúbal paper mill has the largest photovoltaic plant installed in any industrial environment in Portugal (2.2 MW of power)
### START-UP OF PULP EXPANSION AT F. FOZ

Project completed and ramping-up

<table>
<thead>
<tr>
<th>Optimization Project 3</th>
<th>(main)</th>
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<tbody>
<tr>
<td><strong>Ecoefficiency:</strong></td>
<td><strong>MAIN GOALS</strong></td>
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<td>Total CAPEX of € 81.5 million</td>
<td>Increase the annual pulp production from 580,000 to 650,000 tAD</td>
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<td>Increase the <strong>efficiency</strong> of pulp process</td>
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<td>Reduce wood and chemicals specific consumption</td>
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<td><strong>Implementation</strong> of BAT (ex: O₂ delign)</td>
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<td>Environmental advantage for flue gas and liquid <strong>effluent emissions</strong></td>
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<td><strong>Collection and burning</strong> of diluted odorous gases</td>
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</table>
CACIA TISSUE PAPER MILL

INVESTMENT

Paper Mill
€ 121 million

Capacity
70,000 tonnes of reel tissue per year + 55,000 tonnes of converting tissue per year

4 Processing lines
Rolls of toilet tissue, napkins, kitchen rolls and industrial AFH
CREATING INNOVATIVE PRODUCTS & TECHNOLOGIES

RAIZ & Inpactus project
Total Budget €15.3M.

Inpactus:
A co-promotion R&D project between industry and academia.
A step forward to a green, global, sustainable and competitive bioeconomic environment in Portugal, based on eucalyptus pulp and paper industry!

R&D Investment (SIFIDE)

2012 2013 2014 2015 2016 2017

€ 9.6M € 10.5M € 6.4M € 11.1M € 4.7M € 13.5M

Research and Development

RAIZ, a Forestry and Paper Research Institute 94% owned by the Company

Its mission is to boost the industry’s ability to compete on a sustainable basis, by:

- Improving pulp and paper quality
- Cutting production costs
- Minimising environmental impact
- Researching new products and processes

Innovation

Development of innovative concepts:

By launching brands with a distinctive positioning

By introducing products tailored to previously unexploited consumer segments in the office paper sector
In the last cycle of evaluation of the adequacy of projects to patent registration, out of 35 carefully analysed projects, there were 6 that met the criteria.

Projects that involve:
• Breakthroughs/ improvement of industrial performance
• Projects of I&D
• Inventions

...are subject to intense scrutiny before considering patent registry.
FOCUSED ON BUILDING THE FUTURE BIO-ECONOMY

RAIZ & Inpactus project

Plantation trees
Forestry residues

Biorefinery

1 tonne wood

Chemicals & energy recovery (combustion)

Biomass deconstruction & separation processes

Pulp
Fibers

Paper
Tissue
Market pulp

Heat and electricity

Pulping By-products

Biomass components

Biochemicals
Bioproducts
Biomaterials

Examples of bioproducts from biorefinery

Essential oils
Sugars for bioethanol and bioplastics
Thermoplastic bio composites
Lignin-based foams for thermo insulation
Bacterial cellulose for biomedical applications
Nanocellulose for paper coating and food additives
THANK YOU