

**MASTER OF SCIENCE IN  
FINANCE**

**MASTERS FINAL WORK  
PROJECT**

**EQUITY RESEARCH:  
THE NAVIGATOR COMPANY S.A**

**ANDRÉ FILIPE ROSEIRO SANTOS**

**NOVEMBER 2020**

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## ABSTRACT

The following master's final project intends to perform an equity valuation in a Portuguese company currently trading at Euronext. In order to develop this analysis, the research report format recommended by the CFA institute was adopted.

For the industry Navigator, S.A represents a benchmark in quality and operational efficiency. For Portugal and Portuguese, Navigator represents one of biggest companies operating in the country developing local economy to another level, with an increasing concern for environmental and biological issues. The company shows high efficiency-oriented operations with cost reduction measures well implemented that are expected to result in future shareholder gains.

This equity valuation uses both absolute and relative valuation models to propose a target price of 3,16€ for the period between 2021-2026 according to the WACC Method, representing an upside potential of 36%. Also, the APV and Peers Valuation Methods were used and are in line with investment recommendation.

Even when considering the current market and industry situation, Navigator is able to well balance their operations. Therefore, this report represents BUY recommendation for Navigator shares considering the high-risk profile that the company and the industry are subject to. Even with high volatility in paper and pulp prices and high market penetration from Asian p&p producers the company is able to increase UWF market share in Europe.

JEL classification: G10 ; G32; G34; G39

Keywords: Equity Research; Valuation; The Navigator Company; Paper&Pulp Industry.

## RESUMO

Este estudo, pretende realizar uma avaliação relativamente ao preço-alvo das ações da Navigator Company, S.A, uma empresa portuguesa que atualmente negocia na Bolsa Euronext. Para desenvolver esta relatório, adotou-se o formato recomendado pelo Instituto CFA.

Para a indústria, a Navigator, S.A representa uma referência em termos de qualidade e eficiência operacional. Para Portugal e para os portugueses, a Navigator simboliza uma das maiores empresas que operam no nosso país, desenvolvendo a economia local, tendo sempre uma elevada consideração pela preocupação ambiental.

A alta eficiência operacional e as medidas restritivas desenvolvidas nos últimos anos com o objetivo de redução de custos, pretendem maximizar o valor futuro da empresa, valorizando igualmente os seus acionistas.

Esta avaliação usa modelos absolutos e relativos para propôr um preço-alvo de 3,16€ para o período entre 2021-2026 de acordo com o “WACC Method”, representando um potencial de valorização de 36%. Foram também considerados o “APV Method” e o “Peers Valuation Method” que corroboram a recomendação de investimento.

Tendo em conta a situação atual dos mercados acionistas e da indústria do papel, a Navigator mostra-se capaz de tomar decisões que limitam o risco associado aos possíveis efeitos negativos esperados.

Neste sentido, esta análise representa uma recomendação de COMPRA para as ações da Navigator para o período de 2021-2026, mesmo considerando o perfil de alto risco a que a empresa e a indústria estão sujeitas.

JEL classification: G10 ; G32; G34; G39

Keywords: Equity Research; Valuation; The Navigator Company; Paper&Pulp Industry.

## **ACKNOWLEDGEMENTS**

To my Supervisor, I'm thankful for his help throughout this project.

To my dad, I'm thankful for all the moments in his life that he stood by my side, showing me what working hard is all about.

To my mum, I'm thankful for all the effort throughout this journey, always showing his support.

To my girlfriend, I'm thankful for all the countless late-night study hours to make this achievement possible.

To my family and friends, I'm thankful for their presence and encouragement whenever I most need it.

# Index

ABSTRACT	I
RESUMO	II
ACKNOWLEDGEMENTS	III
LIST OF APPENDIXES	V
LIST OF FIGURES	VI
LIST OF TABLES	VII
1. RESEARCH SNAPSHOT	1
2. BUSINESS DESCRIPTION	2
3. MANAGEMENT & CORPORATE GOVERNANCE	6
4. INDUSTRY OVERVIEW	8
5. COMPETITIVE POSITIONING	9
6. INVESTMENT SUMMARY	16
7. VALUATION	17
8. FINANCIAL ANALYSIS	20
9. INVESTMENT RISKS	22
10. SENSITIVITY & SCENARIO ANALYSIS	24
APPENDIXES	26
REFERENCES	39

## LIST OF APPENDIXES

APPENDIX 1: STATEMENT OF FINANCIAL POSITION _____	26
APPENDIX 2: INCOME STATEMENT _____	27
APPENDIX 3: CASH FLOW STATEMENT _____	27
APPENDIX 4: KEY FINANCIAL RATIOS _____	28
APPENDIX 5: COMMON-SIZE INCOME STATEMENT _____	28
APPENDIX 6: COMMON-SIZE STATEMENT OF FINANCIAL POSITION _____	29
APPENDIX 7: FORECASTING ASSUMPTIONS – INCOME STATEMENT _____	30
APPENDIX 8: FORECASTING ASSUMPTIONS – SET. FINANCIAL POSITION _____	32
APPENDIX 9: REVENUE ESTIMATION – SEGMENTATION/FACILITY LOCATION	33
APPENDIX 10: REVENUE ESTIMATION - € / SEGMENT _____	33
APPENDIX 11: BIOLOGICAL ASSETS FORECAST - BREAKDOWN _____	33
APPENDIX 12: DEPRECIATION & AMORTIZATION FORECAST - BREAKDOWN _	33
APPENDIX 13: NET WORKING CAPITAL FORECAST - BREAKDOWN _____	34
APPENDIX 14: CAPITAL EXPENDITURES FORECAST - BREAKDOWN _____	34
APPENDIX 15: DEBT MANAGEMENT FORECAST - BREAKDOWN _____	34
APPENDIX 16: COMPARABLE COMPANIES ANALYSIS _____	34
APPENDIX 17: MULTIPLES VALUATION _____	35
APPENDIX 18: WACC COMPUTATION _____	35
APPENDIX 19: DCF – FCFF – WACC METHOD _____	36
APPENDIX 20: APV METHOD _____	37
APPENDIX 22: SENSITIVITY & SCENARIO ANALYSIS _____	37

## LIST OF FIGURES

<b>FIGURE 1 - RISK ASSESSMENT</b>	1
<b>FIGURE 2 - NAVIGATOR STOCK PRICE (2010-2020)</b>	1
<b>FIGURE 3 - NAVIGATOR'S HISTORY</b>	2
<b>FIGURE 4 - INTEGRATED PRODUCTION</b>	2
<b>FIGURE 5 - NAVIGATOR'S FACILITIES LOCATION IN PORTUGAL</b>	2
<b>FIGURE 6 - NVG SALES BY BUSINESS SEGMENT (2019)</b>	3
<b>FIGURE 7 - NVG SALES BY DESTINATION (2019)</b>	4
<b>FIGURE 8 - YEARLY PULP OUTPUT Vs SALES (VOLUME)</b>	4
<b>FIGURE 9 - YEARLY UWF PAPER OUTPUT Vs SALES (VOLUME)</b>	4
<b>FIGURE 10 - YEARLY TISSUE OUTPUT Vs SALES (VOLUME)</b>	5
<b>FIGURE 11 - YEARLY ENERGY OUTPUT Vs SALES (VOLUME)</b>	5
<b>FIGURE 12 - PAPER AND PULP PRICES (2018-2020)</b>	6
<b>FIGURE 13 - SHAREHOLDER'S STRUCTURE</b>	6
<b>FIGURE 14 - SHAREHOLDER'S GEOGRAPHIC LOCATION</b>	6
<b>FIGURE 15 - NUMBER OF PULP MILLS IN 2009 AND 2019 IN EUROPE (VOLUME)</b>	8
<b>FIGURE 16 - PORTUGAL P&amp;P INDUSTRY PRODUCTION (2010-2019)</b>	8
<b>FIGURE 17 - TOP 10 UWF WORLDWIDE PRODUCERS 2018 Vs 2019</b>	8
<b>FIGURE 18 - EUROPEAN P&amp;P INDUSTRY PRODUCTION (2010-2019)</b>	9
<b>FIGURE 19 - WORLDWIDE P&amp;P INDUSTRY PRODUCTION (2010-2019)</b>	9
<b>FIGURE 20 - WORLDWIDE PAPER PRODUCTION DISTRIBUTION</b>	10
<b>FIGURE 21 - PEST ANALYSIS</b>	10
<b>FIGURE 22 - CAGR BY BUSINESS SEGMENT</b>	10
<b>FIGURE 23 - SHARE OF TOTAL GLOBAL MARKET PULP (2010-2019)</b>	11
<b>FIGURE 24 - PRODUCTION OF MARKET PULP IN CEPI COUNTRIES (1991-2019)</b>	11
<b>FIGURE 25 - PAPER AND BOARD PRODUCTION IN CEPI COUNTRIES</b>	11
<b>FIGURE 26 - GLOBAL TISSUE CONSUMPTION</b>	12
<b>FIGURE 27 - EXPORTS OF PAPER AND BOARD BY REGION (2019)</b>	12
<b>FIGURE 28 - STORA ENSO SALES BY BUSINESS UNIT (2019)</b>	13
<b>FIGURE 29 - MONDI EBIT MARGIN CONTRIBUTION</b>	13
<b>FIGURE 30 - SVENSKA CELLULOSA'S SALES BY SEGMENT</b>	14
<b>FIGURE 31 - METSA BOARD OYJ'S SALES BY SEGMENT</b>	14
<b>FIGURE 32 - NVG'S SWAT ANALYSIS</b>	14
<b>FIGURE 33 - PORTER'S 5 FORCES</b>	15
<b>FIGURE 34 - YEARLY FORECASTED UWF PAPER OUTPUT Vs SALES (VOLUME)</b>	16
<b>FIGURE 35 - YEARLY FORECASTED PULP OUTPUT Vs SALES (VOLUME)</b>	17
<b>FIGURE 36 - YEARLY FORECASTED TISSUE OUTPUT Vs SALES (VOLUME)</b>	17
<b>FIGURE 37 - YEARLY FORECASTED ENERGY OUTPUT Vs SALES</b>	17
<b>FIGURE 38 - EBIT Vs EBITDA MARGIN</b>	18
<b>FIGURE 39 - FORECASTED CAPEX PER SEGMENT</b>	18
<b>FIGURE 40 - FORECASTED DEBT/EQUITY RATIO</b>	19
<b>FIGURE 41 - FORECASTED REVENUE BY SEGMENT</b>	20
<b>FIGURE 42 - INFLOW OPERATIONS BY CATEGORY</b>	20
<b>FIGURE 43 - FORECASTED COSTS BY CATEGORY</b>	21
<b>FIGURE 44 - EBITDA Vs NET INCOME FORECAST EVOLUTION</b>	21
<b>FIGURE 45 - NAVIGATOR'S RISK MATRIX</b>	22

## LIST OF TABLES

<b>TABLE 1 - 2021 FORECASTED TARGET PRICES CONSIDERING DIFFERENT METHODS</b>	<b>1</b>
<b>TABLE 2 - NAVIGATOR'S KEY VALUES</b>	<b>1</b>
<b>TABLE 3 - QUANTITY AND TYPE OF NVG'S WOOD (2019)</b>	<b>3</b>
<b>TABLE 4 - PEERS SELECTION CRITERIA</b>	<b>12</b>
<b>TABLE 5 - PEER COMPANY'S 2019 KEY FIGURES</b>	<b>13</b>
<b>TABLE 6 - WACC ASSUMPTIONS</b>	<b>18</b>
<b>TABLE 7 - BETA ESTIMATION FROM PEERS - PURE-PLAY METHOD</b>	<b>19</b>
<b>TABLE 8 - NAVIGATOR'S RELATIVE VALUATION (2021F)</b>	<b>20</b>
<b>TABLE 9 - COGS DETAILED CAGR (2021-2026)</b>	<b>21</b>
<b>TABLE 10 - TARGET PRICE SENSITIVITY TO CHANGES ON THE AVERAGE SELLING PRICE FROM UWF AND PULP</b>	<b>24</b>
<b>TABLE 11 - TARGET PRICE SENSITIVITY TO CHANGES IN WACC AND TERMINAL GROWTH RATE</b>	<b>25</b>

## 1. RESEARCH SNAPSHOT

Considering the latest NVG robust results and industry overview for the next years my recommendation is to BUY NVG's shares. Considering the price target of 3,16€ for the period between 2021-2026 using the WACC Method. This price target represents an upside potential of 36.1% based on the price of 2,32€ in 15 September 2020. Also Adjusted Present Value (APV) method and relative valuation were addressed resulting in an upside potential of 38% and 31,9%, respectively (table 1).

**Figure 1 - Risk Assessment**

Source: Author Estimates



**Table 1 - 2021 Forecasted Target Prices considering different methods**

Source: Author Estimates

Methodology	2021 Target Price	Up/downside potential
FCFF	3,16 €	36,1%
APV	3,20 €	38,0%
Multiples	3,06 €	31,9%
<b>Final Target Price</b>	<b>3,16 €</b>	<b>36,1%</b>

**Figure 2 - Navigator Stock Price (2010-2020)**

Source: Bloomberg and Author Estimates



### Tissue segment may experience heavy growth

After 2018 capacity expansion in Cacia mill, tissue becomes clearly the next unicorn investment inside Navigator considering lower demand for paper products. In 2019 Tissue segment represented already 10% of sales after a 45% growth YoY. Tissue is a well-known unique sector since it expects growth of around 4% per year according to industry specialists. However, Navigator shall exceed expectations with a 7% increase in sales volume according to Q3 2020 results presentation.

### Increasing Supply from Asian Countries

Increasing Asian p&p production capacity may arise some concerns for European producers. European companies are subject to heavy environmental regulation that shrink the company's profitability. For these reasons, Asian companies may experience price leverage due to lower payroll and environmental restrictions.

### Increasing European Production

P&P producers in Europe are becoming more concentrated with less companies however, achieving higher productivity with increasing production capacity, according to CEPI 2019 key statistics. Top pulp producers are Sweden and Finland however when we consider paper production Germany comes to play. With increasing production capacity, the industry may expect some heavy competition in the most profitable segments.

**Table 2 - Navigator's Key Values**

Source: Company data and Author estimates

Millions €	2019	2020F	2026F
Revenue	1688	1387	1555
EBITDA	372	257	355
EBITDA Margin	22,05%	18,51%	22,83%
Net Income	168	77	164
EPS	0,24	0,11	0,23

## 2. BUSINESS DESCRIPTION

The Navigator Company S.A (NVG), roots back to 1953 known as “Companhia Portuguesa de Celulose”. After 67 years of mergers and acquisitions, the company still has the same values when conducting his business: trust, integrity, excellence and sustainability always in every new challenge. (figure 3)

As an integrated producer of forest, pulp, paper, tissue and energy Navigator is the European leader in the production of UWF paper (19% market share) and BEKP pulp and the sixth and fifth worldwide, respectively in each core product. (figure 4) NVG has four industrial units in Portugal (figure 5) and offices around the world. Its main competitive advantage is the fact that the company is present since the start of paper production by developing numerous forestry management sites until the final distribution of paper throughout 123 countries around the world.

With the development of RAIZ its own Forestry Research Institute the group was able to enhance their Eucalyptus Globulus quality content and to create sustainable forests. With his high-quality standards and environmental behaviors, Navigator has been known as a benchmark in p&p industry

Navigator’s paper product portfolio is divided into office paper and printing industry brands. Office paper brands such as Navigator, Pioneer or Inacopia are widely used by professional or home users. Taking in consideration NVG’s differentiation strategy, to offer even higher printing quality for the industry Navigator works with brands such as Soporset, Target Plus, Inaset and Explorer having 50% market share of premium products in Europe. In the USA, the company has one additional brand with Discovery Premium Selection.

### 2.1 Main Facilities

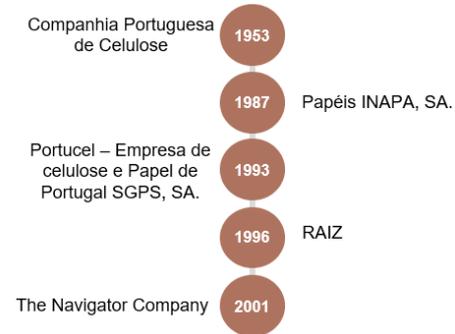
#### Aveiro (Cacia)

Pulp mills with the capacity to produce 350k tAD directly sold to the market. The most recent development was the new tissue mill which has the nominal capacity to produce 70k tons of reels and 55k tons of converting capacity (finished product). In this location, there is also one biomass power station and one cogeneration station (energy segment).

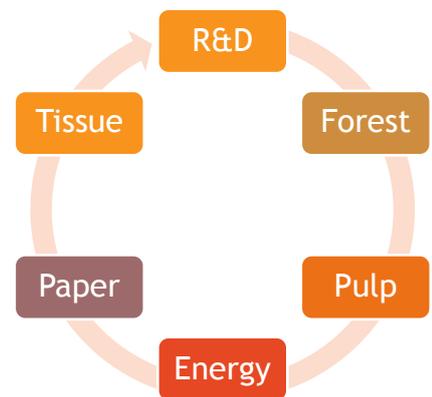
#### Figueira da Foz

650,000 tAD of integrated pulp production capacity and 790k tons of paper production capacity (with 2 paper machines, one with 450k tons capacity and the other with 340k tons capacity). With a natural gas station, this plant also produces electricity.

**Figure 3 - Navigator's History**  
Source: Navigator's Website



**Figure 4 - Integrated Production**  
Source: Author



**Figure 5 - Navigator's Facilities location in Portugal**  
Source: NVG 2019 Annual Report



## Vila Velha de Rodão

This mill only produces tissue with a capacity to produce 60k tons of tissue reels and 65k tons of converting capacity (finished products).

## Setúbal

550k tons capacity to produce integrated pulp and 775k tons capacity to produce paper with 3 paper machines: PM1 (85k tons capacity), PM3 (190k tons capacity) converted to high grammage paper and PM4/AFT (500k tons capacity). In this mill, there is also one biomass power station and one cogeneration station.

## 2.2 Forest Sites

The main raw material for pulp production is wood. Navigator owns 110k hectares of forest area in Portugal. (table 3) Since Navigator is only able to produce about 14% of the wood needed in its operations and the increasing restrictions imposed by the Portuguese government in Eucalyptus plantation, the company is currently increasing its forest sites in Galicia, Spain and Mozambique. In the area of Manica and Zambezia, the company owns 356k hectares of land of which almost 14k are already planted.

## Mozambique

Since July 2018 Portucel Moçambique and the Mozambican Government sign an MoU. The project is now in his first stage were a forest base of around 40 thousand hectares will be created with eucalyptus which will then be exported to Portugal providing around 1 million tons per year with a total investment estimated in \$140 million.

## 2.3 R&D and nurseries locations

NVG nurseries are responsible for the production of forest and ornamental plant with a total production capacity of 12 million trees/year including 6 million eucalyptus clonal, 30 forest species, 130 species ornamental and 5 varieties of olive trees. With a total of 4 nurseries, 3 in Portugal (Caniceira, Espirra and Ferreiras) and 1 in Mozambique (Luá-Gurué) with an additional 12 million plants in this location.

RAIZ Research Institute located in Aveiro is the biggest R&D investment ever made in Portugal, with a budget of €15.3 million and 180 researchers in the field. Their main objective is to provide higher quality in eucalyptus production.

## 2.4 Segmentation – 2019 Performance Outlook

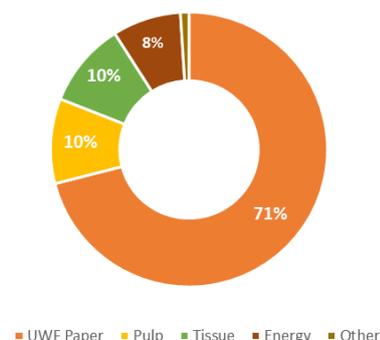
2019 was tuff for NVG results. Deteriorated market conditions and weaker demand in the European market, lead to a turnover of € 1688 million (-0.2% YoY) divided in 71% from paper sales, 10% from pulp and energy sales each and 8% from tissue

**Table 3 - Quantity and type of NVG's Wood (2019)**  
Source: NVG 2019 Annual Report

Type of wood	Hectares amount in Portugal
Eucalyptus	80.333
Pine	3.463
Cork Oak	3.890
Other	2,116
Infrastructure	8.500

**Figure 6 - NVG Sales by Business Segment (2019)**

Source: NVG 2019 Annual Report



sales (figure 6). The other 1% is related to the sales from other business totaling € 32 million (vs. €12 million in 2018) being this considered one-off sales.

With this high figure of production 81% of the group's pulp, paper and tissue products are sold outside of Portugal in approximately 123 countries.

Navigator's main markets are Portugal (19%); Rest of Europe (50%), America (11%), Africa (11%) and Asia/Oceania (9%). (figure 7)

## Pulp

Navigator is known as the top manufacturer of bleached eucalyptus pulp (BEKP), producing 1.4 million tons in 2019 (figure 8), of which 80% directly used in paper production and the remaining were sold at market values set weekly in London by the BHKP Index. For pulp production, the main raw materials needed are wood and chemicals which represent the main costs for the company.

Considering wood, despite the investment and development of new forestry sites in Spain and Mozambique, NVG must buy 86% of the total raw material needed, therefore representing an important operational risk.

Even though pulp sales increased 24%YoY in volume to 14k tons the overall pulp output was down 1.8% (1.4 million tons vs 1.5 million tons in 2018) due to the long maintenance shutdowns and staff strikes during 2019. Also, the reduction in pulp prices by roughly 13%YoY to an average of 762.3€/ton decreased the pulp business sales to a total of € 165 million (vs. € 167 million in 2018).

Pulp segment represents 10% of revenues with an EBITDA margin of 28% being the most important driver of profitability in the company.

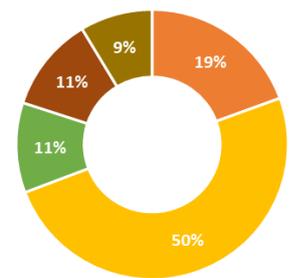
## Paper

With a capacity to produce 1.6 million tons of paper per year, Navigator has the title of the biggest producer of writing and printing paper (UWF – Uncoated Woodfree) in Europe and the 6th largest in the world. The prices of paper contracts are settled following PIX A4 B-Copy Index and have a duration close to 1 year. In 2019 paper price proved to be resilient averaging 903€/ton (+3.4% YoY).

Paper business has also deteriorated with 1447 thousand tons sold in 2019 (-4.4% YoY) representing €1198 million (-4% YoY) in sales mainly related with the reduction in output and hence in sales volumes (figure 9). However, this reduction in output was explained by the series of tests and trials in Setúbal for the pioneering project PM3 to produce a wider range of products from 75 to 300 g/m2 which is expected to lead to future gains and higher operating margins.

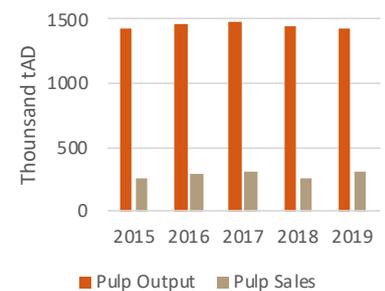
Paper segment represents 71% of revenues with an EBITDA margin of 26% being the second most important driver of profitability in the company.

**Figure 7 - NVG Sales by Destination (2019)**  
Source: NVG 2019 Annual Report

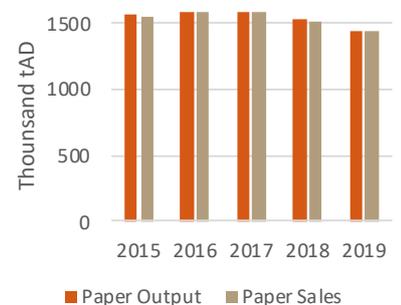


Legend: Portugal (orange), Rest of Europe (yellow), America (green), Africa (brown), Asia / Oceania (dark green)

**Figure 8 - Yearly Pulp Output Vs Sales (volume)**  
Source: NVG Annual Reports



**Figure 9 - Yearly UWF paper Output Vs Sales (volume)**  
Source: NVG Annual Reports



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## Tissue

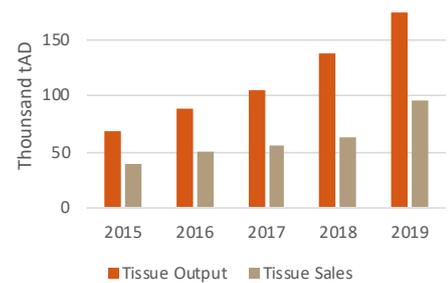
In 2018 a capacity expansion for tissue production took place in Aveiro (Cacia) Mill. NVG is now able to produce 130 thousand tons of reels and 120 thousand tons of converting capacity (finish product) in total.

Tissue reels are huge cylinders of tissue that will later be used to produce finish products such as napkins, towels, etc. Finish products have higher sale prices than reels and therefore higher margins, however, this sub-segment (finish products) has higher transportation costs since for the same quantity it occupies a higher space.

Tissue sales grew up 45% to € 132 million after the start-up of the new tissue mill in Aveiro. This increase in sales is mainly related to a 52% increase in volume to 95.7 thousand tons sold in 2019 (figure 10). Tissue segment is expected to increase in importance for the business since the worldwide population and GDP is expected to grow, being this key driver of demand and therefore revenue.

Tissue segment represents 8% of revenues with an EBITDA margin of 8%, being the one with the highest tendency to grow.

**Figure 10 - Yearly Tissue Output Vs Sales (volume)**  
Source: NVG Annual Reports



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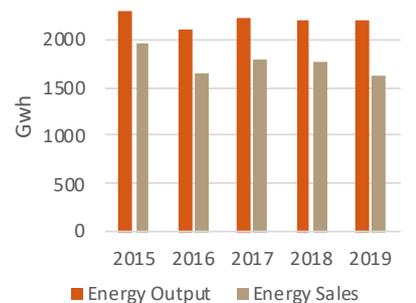
## Energy

The group can produce 2.5Twh of electricity per year which accounts for 50% of all power generated in Portugal from biomass and 5% of Portugal's total power production.

The energy business had a drop of 6.8% in sales (€ 161 million in 2019 vs. € 172 million in 2018) mainly related with a series of stoppages during strikes and several technical and operational issues in Setúbal and Figueira da Foz resulting in a decrease in sales volume from 1,761 GWh recorded in 2018 to 1,631 GWh in 2019 (-7.4% YoY) (figure 11).

In 2020, the government benefit granted during last year's regarding the energy production directly from biomass will come to an end. The benefit had already been discontinued from Cacia and Figueira da Foz mills, and in this year will have a negative impact in EBITDA and revenues since it will be discontinued from Setúbal. Electricity produced in Setúbal and Cacia (using forest waste biomass purchased in the market) is directly sold to the national grid. Electricity produced from cogeneration plants it's used in the company's operations producing paper and pulp. Navigator also has solar energy origination with an installed capacity to produce a total of 3.1 Gwh - 2.2MW (8800 solar panels) in ATF and 113kW (352 solar panels) in Espirra. This solar energy production represents savings of around €264 thousand and €20 thousand respectively.

**Figure 11 - Yearly Energy Output Vs Sales (volume)**  
Source: NVG Annual Reports



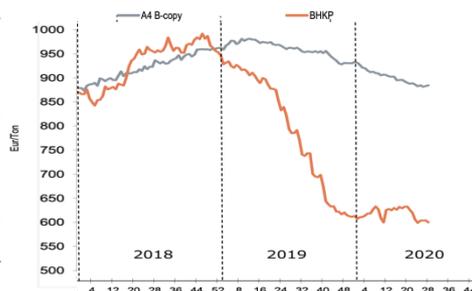
## 2.6 COVID-19 and forward outlook for the business

Due to the extreme market conditions experienced in 2020, Navigator was forced to implement layoff, reducing operations during the period since March 2020. As result, p&p output was reduced to prevent inventories build-up stocks (-19% in NVG inventories Vs -6% among competitors) according to Q3 2020 NVG results presentations.

This lock down result in -15% YoY paper output and sales as reported in Q3 2020 results presentation due to the drop in UWF consumption around the world. On the other hand, pulp external sales volume increased 39% YoY. Pulp and Paper prices are under extreme pressure since 2019 (figure 12) and this trend is expected to follow for 2020.

Tissue business proved to be a resilient investment with 79Kton (+7% YoY) according to Q3 2020 results presentation.

**Figure 12 - Paper and Pulp prices (2018-2020)**  
Source: NVG Q2/H1 2020 Results Presentation



## 3. MANAGEMENT & CORPORATE GOVERNANCE

Navigator has a share capital of 500 million euros, divided into 715,5 million ordinary shares regulated in Euronext Lisbon market. All shares have the same rights and duties and don't have any nominal value however shares outstanding are only 711,2 million.

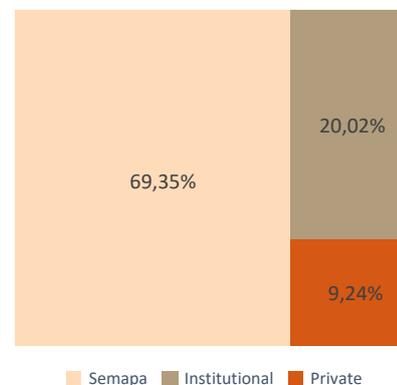
NVG shares are spread among 3 main types of investors: Semapa Group owning roughly 70%, institutional investors (20%), and the remaining (10%) held by private investors (figure 13).

A study conducted by the company identifies the major geographic distribution of shareholders, being 42% of shares held by Portuguese investors, 14% of shareholders are based in Spain 7% in the United Kingdom, 5% from Belgium and Norway each and 3% from France (figure 14). USA investors represent 14% and the rest of the world represents 10% of shareholders. Also, when analyzing the investment style of shareholders, 60% of shares are held by institutional investors with a growth-oriented strategy while 15% of investors pursue an Index Funds strategy and 11% pursue an aggressive growth strategy.

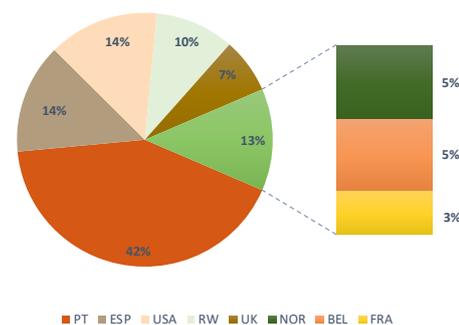
### 3.1 Corporate Bodies

NVG's Articles of Association (Article 8) approved in 2017, establishes that company's corporate bodies are elected for 4 years with a possibility of renewal and comprise the following: general meeting, board of directors, audit board and statutory board.

**Figure 13 - Shareholder's Structure**  
Source: NVG 2019 Annual Report



**Figure 14 - Shareholder's Geographic Location**  
Source: NVG 2019 Annual Report



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### **Board of Directors**

The board of directors is composed by 14 members, being João Nuno de Sottomayor Pinto de Castello Branco chairman, with a degree in mechanical engineering from Instituto Superior Técnico and an MBA from INSEAD. Since 2015 João Castello Branco was the CEO of Semapa, as well as managing partner of McKinsey & Company – Iberian Office. The Board of Directors is responsible to ensure the correct management of the company and is elected by the General Meeting. NVG board of directors are then responsible for the management and supervisory bodies.

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### **Audit Board**

NVG has its own Supervisory board with José Vitorino as it's chairmen, this corporate body is responsible to supervise, analyze and validate proposals submitted by the external auditor.

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### **Statutory Board**

The external auditor for NVG is KPMG, S.A. since 2018 after resigning contract with PricewaterhouseCoopers&Associates – SROC, Lda.

## **3.2 Environmental, Social & Governance**

With sustainability in its core, NVG has implemented numerous internal and external environmental and social projects. For instance, at the end of 2019, Navigator announced the commitment to reduce carbon emission with the vision to accomplish carbon neutrality in 2035, 15 years ahead, being the first in Portugal and at the lead worldwide. To pursue this objective NVG announced an investment of €158 million with “an ambitious set of investments in renewable energies and new technologies to reduce CO<sub>2</sub> emissions” as the CEO reported in 2019 NVG annual report.

67% of the companies' energy used in 2019 is originated from renewable sources. Also, 80% of the water used in operations are returned to the environment. Sustainable Forest Management is also promoted throughout the “Clear and Fertilize” program where NVG ensures that 72% of wood supplies are certified. According to NVG Sustainability report, 20% of wood supplies are smallholders (658) in this way the company promotes social and environmental awareness.

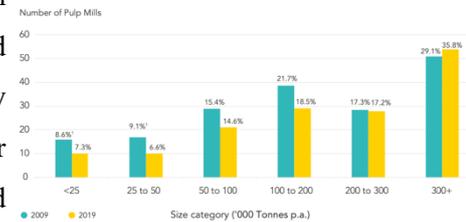
Social events are also extremely important. 95 events from “Give the forest a hand” took place in 2019 where NVG seeks out to raise children's and their family's awareness for forest protection. Other initiatives like “Navigator Tour” promoted in 2019 aimed to a variety of stakeholders to spread the company's mission and vision by visiting the industrial units and forest sites. 5416 people visited the four industrial complexes in 2019 which promoted the company's social responsibility.

## 4. INDUSTRY OVERVIEW

P&P industry has a variety of players in a sector relatively concentrated with medium and large firms around the world.

Nowadays pulp is the most abundant raw material worldwide and it's categorized in Bleached Softwood Kraft Pulp (BSKP), Birch Hardwood Kraft Pulp (BHKP) and Bleached Chemi-Thermo Mechanical Pulp (BCTMP). BSKP has a higher quality and it's mainly produced in North America and Scandinavia. BHKP has lower quality however it's more cost-efficient. It is mainly produced in LATAM, Asia and Iberia. BSKP have been consumed twice more than BHKP. In order days, small pulp producers are less than in 2009, however the number of firms with high capacity for pulp production had increased. (figure 15).

**Figure 15 - Number of Pulp mills in 2009 and 2019 in Europe (volume)**  
Source: CEPI – Key Statistics 2019



### 4.1 Portuguese P&P Market

In Portugal, paper and pulp industry is mainly dominated by two main players: The Navigator Company and Altri Group. Altri only produces pulp, specifically BEKP pulp and DWP (dissolving pulp) and has a production capacity of 1 million tons per year. Portugal accounts for 12% of total Altri pulp sales in 2019 being Navigator one major customer of BEKP produced.

According to FAO Statistics (figure 16), wood pulp production in Portugal has been increasing at 4,23% CAGR since 2010 to reach a value of 2.78 million tons produced in 2019. This increase in production is expected to smooth in the following years to become relatively constant. Following the same trend, UWF paper production (figure 16) experienced a hype in 2011 and thereafter as becoming relatively constant throughout the years to reach a value of 1.55 million tons produced in 2018 being the 7<sup>th</sup> largest producer in the world. (figure 17)

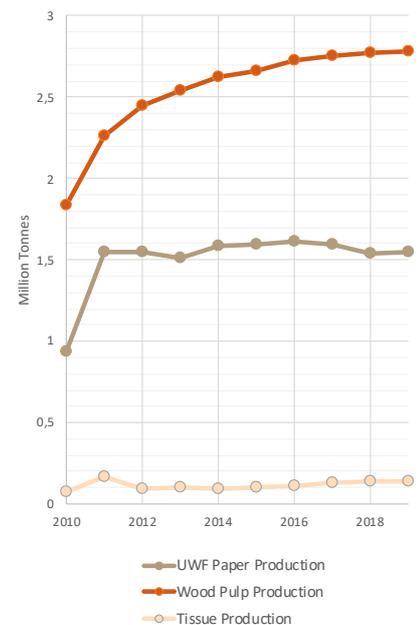
On the other hand, household and sanitary papers, commonly known as tissue paper, production has been increasing after a drop in 2012. In 2019 Portuguese production of this type of paper almost reached 150 thousand tones.

In terms of trade, in 2011 UWF paper exports outpaced the wood pulp exports becoming now relatively constant at 1.45 million tons of yearly exported UWF paper and 1.15 million tons of yearly exported wood pulp.

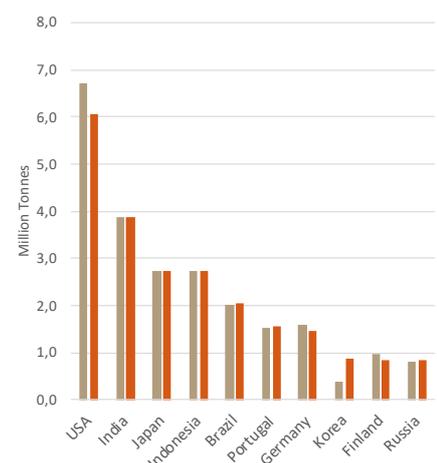
### 4.2 European P&P Market

Focusing now in the European p&p market (figure18), in the latest study from December 2019 conducted by MarketLine regarding European P&P industry, revenues from the industry totalled €74.2B in 2018 (+1.9% YoY), with a CAGR of 2,3% in the period from 2014 to 2018. On the other hand, market volume shrank by

**Figure 16 - Portugal P&P Industry Production (2010-2019)**  
Source: FAO Statistics Database



**Figure 17 - Top 10 UWF Worldwide Producers 2018 Vs 2019**  
Source: FAO Statistics Database



-1,1% in 2018 to 88,7 million tons with a CAGR of -0.2% in the period between 2014-2018 (figure 22).

Concerning European geography segmentation, Germany is a leading country representing 22,2% (\$19,4B of the European p&p market value) followed by UK (12%), Italy (10,3%), France (9,1%), Spain (6,9%) and the remaining countries representing 31,4%.

### 4.3 Worldwide P&P Industry

Also, in another study conducted by MarketLine focused on worldwide p&p industry (figure 19) developed in 2019, the overall p&p industry market value reached €333,7 billion (+4,4% YoY) with a CAGR of 1,5% in the period between 2014-2018. In the same period, worldwide p&p market volume grew 1,9% to 404,6 million tons in 2018 representing a CAGR of 1.1% in the period between 2014-2018 (figure 19).

Concerning Worldwide geography segmentation, Asia-Pacific is a leading region representing 50% (\$197 billion of the European p&p market value) followed by Europe (22,2%), United States (17,7%), Middle East (1,3%), and the remaining regions representing 8,8% of total market value.

### 4.4 COVID-19 and forward outlook for the industry

Due to the worldwide companies and economies lockdowns, P&P industry was highly impacted in 2020. UWF paper consumption decreased 25% in Europe and 30% in USA in the first half of 2020, according to NVG Q3 results presentation. The global UWF paper consumption decreased 13%YTD by May 2020. UWF paper price index average 855€ (-6.4% YoY).

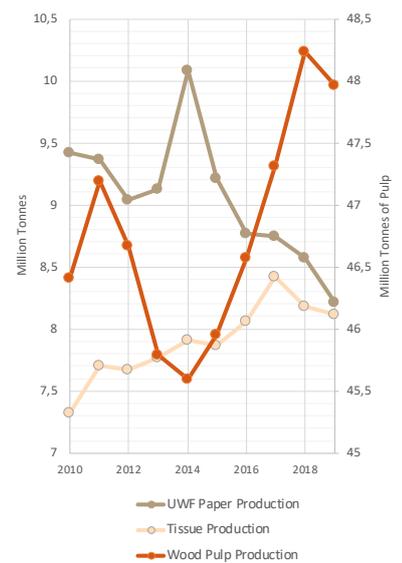
On the other hand, pulp market proved to be more resilient. Worldwide demand for BHKP grew 13% YoY with significant increase in Latin America (+22%), Africa (+18%), Eastern Europe (+10%) and China (+12%) mainly due to the growth in tissue production and consumption. On pulp supply side there was a strong rebalancing of producer stocks (from 65 days-of-stock in June 2019 to 49 days-of-stock in June 2020). Overall pulp prices decreased 29%YoY by June 2020 680\$/ton or 618€/ton (figure 12).

## 5. COMPETITIVE POSITIONING

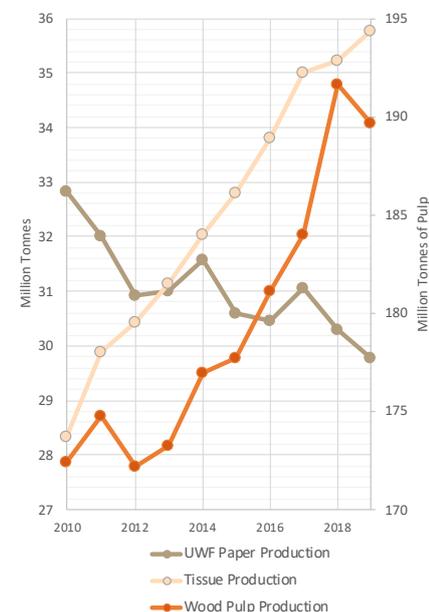
P&P industry is a mature industry, therefore, there is little growth. Improving the internal efficiencies and continuing production of successful products has way more focus than reinvesting or developing. The global M&A activities in this sector continuous declining over the years.

Worldwide the industry contains around 300 companies, of which 34 companies with a market cap over 1 billion EUR. Mondi PLC, Stora Enso Oyj, Suzano SA and

**Figure 18 - European P&P Industry Production (2010-2019)**  
Source: FAO Statistics Database



**Figure 19 - Worldwide P&P Industry Production (2010-2019)**  
Source: FAO Statistics Database



UPM-Kymmene Oyj are the largest companies in terms of market cap. In Europe, 12 companies generate revenues of more than 1 billion, and the 5 biggest companies have revenues of more than 10 million EUR. Hence, the major companies in the industry, as well as in Europe as globally, are reasonably concentrated.

Considering this information, the market can be considered an oligopoly, with some elements of monopolistic competition. There are a few significant players and smaller players, the product is homogeneous and the barriers to enter the market are high, because of initial capital requirements.

Paper is a stable product. The product life cycle of paper is mature since it is an old well-used product and advertisement is less necessary. Influence on the price is limited. In this industry, there are two types of end consumers: companies and individuals. Individuals have no switching costs, so will not be loyal to the product. However, companies buy paper in bigger amounts which might lead to higher switching costs. The major reason for consumers not to switch supplier is the reason it is a homogeneous product.

Products might be different, but all based on pulp. Those products are corrugated material, printing & writing paper, paperboard for packaging, tissue paper, newsprint and wrapping paper. The first three cover 75% of the total production worldwide (figure 20). There are not many opportunities for differentiating products.

Macro-economic factors were explained by the PEST analysis (figure 21).

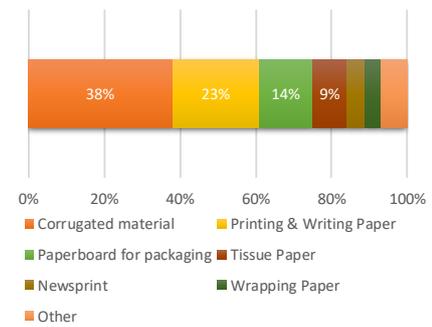
### 5.1 Supply & demand – Segmental analysis

Structural demographic changes, environmental changes and resource scarcity are today’s main drivers of demand. There has been a shift in consumer choice mainly due to the increased awareness of sustainability, plastic decomposition and the shift to a digitalization era. Even though digitalization will have a negative impact in P&P consumption, the increasing e-commerce business (followed by the increase in cardboard packages) and the anti-plastic megatrend (increasing demand for paper-based food packaging) guarantee a worldwide p&p market value forecast of \$489,7 billion (24,3% increase) by 2023.

In 2018 the global market volume of paper and paperboard was 404,6 million tones (+1,9% YoY) with a CAGR of 1,1% in the period 2014-2018, as a result of the negative CAGR of the types of printing/writing paper (23,4% consumption) and newsprint (3,1% of consumption). Tissue and containerboard increased (Figure 22). China and the USA had 43% of the global consumption of pulp. Nonetheless, China has a paper consumption per capita of 78 kg, US and Japan consumed more than 200 kg per capita. The demand for paper board has contributed to an increase of 1,3% in the global paper industry generating a revenue of 333 billion. This demand allowed to reach 11.9 billion of market revenue worldwide. Till 2023, the global pulp

**Figure 20 - Worldwide Paper Production Distribution**

Source: MarketLine P&P Industry Review (2018-2023)



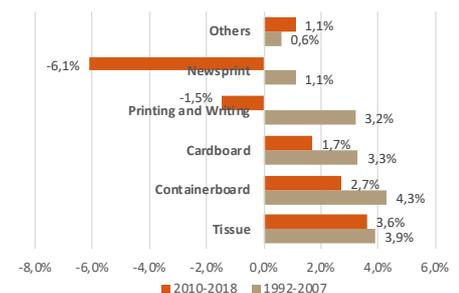
**Figure 21 - PEST Analysis**

Source: Author

PEST
<b>Political:</b> High environmental regulations focused in water and air pollution.
<b>Economic:</b> High impact of exchange rates since the industry operates globally.
<b>Social:</b> Increase of population leads to increase in demand but environmental and sustainability concerns don't seem to impact the growing consumption.
<b>Technological:</b> Necessary to decrease the negative impact of the process/manufacturing on the environment and increase cost efficiency.

**Figure 22 - CAGR by business segment**

Source: Statista

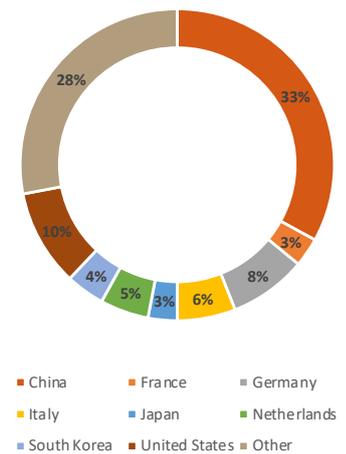


and paper market value are expected to increase to \$489,7 billion at a CAGR of 4,4% in line with the European trend. All these reasons are giving a rise in demand for non-wood pulp production as a fiber source for pulp.

China, Germany and United States account for the main producers of pulp in the period between 2010-2019 (figure 23) in the world being Asian countries the largest paper producers worldwide. China produces 99.3 million tons of pulp yearly, followed by the USA with 75 million tons. Europe represents 25% of the global production, mainly concentrated in Finland and Sweden (23 million tons) and Germany (22 million tons).

Being Europe the major market for Navigator sales (figure 7) the focus is now in the CEPI (Confederation of European Paper Industries) countries in the following analysis.

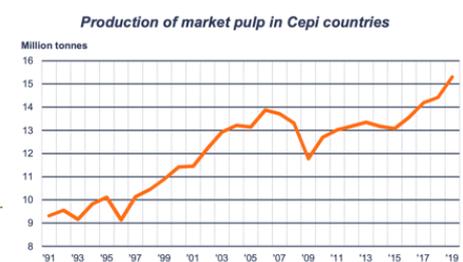
**Figure 23 - Share of total Global Market Pulp (2010-2019)**  
Source: tissueworld.com



### Pulp Market

In 2019, total pulp production (integrated and market pulp) increased by 0,8% to 38.6 million tons in Europe according to CEPI statistics (figure 24). Specifically, market pulp production increased by 6.1% as a result of massive investments in capacity extension due to the increasing export market demand (40% increase according to Eurostat). 74% of the pulp produced in Europe in 2018 comes from certified wood forest sites through programs like PEFC (Programme for Endorsement of Forest Certification) and FSC (Forest Stewardship Council).

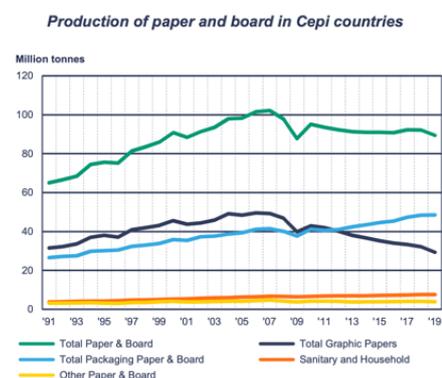
**Figure 24 - Production of market pulp in CEPI countries (1991-2019)**  
Source: CEPI



### Paper Market

In 2019, paper and paper board production decreased by 3.0% YoY (figure 25). For the first time since 2009, the total paper production in CEPI countries reached a value below 90 million tonnes (89.5 million tonnes, precisely). Despite the augmented capacity during the year, this decrease in production was due to closures and lower production operating rates.

**Figure 25 - Paper and Board production in CEPI Countries**  
Source: CEPI



European production of graphic paper felt more than 8.0% in 2019 with newsprint and printing & writing paper production decreasing by 8.0% and 8.9% respectively. Uncoated paper accounts for 14.7% of the total paper production in Europe experiencing a drop in production of 6.4% in 2019.

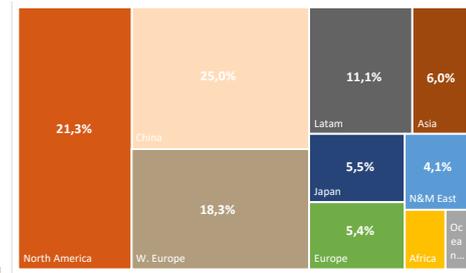
The overall paper and board consumption drop 4% (YoY) in line with the decrease in production. The decreasing demand is explained by the significant slowdown of the European economy and the less favorable global economic environment.

### Tissue Market

Whether we are talking about toilet tissue, facial tissue, paper towel or table napkins, tissue industry faced a 4% growth in 2019. Worldwide, the emerging market experienced the highest growth followed by China and Latin America. For the next

period between 2019 and 2024, the industry is expecting a CAGR of 4.5% due to macro-economic factors such as increasing urbanization, higher disposable income and further consumer spending. According to PG Paper Company Ltd (figure 26) China (25%), North America (21,3%) and Western Europe (18.3%) were the 3 main players in global tissue consumption in 2019. This higher figures in demand are and will continue to impact the high budget investments in growing production capacity in tissue mills.

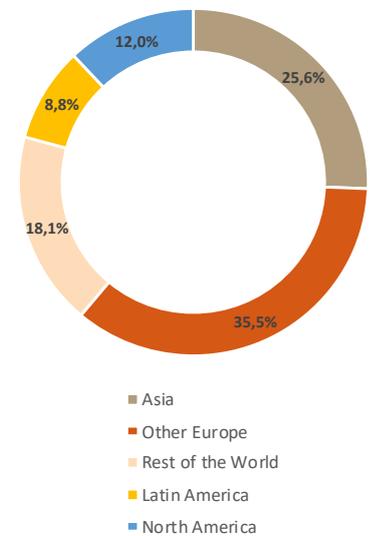
**Figure 26 - Global Tissue Consumption**  
Source: PG Paper Company Ltd



## 5.2 Export/Import considerations

Exports of paper and board by CEPI countries decreased by 1.9% in 2019 with exports of graphic grades decreasing 8.8% and packaging grades increasing 2.6% in the same period according to CEPI 2019 key variables outlook. Exports to other Europe (35.5%) and Asia (25.6%) rose by 0.3% and 2.5% respectively YoY (figure 27). On the other hand, exports to Latin America (8.8%) and North America (12.0%) decreased by 3.5% and 7.9%, respectively.

**Figure 27 - Exports of paper and board by region (2019)**  
Source: CEPI



Imports from CEPI countries decreased by 3.9% in 2019, mainly due to the declining volumes coming from North America (-8.8%), despite the growing imports from other Europe (1.4% YoY) and China (19% YoY). Imports from other European countries represent 46% of the total imports, North America (29%) and Asia (15%).

## 5.3 Peer Companies

In the following analysis, 4 European based companies with worldwide operations were chosen (table 4 and 5) taking in consideration the following assumptions:

- Peer company should be an integrated paper producer with pulp, paper, tissue and energy internal production;
- Pulp revenue share should be lower than 25%, in line with NVG operations;
- Lastly, paper revenue share should be higher than 20%, since the majority of firms have other business segments.

**Table 4 - Peers Selection Criteria**  
Source: Author

Company	Paper Producer	Paper Share (>20%)	Pulp Share (<25%)
Stora Enso	yes	28,4%	15%
Mondi	yes	24,2%	2,63%
Svenska Cellulosa	yes	47%	22%
Metsa Board Oyj	yes	25%	13%
International Paper	yes	19%	12%
UPM	yes	12%	24%
Altri	no	no	-
ENCE	no	no	-
Navigator	yes	78%	11%

Stora Enso and Mondi are the largest in terms of revenue, followed by Metsa Board Oyj and Svenska Cellulosa which are the peers with the lowest revenues figure (1932 million € and 1959€, respectively). (table 5)

All 4 companies operate mainly in Europe with costumers around the world.

### STORA ENSO

Stora Enso (SE) is the second-largest renewable paper producer based in Europe with a wide product portfolio sold in more than 30 countries. 73% of revenues come from Europe (10B total sales in 2019) and the second-largest market is Asia-Pacific accounting for 17%. Pulp segment - biomaterials accounts for 15% sales (24% EBIT) and paper accounts for 28% sales (22% EBIT) from 5 business segments (figure 28). With the vision to become worldwide leader producer of wood-based products in substitution from plastic and fossil-based material, SE owns or manages 2.35 million hectares of forest in South America, Europe and Southern China.

### MONDI

Mondi manages its own sustainable forests as well as manufacturing industrial and consumer packaging solutions. Mondi has 4 main businesses contributing for overall 7,3B€ in sales: Corrugated packaging with 35% EBITDA contribution, Flexible packaging (32%), Uncoated Fine Paper (26%) and engineered materials (7%) (figure 28). Mondi's market position is strong, the group is a market leader in different regions and segments. Mondi has 102 production places across 33 countries. The operations occur in Western Europe (38%) and emerging Europe (34%), Russia (12%), North America and South Africa (7% each) and Asia/Australia (2%). 60% of revenue is from European sales.

### Svenska Cellulosa

Svenska Cellulosa (SC) is a Swedish integrated P&P producer and is the Europe's largest private forest owner with 2.6 million hectares of forest land in Northern Sweden, Estonia and Latvia. In 2019 SC's sales grew by 4.5% to 19,591 million SEK. SC has a 5% market share of the global BSKP market. SC's business units and operational figures for 2019 were: forest (26% sales and 25% EBITDA margin), wood (24% sales and 12.5% EBITDA margin), pulp (16% sales and 23% EBITDA margin) and paper (34% of sales and 22% EBITDA margin) (figure 29). Sustainability is a core objective within the company, for that reason SC can produce 4.4 TWh/year of energy from wind and has the intention to grow wind power to 8TWh/year by 2022 representing 20% of Sweden's wind power production.

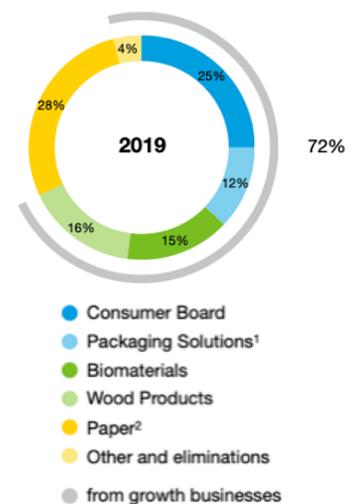
**Table 5 - Peer Company's 2019 Key Figures**

Source: Peer's 2019 Annual Reports

Company	Sales (M€)	EBITDA MARGIN	Operating Margin
Stora Enso	10055	15,3%	13,0%
Mondi	7268	22,8%	16,8%
Svenska Cellulosa	1959	27,0%	18,9%
Metsa Board Oyj	1932	14,4%	9,5%
Navigator	1688	22,0%	13,8%

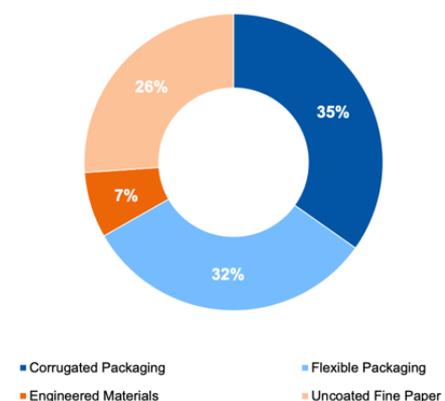
**Figure 28 - Stora Enso sales by business unit (2019)**

Source: Stora's Enso 2019 Annual Report



**Figure 29 - Mondi EBIT Margin Contribution**

Source: Mondi's 2019 Annual Report



## Metsa Board Oyj

Metsa Board Oyj (MBO) is a finish producer of P&P. However, the company has the recognition of being the European's leading producer of premium cardboard with a production capacity of 2 million tonnes per year. With 8 production units in Finland and Sweden, the company was able to generate 1,932 million EUR in sales for 2019. MBO's main business units are folding boxboard (57% of sales), white kraftliner (25%) and market pulp (13%) (figure 30). Regarding destination of sales, 71% were to EMEA, 21% to America and 8% to APAC.

The company has also committed to fossil-free mills by 2030 and in 2019 83% of the total energy used was fossil-free energy.

## 5.4 SWOT ANALYSIS

### Strengths

Since NVG is an integrated player in the industry, the company is present in all supply chain with plantation and wood production, producing then wood pulp and transforming it in paper or tissue. This factor guarantees Navigator consistency and cost control through supplied products. Another strength factor is the fact NVG has little exposure to customer's concentration in all business units, since the company exports to roughly 125 countries worldwide. High market share in the European market guarantees local advantage for the business since all operations are based on this continent at the time. The company can always be informed of other environmental policies that may be implemented. Finally, NVG operations are becoming increasingly efficient, the company are always controlling and managing production volume, with increasing investment in capacity and maintenance efforts.

### Weaknesses

NVG only produces 15% of the wood needed in its operations, therefore, the company is subject to high dependence from suppliers of this raw material. The company has already started investment in Mozambique Project that will guarantee an additional 1 million tons of pulp per year when the project is completed and running. Also, increasingly legislation and environmental measures took in place by the Portuguese government impose some concern in NVG forest sites. The company must ensure controlled and well-managed forest sites which are possible and enhanced with RAIZ Research Institute state of the heart R&D developments.

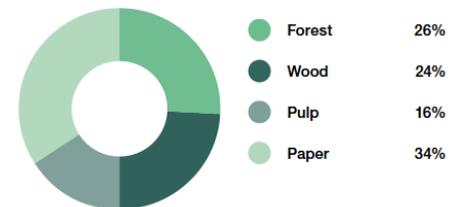
### Opportunities

Also, there is a lack of substitutes in tissue segment, thereafter, companies with well-managed operations and increasing capacity investments have a competitive advantage in this segment that is growing worldwide. Moreover, in the industry,

**Figure 30 - Svenska Cellulosa's Sales by Segment**

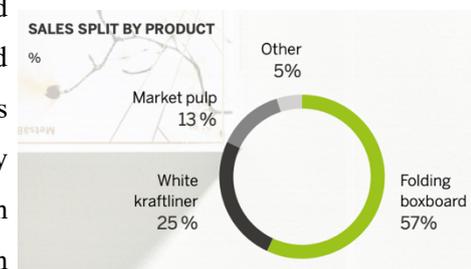
Source: Svenska Cellulosa's 2019 Annual Report

Net sales by segment<sup>1)</sup>



**Figure 31 - Metsa Board Oyj's sales by Segment**

Source: Metsa Board Oyj's 2019 Annual Report



**Figure 32 - NVG's SWAT Analysis**

Source: Author

<b>Strengths</b>
Integrated producer of P&P
Exports to 125 countries worldwide
19% market share in UWF
Operational efficiency
<b>Weaknesses</b>
15% own production in wood needed
Increasingly legislation in forest production
<b>Opportunities</b>
Lack of substitutes in tissue
Wood quality enhancement with R&D
Anti-plastic trends worldwide
<b>Threats</b>
Increasingly energy and transportation costs worldwide
Digitalization

companies are heavily investing in R&D forest sites, enhancing the wood quality and therefore having highly efficient operations. In this mature industry, companies are developing new value-added products exploiting biotechnology developments. The market growth in Eastern Europe, Russia and Asia due to anti-plastic trends also represents further opportunities within the industry.

**Threats**

As intensive energy dependable industry, increasing worldwide energy costs may damage operations profitability in P&P producers. Furthermore, increasingly transportations costs and wood costs due to lower supply and government restrictions as well as new environmental requirements should be considered as threats to industry profitability. Digitalization is the key warning for the industry, newspaper and magazine companies, book publishers, as well as the majority of the companies worldwide, are shifting to digital, therefore the demand for paper-based products is under pressure also due to corporate environmental responsibility measures, decreasing paper consumption.

**5.5 Porter’s Five Forces**

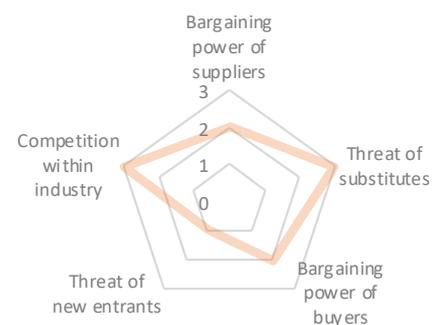
**Bargaining power of suppliers (Moderate)**

This industry has a pool of global suppliers with strong relationships. Since wood is the most important raw material is, for this reason, the most important cost, the main purpose is to have a high retention rate of suppliers as they would face switching cost in an unstable bargaining situation. Wood is considered as a commodity, being for this reason sold by a large number of firms, hence there are low or non-switching costs. Recycled paper is considered a substitute for wood as raw material, however since the “feeling” and appearance is different, the supplier power is decreased.

**Threat of substitutes (High)**

The paper consumption in Europe has stagnated, as a result of the economic slowdown and structural developments. End users swung more and more toward electronic communication and digital solutions. However, this lifestyle change is offset by growing demand in packaging and hygiene papers, mainly due to demographic trends in Europe. Additionally, within the industry, BHKP is the main pulp used in paper production with 53% of the global production market. As an alternative, BSKP, recycling paper and cotton can substitute BHKP. However, the cost-efficiency of BHKP makes it very attractive for manufacturers. The digitalization effect in newspaper and magazines as well as in normal workforce with the majority of the companies worldwide switching to digital, impose high concerns

**Figure 33 - Porter's 5 Forces**  
Source: Author



in p&p industry as the substitution for digital guarantees lower costs and commitment to “environmental responsibility”.

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### **Bargaining power of buyers (Moderate)**

Concerning printing and writing paper segment, the majority of buyers are wholesale and multi-national companies with specific contracts. For this reason, we may conclude there is a high number of buyers, with low switching costs for paper providers. Hence, buyer power is relatively moderate since there is no much room for price reductions. Also, with the high capital outlay needed for vertically backward integration, there is almost no likelihood to happen.

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### **Threat of new entrants (Low)**

P&P industry participants benefit from a brand recognition build and maintain throughout time; high capital expenditures comprise the major component that hinders the possibility to compete as a new member. To harvest and profit from this natural raw material companies must fulfil the high environmental requirements to get the certifications (climate change, energy efficiency, and sustainable forest management), restricting the prospect for new entrants.

Also, the magnitude of the players within the industry (very large, with high scale operations) impose difficulties for new entrants and therefore reducing the threat from new entrants.

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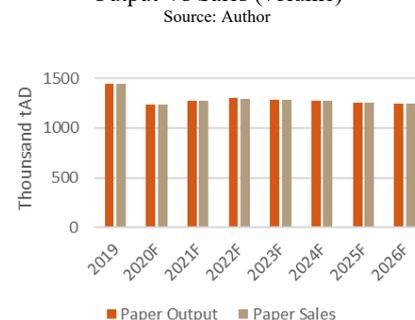
### **Competition within the industry (High)**

This industry can be considered as a highly competitive oligopoly. Since the companies cannot supply a unique or differentiated product, naturally a price war will be established. Companies are forced to develop highly efficient processes to decrease the company’s operations costs. If additional plants get to build, prices of paper will decrease, having huge impacts in P&P producers’ profitability. Furthermore, barriers to exit are high (expensive setting up in the industry and product-specific manufacturing, which means that companies are willing to ask low prices to stay in the industry.

## **6. INVESTMENT SUMMARY**

After a financial analysis in NVG operations and business, a price target for 2021 of 3,16€ was reached resulting in an upside potential of 36% when compared to the stock price of 2,32€ observed in 15<sup>th</sup> September 2020. Due to the current market conditions and future concerns in p&p industry we consider this investment as high risk. For this reason, our investment recommendation is to Buy considering NVG operations and industry outlook for 2021-2026.

**Figure 34 - Yearly Forecasted UWF Paper Output Vs Sales (volume)**



The Navigator Company S.A is one of the biggest companies in Portugal with operations dispersed throughout 4 different locations in the country. Operations are well organized with each factory being specialized in one or maximum two core segments. Value chain begins with the excellence supplier choice where 76% are local suppliers. For p&p manufacturing, Navigator needs to rely on outside suppliers for wood (57% from the national market and 29% from international sources) since is only able to produce 14% of the wood needed in the process which means that the raw-materials price is a core key success factor. NVG also needs chemicals in manufacturing pulp, after 40% price increase in 2019 prices have stabled in 2020. Also, NVG is highly committed with efficiency usage from both wood and chemicals.

To meet efficient operations, NVG needs to accurately manage logistics. In 2019, 2.2M tons of paper, pulp and tissue were managed successfully by the company trough sea, road or rail. Finally, the center in NVG philosophy, costumers. Costumers satisfaction is a fundamental link in the value chain that's why 2019 market share stood at 19% (+1% YoY).

Even in this difficult worldwide situation caused by COVID19 NVG will continue to delivery it's high standards in operations. Revenues are expected to decrease around 17% in 2020 due to the worldwide lock down situation for several months.

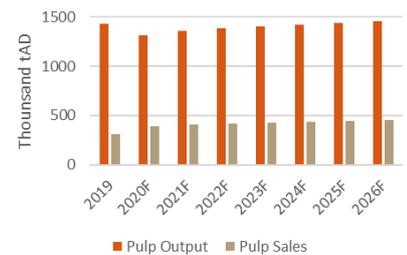
NVG product portfolio provides revenue diversification, that's why even under the current p&p expected future growth (around -1% for UWF, 3% for pulp, and 4,5% for tissue) the company is able to provide constant FCF. Also, after 2019, NVG started to implement some cost reduction measures in order to provide higher profitability margins. In 2020 these measures are already correctly implemented with COGS decreasing 15,81% in 2020 due to variable costs optimization and decrease in production, external and services supplies also decreased by roughly 10% in 2020. Forecasts shows that revenues are expected to increase at 2,63% CAGR (2020-2026) while total costs are expected to increase at 1,42% (2020-2026). This cost reduction measure provides NVG with financial stability for the forecasted period.

## 7. VALUATION

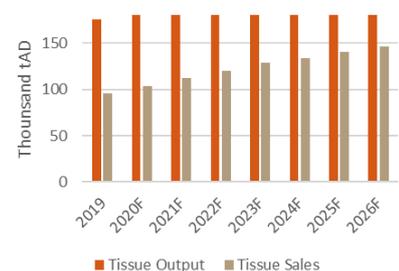
### 7.1 DCF Approach: Free Cash Flow to the Firm (FCFF)

The first approach used to arrive at the final price target for 2021 was the Discounted Cash Flow Model considering the WACC Method. The FCF represents the amount of cash flow available for distribution either to the firm, considering yearly operating results after accounting for the company's taxes, depreciation, working capital and investment expenses (appendixes 18 and 19).

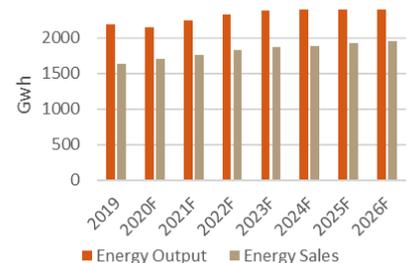
**Figure 35 - Yearly Forecasted Pulp Output Vs Sales (volume)**  
Source: Author



**Figure 36 - Yearly Forecasted Tissue Output Vs Sales (volume)**  
Source: Author



**Figure 37 - Yearly Forecasted Energy Output Vs Sales**  
Source: Author



Throughout this analysis the price target of 3,16€ was reached, representing an upside potential of 36% when compared to the market price of 2,32€ registered on 15 September 2020.

The following critical factors may influence the analysis:

### Revenue & Costs

Paper sales (figure 34) are expected to decrease by roughly 22% YoY by 2020 in line with NVG expectations in Q3 2020 results presentation. Pulp sales volume (figure 35) is expected to increase 29% in the same period, however due to decreasing worldwide pulp prices, revenues won't follow this upward trend. Tissue segment is expected to be the best in the sales performance recording almost 7% increase in 2020 (figure 36). Energy segment revenue (figure 37) is expected to increase by almost 5% in 2020 after the investments in solar energy done in 2019 and lower energy usage rate in 2020. On the other hand, costs are expected to follow this trend with COGS decreasing 19,72% YoY due to lower production and decreasing pulp and chemicals prices, external services and payroll costs are expected to decrease 9,37% and 4,65%, respectively. After this instable year revenues will tend to follow market demand for NVG products. For instance, in the period between 2021 and 2026 EBIT is expected to grow 7,22% CAGR, representing an EBIT margin of 14,5% by 2026 Vs 8% in 2020. (figure 39)

### CAPEX and D&A

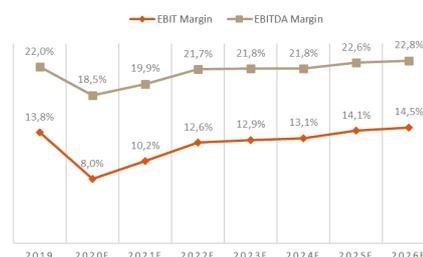
In the current uncertain environment, CAPEX is extremely difficult to evaluate. Historically Navigator is known by its huge investments either in maintenance or operational expansion CAPEX. CAPEX figure for 2020 was directly disclosed by the company at the beginning of the year in the amount of 70M€. For the following forecasted years (appendix 14), the last 2Y average % in sales by segment was considered. From 2019, 9,36% of total sales, CAPEX represents 5,05% of 2020 total sales. Following this assumption CAPEX varies between 107M€ and 119M€ between 2021 and 2026 (figure 38), growing at 1,76% CAGR in the period.

Yearly percentage D&A has been relatively stable throughout the past years. Firstly, depreciation of PP&E and Right of use Assets (ROUA) was calculated assuming constant % of depreciation (10,64% for PP&E, the average from the last 3 years, and 12,2% for ROUA same % as 2019). Then, amortization of intangible assets was assumed the same as 2019 (644,00€) since it is not expected to invest in intangible assets in the near future. (appendix 12)

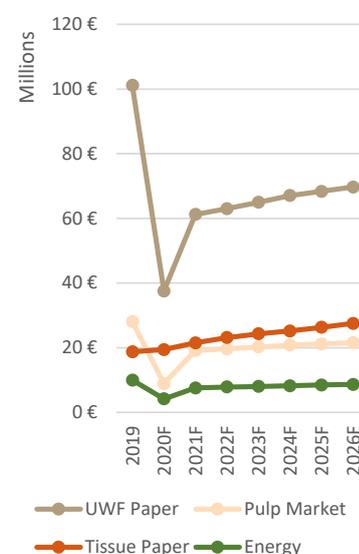
### WACC – Weighted Average Cost of Capital

In order to discount the FCFF from each forecasted year to the present date, WACC rate was used since Navigator uses sources of debt and equity in order to finance its

**Figure 38 - EBIT Vs EBITDA Margin**  
Source: NVG 2019 Annual Report and Author Estimates



**Figure 39 - Forecasted CAPEX per Segment**  
Source: Author



**Table 6 - WACC Assumptions**  
Source: Author Estimates

Cost of Equity	
Risk Free Rate (Rf)	0,8%
Country Risk Premium (CRP)	2,3%
Market Risk Premium (MRP)	5,3%
Beta (B)	1,1
<b>Re</b>	<b>9,49%</b>
Cost of Debt	
Current	1,62%
Credit Spread	2,73%
<b>Rd (2020F)</b>	<b>1,62%</b>
<b>Rd (2021F-2026F)</b>	<b>2,73%</b>
Terminal Value	
Terminal Growth - PRAT Model	0,64%
<b>Terminal Growth rate (g)</b>	<b>0,64%</b>

operations. To arrive at the final figure for the WACC rate (6,04% - 6,19%) in the period between 2021-2026 (appendix 18) the following assumptions were considered:

### Cost of Equity - $r_e$

Cost of equity was computed using the Capital Asset Pricing Model (CAPM) with adjustments for country risk premium (CRP) and market risk premium (MRP) figures using the following formula:

$$r_e = r_f + \beta \times (MRP + CRP)$$

Since NVG exports 80% of its products, risk-free rate, was computed as the average German 10Y Government Bond Yield from the last 10 years arriving at 0,831%.

CRP and ERP were estimated using Damodoran's figures from core countries that NVG sells for, considering adjusted % sales for each, arriving at the value of 7,64% for ERP and 2,29% for CRP. (appendix 18.1).

Finally, beta ( $\beta$ ) meaning the companies' systematic risk was computed as the average from the linear regression between PSI20 and Navigator's daily stock prices since 2010 (1,1 when considering *Blume* adjustment) and pure-play method considering peers (table 7) averaging 1,1 when considering blume adjustment.

### Cost of Debt - $r_d$

The cost of debt figure was based on NVG Q3 results disclosure with average cost of debt of 1,62% for 2020 and credit spread of 2,73% for the period between (2021-2026). For simplicity reasons, a 27,5% tax rate was considered suitable for the adjustment for after-tax cost of debt, however this figure is under sensitivity analysis to analyze possible changes in target price.

### Terminal Value

For the terminal growth rate (appendix 19.1), the PRAT Model were considered, resulting in a terminal growth rate of 0,64%, in line with industry expectations.

Terminal value was then discounted considering the same WACC rate as 2026, arriving at the value of 3141 Million € (appendix 19).

## 7.2 Adjusted Present Value (APV)

Since it is expected that NVG maintains the amount of debt throughout 2021-2026, the APV Method was also used (appendix 20) considering the unlevered cost of capital as the discount rate.

$$r_u = r_f + (\beta_u * ERP)$$

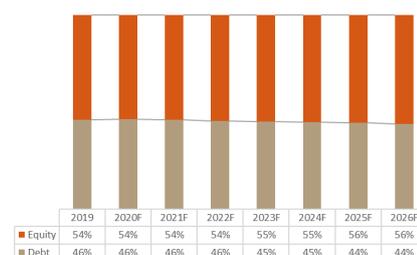
Considering the unlevered beta from peers (table 7) of 0,78, an equity risk premium of 7,637% and the same risk-free rate as the WACC Method (0,831%),  $r_u$  was estimated as 6,82%. The 2021 price target from APV method is 3,20€, resulting in an upside potential of 38%. Due to the current market conditions, NVG decided to

**Table 7 - Beta estimation from peers - Pure-play Method**  
Source: Author

Company	B(levered) adjusted	t	D/E	BU
Stora Enso	1,41	24,70%	54,49%	1,00
Mondi	1,08	23,00%	66,53%	0,71
Svenska Cellulosa	0,55	20,60%	15,96%	0,49
Metsa Board Oyj	1,22	12,70%	35,12%	0,93
Navigator	1,2	27,50%	85,37%	0,78

Source: Author Estimates

**Figure 40 - Forecasted Debt/Equity ratio**  
Source: Author Estimates



roll-over 2020 and 2021 debt payments therefore this method may suffer changes soon and therefore shall only be used to corroborate the WACC Method.

## 7.2 Relative Valuation Approach (Multiples)

Relative Valuation was used as a third methodology to compute NVG price target. The peer companies from industry overview were considered.

When analyzing 8 worldwide companies (appendix 16 and 17) from p&p industry, only 4 of them filled the requirements presented in point 5.3 from this report (table 4). Stora Enso (Finish), Mondi (Austrian), Svenska Cellulosa (Swedish) and Metsa Board Oyj (Finish) were selected as suitable peers. All the companies have similar operations however, some of them are present in the packaging segment and tissue segment which have higher multiple valuation from the higher market expansion prospects in these segments.

**Table 8 - Navigator's Relative Valuation (2021F)**  
Source: Author

2021 VALUATION					
Direct Comparables (4)					
	Price/Earnings	Price/Book	Price/Sales	EV/EBITDA	EV/SALES
Peers Mean	16,2	1,8	1,0	8,7	2,0
Navigator	14,2	1,4	1,0	7,3	1,4
Target Price	€2,39	€2,62	€2,10	€3,52	€3,98
TP (2021)	€3,06				

Source: Author Estimates

Navigator it's relatively close to peers mean multiples. The multiples used were price/earnings, price/book, price/sales, EV/EBITDA and EV/sales since they provide accurate forecasts. The forecasted target price was 3,06€ which represents an upside potential of 31,9% from the 2,32€ registered on 15 September 2020, which also corroborates the investment recommendation.

## 8. FINANCIAL ANALYSIS

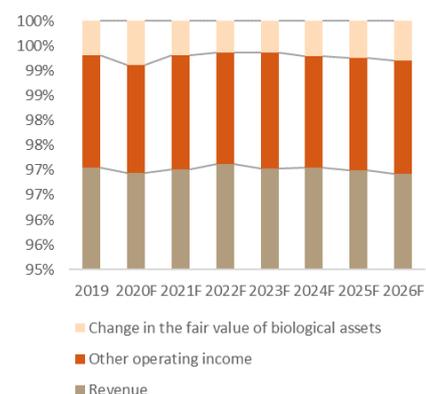
### Revenue

Global sales are expected to decrease around 17% in 2020F (figure 41) due the current market situation with COVID19 imposing worldwide lockdowns. In the following year's, UWF revenue is expected to grow at 0,43% CAGR, pulp revenue 2,28% CAGR, tissue revenue 4,64% CAGR and energy revenue 1,77% CAGR in the period between 2021-2026. Revenues are also expected to have the highest decrease in Africa (67% YoY in 2020F) followed by a 27% decrease in American market, 20% decrease in Portugal and 15% decrease in the rest of Europe considering the last year's average revenue distribution. On the other hand, revenues are expected

**Figure 41 - Forecasted Revenue by Segment**  
Source: Author Estimates



**Figure 42 - Inflow operations by category**  
Source: Author Estimates



to increase 40% in Asia and Oceania due to the increasing purchasing power in that countries and economic growth. In the forecasted period (2021-2026), average selling prices for UWF paper (829€/ton - 871€/ton) Vs 912€/ton in 2019 and pulp (466€/ton - 480€/ton) Vs 582€/ton in 2019 are expected to remain highly impacted under the current market conditions. Further analysis in price target sensitivity analysis to average selling price is provided in point 10.

### Operational Costs

Total operational costs are expected to evolve at 0,63% CAGR between 2021-2026. COGS have the highest importance (49,61% in 2021 Costs to 51,35% in 2026) due to high correlation with revenue and market prices for wood, chemicals and pulp prices. Since external acquisitions for wood and chemicals are highly correlated with production figures, they were considered to a percentage of sales from each year (16,3% for wood and 8,9% for chemicals) (appendix 7.1). Also, NVG Q3 2020 results presentation shows low variation in wood and chemicals prices with the company imposing more efficiency measures in order to lower this raw materials usage in production. BSKP pulp and Pine pulp costs are expected to increase at 1,83% CAGR and 2,00% CAGR, respectively in the period between 2021 and 2026 (table 9). Further sensitivity analysis was performed in order to evaluate further deviations in target price with increase and decrease in both pulp prices.

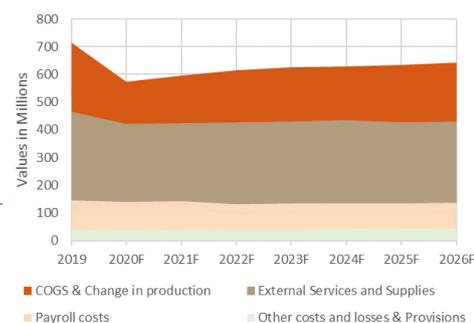
External services and supplies are measured as fixed costs (company disclosure) therefore they were considered to be an average figure from the last 5 years. Payroll costs (-0,69% CAGR 2021-2026) were carefully computed since NVG announced 13% layoff rate in 2020 for half of the year which will lead to a cost reduction of almost 3M€. In 2021 a 6.5% layoff rate was assumed since there is no forecasted time horizon to reverse this decision. (appendix 7.2)

### Ratios & Margins Analysis

Operating cycle is expected evolve favorably for the company from 126 days in 2019 to 112 days by 2026. Days of sales outstanding (DSO) are expected to decrease to 53 days by 2026 (67 days in 2019 after efficiency guidance from 2019 Annual Report). Also, inventory management is key however, days of inventory outstanding are expected to increase from 2019 values (59 days), 64 days in 2020 and 59 days also by 2026. Days of payables outstanding are expected to increase in 2020 (117 days in 2020 VS 106 days in 2019) however, this figure will return closer to historical values by 2026 (109 days).

Gross Profit and EBITDA are expected to be highly impacted by the current market and worldwide situation due to COVID-19. After 2019 decrease to 19% and 22%, respectively both are expected to return to the same margins by 2024 and to historical margins by the end of the forecasted period. EBITDA margin is expected to grow

**Figure 43 - Forecasted Costs by Category**  
Source: Author Estimates



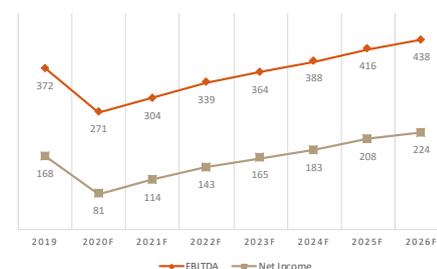
**Table 9 - COGS detailed CAGR (2021-2026)**

Source: Author Estimates

	CAGR (2021-2026)
Wood/Biomass (external acquisitions)	3,08%
Chemicals	3,08%
BEKP Pulp	1,83%
Pine Pulp	2,00%

**Figure 44 - EBITDA Vs Net Income Forecast Evolution**

Source: Author Estimates



from 18,5% in 2020 to 22,58% by 2026 as well as gross profit margin is expected to grow from 15,4% in 2020 to 19,7% due to cost reduction measures already implemented and revenue expected growth.

Net profit margin will take more time to recover to 2019 levels (10%). After an historical 54,27% estimated decrease in net profit, margin is expected to stay around 5,5% by 2020. Net profit margin will recover to 2019 levels by 2025 (10,3%) reaching the highest level by 2026 (10,5%).

EPS are expected to decrease by more than half in 2020 to 0,11€/share, reaching a maximum of 0,23/share by 2026.

Debt policy is relatively constant, over the last several years NVG has been shifting from short-term to long-term debt. In Q3 2020 results presentation the company disclosed that Is taking measures to postpone debt payments from 2020 to 2021 in order to increase short-term liquidity. For this reason, D/E ratio is expected decrease with the increasing proportion of equity in the company, from 86% by 2020 to 78% by 2026.

## 9. INVESTMENT RISKS

### 9.1 Operational Risks (OR)

#### Exchange rate risk - OR1

Since Navigator exports to 125 countries worldwide and almost 30% of sales comes from non-European countries, small variations between EURO and other currencies may significantly impact NVG's operational performance either by revenues or costs.

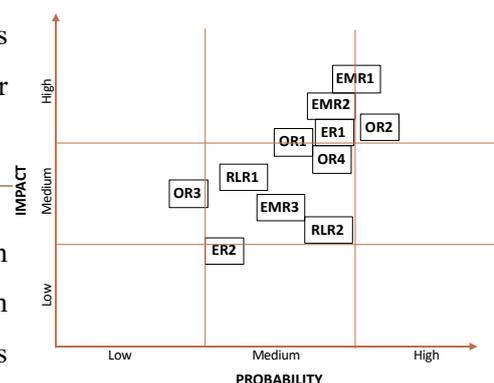
#### Shortest in wood supply - OR2

Since NVG's wood production only accounts for 14% of the raw material needed in p&p manufacturing, the company needs to use outside suppliers of wood. With increasing legislation in forestry activities, the company may be subject to failures in wood supply, causing operations to shut down, increasing costs and loss of revenues.

#### Industrial accidents and units' breakdowns – OR3

Industrial facilities are always subject to potential accidents that may occur from employees or machine breakdowns. For that reason, NVG has severe restrictions implemented and respected by employees and frequently does maintenance checkups in their machines.

Figure 45 - Navigator's Risk Matrix  
Source: Author



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#### **Increase in transportation costs – OR4**

Wood is known for “not travelling well”. Also due to the size of NVG operations, the company is very exposed to logistical variation costs. Increasingly transportation costs may damage operating margins and results. NVG closely manage these costs and operations to decrease potential increases in production costs.

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### **9.2 Economic and Market Risks (EMR)**

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#### **Wood, Paper, Pulp and Energy price variations – EMR1**

Being wood, paper, pulp and energy commodities their prices are market-based. For this reason, NVG has no impact on raw material and output prices. These variations may highly impact the company’s results and operational performance. In order to reduce and control risks that may arise from these issues, NVG must closely monitor commodities prices and hedge their position using derivatives (already in use). Also, chemicals used in p&p manufacturing increased roughly 40% in price in 2019.

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#### **Energy Prices – EMR2**

P&P is an energy-intensive industry. Part of the energy is obtained from fossil-fuel like gas, oil and coal. Relying on global supply chains makes companies face physical and regulatory risks related to climate change. Companies are now using biomass power stations, using waste to produce energy which assures greener and fossil-free energy production. Environmental self-sufficiency is key. Next to this, monitoring and managing the right amount of energy needed, are also a key element to reduce this risk.

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#### **Paper Substitution – Digitalization – EMR3**

Anti-plastic trends and environmental legislation contribute to altering the consumer’s attitude. Possible substitutes include technological substitution, recycled materials or flexible packaging. By monitoring trends of new developments and innovations, and also the legislative developments, companies might take market shares in substitutes. Or develop new products which are sustainable and competitive considering new market trends.

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### **9.3 Environmental Risks (ER)**

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#### **Forest Destruction / Fires and Natural disasters – ER1**

Forestry management and maintenance are extremely important in integrated P&P producers. Natural or man-made forest destruction needs to be avoided in order to protect the most important raw-material and therefore protecting increasingly costs or loss in revenues. NVG has 7,755 ha of paths and firebreaks and invested 4.1 million in forest fire protection actions the reduce this risk.

## Sustainability of Forestry and Industrial Operations – ER2

Irrational use of natural resources may lead to future unavailability, negatively impacting operations. Since chemicals are used in P&P production there is the risk of soil contamination that may lead to legal punishments. 72% of wood used in NVG operations comes from certified sources.

### 9.4 Regulatory and Legal Risks (RLR)

#### Energy Sector Regulation – RLR1

Worldwide energy operations are subject to severe regulations. In the last years with global awareness for environmental issues, these regulations are expected to increase in quantity and severity. With P&P industry intensive usage of energy, risks that may arise must be closely managed. Therefore, NVG uses biomass cogeneration (60%), thermoelectric, natural gas cogeneration and solar-based energy for their operations.

#### Restrictions in Paper Imports and Forestry Production – RLR2

Customer barriers to paper import in Europe may decrease NVG sales since this continent accounts for 50% of sales. Legal restrictions are also imposed in forestry production in Portugal. Therefore, the company is starting to develop outside plantations in order to fulfil NVG's wood operational requirements.

## 10. SENSITIVITY & SCENARIO ANALYSIS

Sensitivity analysis for the target price was performed considering changes in different key success variables. On the operational side, changes on the average selling price from both UWF and Pulp segments may significantly impact the price target, therefore changing the investment recommendation. (table 10)

**Table 10** - Target Price sensitivity to changes on the average selling price from UWF and Pulp  
Source: Author

		UWF Av. Selling Price						
		-3%	-2%	-1%	0%	1%	2%	3%
Pulp Av. Selling Price	-3%	1,98 €	2,27 €	2,59 €	2,95 €	3,35 €	3,80 €	4,30 €
	-2%	2,03 €	2,33 €	2,65 €	3,02 €	3,42 €	3,88 €	4,40 €
	-1%	2,08 €	2,38 €	2,72 €	3,09 €	3,50 €	3,97 €	4,50 €
	0%	2,13 €	2,44 €	2,78 €	3,16 €	3,58 €	4,06 €	4,61 €
	1%	2,18 €	2,50 €	2,84 €	3,23 €	3,66 €	4,15 €	4,71 €
	2%	2,24 €	2,56 €	2,91 €	3,30 €	3,75 €	4,25 €	4,82 €
	3%	2,29 €	2,62 €	2,98 €	3,38 €	3,83 €	4,35 €	4,93 €
			SELL	REDUCE	HOLD	BUY	STRONG BUY	

For instance, a 1% decrease (-8,21€/ton) on the average UWF selling price forecasted for 2021 without considering any change on the average selling pulp price, would shift the price target to 2,78€/share representing an upside potential of 19,83% for the forecasted period (2021-2026) and therefore, the investment recommendation would be to HOLD. Due to this high dependence and volatile

average UWF selling price this investment represents a high risk, for instance 2% decrease (-16,42€/ton) on the average UWF selling price forecasted for 2021 would result in a REDUCE recommendation. On the pulp price side, due to low revenue share, significant changes wouldn't deeply affect the price target.

Appendix 22 shows other sensitivity analysis that were performed to the FCFE price target. Even if terminal growth rate (g) changes from 0,6% to 0,1% our investment recommendation would remain at a BUY since price target would be 2,89€/share and therefore, still representing an upside potential of 25%. On the other hand, increases in Beta and WACC would change our investment recommendation. 1% increase in terminal WACC rate, from 6,2% to 7,2% would drop our target price by 19,38% resulting in 2,55€/share and only 9,76% of upside potential for the forecasted period, therefore resulting in a REDUCE recommendation.

Also changes in tax rate were performed since in our analysis we considered the highest possible tax rate as a conservative approach for our investment recommendation therefore if effective tax rate observed in 2021 drops to 22,5% our investment recommendation will change to STRONG BUY with an upside potential 45,29% for 3,37€/share price target.

Sensitivity to terminal WACC and terminal growth rate (g) changes at the same time were considered (table 11). It is important to notice that if WACC rate increases by 0,5 p.p (from 6,2% to 6,7%) and terminal growth rate decreases by 0,1 p.p (from 0,6% to 0,5%) our investment recommendation would change to HOLD since our new price target would be 2,76€/share.

**Table 11** - Target Price sensitivity to changes in WACC and Terminal Growth Rate  
Source: Author

		Terminal Period WACC						
		4,7%	5,2%	5,7%	6,2%	6,7%	7,2%	7,7%
Terminal Growth Rate (g)	0,2%	4,20 €	3,68 €	3,26 €	2,92 €	2,62 €	2,38 €	2,17 €
	0,3%	4,34 €	3,80 €	3,36 €	2,99 €	2,69 €	2,43 €	2,21 €
	0,5%	4,50 €	3,92 €	3,45 €	3,07 €	2,76 €	2,49 €	2,26 €
	0,6%	4,67 €	4,05 €	3,56 €	3,16 €	2,83 €	2,55 €	2,31 €
	0,8%	4,86 €	4,19 €	3,67 €	3,25 €	2,90 €	2,61 €	2,36 €
	0,9%	5,05 €	4,35 €	3,79 €	3,34 €	2,98 €	2,67 €	2,41 €
	1,1%	5,27 €	4,51 €	3,92 €	3,44 €	3,06 €	2,74 €	2,47 €
			STRONG BUY	BUY	HOLD	REDUCE	SELL	

Scenario Analysis was also computed considering changing variable from sensitivity analysis (appendix 22).

## APPENDIXES

### Appendix 1: Statement of Financial Position

Consolidated Statement of Financial Position								
Millions €	2019	2020F	2021F	2022F	2023F	2024F	2025F	2026F
<b>ASSETS</b>								
<b>Non-Current Assets</b>								
Goodwill	377	377	377	377	377	377	377	377
Other intangible assets	5	5	5	5	5	5	5	5
Plant, property and equipment	1250	1177	1146	1121	1101	1084	1071	1060
Right of use assets	46	43	41	40	40	39	38	38
Investment properties	0	0	0	0	0	0	0	0
Biological assets	132	145	155	165	175	186	198	211
Non-Current Receivables	59	41	47	47	48	48	49	49
Available-for-sale financial assets	0	0	0	0	0	0	0	0
Deferred tax assets	32	32	32	32	32	32	32	32
	1899	1819	1802	1786	1777	1771	1769	1772
<b>Current Assets</b>								
Inventories	218	195	196	200	201	204	203	205
Receivable and other current assets	247	203	212	219	222	224	226	228
Income Tax	25	25	25	25	25	25	25	25
Cash and cash equivalents	162	209	260	286	320	337	364	381
	652	632	693	730	769	790	818	839
<b>Non-current assets held for sale</b>								
	0	0	0	0	0	0	0	0
<b>Total Assets</b>	<b>2552</b>	<b>2452</b>	<b>2495</b>	<b>2517</b>	<b>2546</b>	<b>2561</b>	<b>2587</b>	<b>2611</b>
<b>EQUITY AND LIABILITIES</b>								
<b>Capital and Reserves</b>								
Share capital	500	500	500	500	500	500	500	500
Treasury shares	-20	-20	-20	-20	-20	-20	-20	-20
Fair value reserves	-6	-6	-6	-6	-6	-6	-6	-6
Legal Reserves	100	100	100	100	100	100	100	100
Other reserves	98	111	121	131	141	153	164	177
Currency translation reserves	-19	-19	-19	-19	-19	-19	-19	-19
Retained earnings	206	274	251	228	227	232	225	228
Net profit for the period	168	77	105	135	143	144	159	164
	1027	1017	1032	1049	1066	1084	1104	1124
<b>Non-controlling interests</b>								
	0	0	0	0	0	0	0	0
<b>Total Equity</b>	<b>1027</b>	<b>1017</b>	<b>1033</b>	<b>1049</b>	<b>1066</b>	<b>1084</b>	<b>1104</b>	<b>1125</b>
<b>Non-current liabilities</b>								
Deferred taxes liabilities	80	80	80	80	80	80	80	80
Pension liabilities	7	6	6	6	6	6	6	6
Provisions	20	20	20	20	20	20	20	20
Loans	864	859	861	862	863	864	864	865
Lease Liabilities	42	40	39	38	37	36	36	35
Non-current payables	31	45	47	48	51	45	50	50
	1044	1051	1053	1054	1058	1052	1056	1056
<b>Current liabilities</b>								
Loans	13	16	16	14	15	16	16	15
Lease Liabilities	4	4	4	4	4	4	4	4
Payables and other current liabilities	426	327	353	359	367	368	372	375
State and other public entities	36	36	36	36	36	36	36	36
	480	384	410	414	422	424	428	430
<b>Total liabilities</b>	<b>1524</b>	<b>1434</b>	<b>1462</b>	<b>1468</b>	<b>1480</b>	<b>1476</b>	<b>1483</b>	<b>1486</b>
<b>Total equity and liabilities</b>	<b>2552</b>	<b>2452</b>	<b>2495</b>	<b>2517</b>	<b>2546</b>	<b>2561</b>	<b>2587</b>	<b>2611</b>

Source: Author Estimates

## Appendix 2: Income Statement

Income Statement								
Millions €	2019	2020F	2021F	2022F	2023F	2024F	2025F	2026F
Revenue	1688	1387	1446	1497	1516	1529	1541	1555
Other operating income	39	31	34	34	36	35	36	36
Change in the fair value of biological assets	12	13	10	10	10	11	12	13
<b>Costs</b>	<b>-1367</b>	<b>-1174</b>	<b>-1203</b>	<b>-1216</b>	<b>-1232</b>	<b>-1242</b>	<b>-1241</b>	<b>-1249</b>
COGS & Change in production	-714	-573	-597	-616	-625	-630	-635	-641
External Services and Supplies	-467	-423	-423	-427	-431	-434	-428	-429
Payroll costs	-146	-139	-142	-133	-134	-135	-136	-136
Other costs and losses & Provisions	-40	-39	-41	-40	-42	-42	-42	-43
<b>EBITDA</b>	<b>372</b>	<b>257</b>	<b>288</b>	<b>325</b>	<b>330</b>	<b>333</b>	<b>348</b>	<b>355</b>
Depreciation, amortization and impairment losses	-139	-145	-140	-137	-135	-133	-131	-130
<b>Operating results</b>	<b>234</b>	<b>111</b>	<b>148</b>	<b>188</b>	<b>195</b>	<b>201</b>	<b>217</b>	<b>225</b>
Financial Income	3	2	3	2	4	2	3	2
Financial Expenses	-22	-16	-19	-20	-19	-21	-19	-20
Net financial results	-19	-14	-16	-18	-15	-19	-16	-18
<b>Profit before tax</b>	<b>215</b>	<b>97</b>	<b>133</b>	<b>170</b>	<b>180</b>	<b>182</b>	<b>201</b>	<b>207</b>
Income tax	-46	-20	-27	-35	-37	-38	-42	-43
<b>Net Income</b>	<b>168</b>	<b>77</b>	<b>105</b>	<b>135</b>	<b>143</b>	<b>144</b>	<b>159</b>	<b>164</b>
Non-controlling interests	0	0	0	0	0	0	0	0
<b>Net profit for the period</b>	<b>168</b>	<b>77</b>	<b>105</b>	<b>135</b>	<b>143</b>	<b>144</b>	<b>159</b>	<b>164</b>

Source: Author Estimates

## Appendix 3: Cash Flow Statement

Cash Flow Statement								
Millions €	2019	2020F	2021F	2022F	2023F	2024F	2025F	2026F
EBITDA	372	257	288	325	330	333	348	355
Income tax	-75	-20	-27	-35	-37	-38	-42	-43
Changes in NWC	186	-32	17	-6	3	-3	2	-1
Other (payments) or receipts (NCI)	-47	32	-4	1	2	-6	4	0
<b>OPERATING ACTIVITIES</b>	<b>436</b>	<b>236</b>	<b>273</b>	<b>286</b>	<b>299</b>	<b>287</b>	<b>312</b>	<b>311</b>
CAPEX	-196	-70	-107	-112	-114	-115	-117	-119
Other Investment Activities	3	2	3	2	4	2	3	2
<b>INVESTMENT ACTIVITIES</b>	<b>-193</b>	<b>-68</b>	<b>-104</b>	<b>-109</b>	<b>-110</b>	<b>-113</b>	<b>-114</b>	<b>-117</b>
Dividends	-200	-100	-100	-128	-136	-137	-152	-156
<i>% net profit for the period</i>	<i>119%</i>	<i>130%</i>	<i>95%</i>	<i>95%</i>	<i>95%</i>	<i>95%</i>	<i>95%</i>	<i>95%</i>
Interest	-20	-16	-19	-20	-19	-21	-19	-20
Net borrowing	113	-2	2	-1	2	2	0	0
Lease Payments	47	-3	-1	-1	-1	-1	-1	0
Other	-1	-1	0	0	0	0	0	0
<b>FINANCING ACTIVITIES</b>	<b>-60</b>	<b>-122</b>	<b>-118</b>	<b>-150</b>	<b>-154</b>	<b>-157</b>	<b>-172</b>	<b>-176</b>
Change for the period		47	51	26	35	17	27	18
Beginnig Balance		162	209	260	286	320	337	364
Ending Balance	162	209	260	286	320	337	364	381

Source: Author Estimates

## Appendix 4: Key Financial Ratios

Key Financial Ratios	Unit	2019	2020F	2021F	2022F	2023F	2024F	2025F	2026F
<b>Liquidity Ratios</b>									
Current Ratio	Times	1,4	1,6	1,7	1,8	1,8	1,9	1,9	1,9
Quick Ratio	Times	0,9	1,1	1,2	1,2	1,3	1,3	1,4	1,4
Cash Ratio	Times	0,3	0,5	0,6	0,7	0,8	0,8	0,8	0,9
<b>Efficiency Ratios</b>									
Total Assets Turnover	Times	0,7	0,6	0,6	0,6	0,6	0,6	0,6	0,6
Accounts Receivables Turnover	Times	5,9	6,4	6,9	6,9	6,8	6,8	6,8	6,8
DSO - Days of sales outstanding	Days	67,1	59,3	52,4	52,6	53,2	53,3	53,3	53,3
Inventory Turnover	Times	7,7	6,7	7,4	7,6	7,6	7,5	7,6	7,6
DIO - Days of inventory outstanding	Days	58,8	64,2	59,3	59,4	59,5	59,5	59,8	59,6
Payables Turnover	Times	3,4	3,1	3,5	3,4	3,4	3,4	3,4	3,3
DPO - Days of payables outstanding	Days	106,3	117,1	103,2	106,9	107,6	108,0	108,9	109,2
Operating Cycle	Days	125,9	123,5	111,7	112,0	112,7	112,8	113,1	112,9
<b>Profitability Ratios</b>									
Gross Profit Margin	%	19,0%	15,4%	16,8%	18,8%	18,7%	18,8%	19,5%	19,7%
EBITDA Margin	%	22,0%	18,5%	19,9%	21,7%	21,8%	21,8%	22,6%	22,8%
EBIT Margin	%	13,8%	8,0%	10,2%	12,6%	12,9%	13,1%	14,1%	14,5%
Net Profit Margin	%	10,0%	5,5%	7,3%	9,0%	9,4%	9,4%	10,3%	10,5%
ROA	%	6,6%	3,1%	4,2%	5,4%	5,6%	5,6%	6,2%	6,3%
ROCE	%	11,3%	5,4%	7,1%	8,9%	9,2%	9,4%	10,0%	10,3%
ROE	%	16,4%	7,6%	10,2%	12,9%	13,4%	13,3%	14,4%	14,6%
EPS	€	0,24 €	0,11 €	0,15 €	0,19 €	0,20 €	0,20 €	0,22 €	0,23 €
SG&A/Sales	%	38,7%	43,3%	41,9%	40,1%	40,0%	40,0%	39,3%	39,1%
<b>Solvency Ratios</b>									
Shor-term Debt Ratio	%	1,5%	1,9%	1,8%	1,6%	1,7%	1,8%	1,8%	1,8%
Long-term Debt Ratio	%	98,5%	98,1%	98,2%	98,4%	98,3%	98,2%	98,2%	98,2%
Debt to Equity Ratio	%	85,4%	86,1%	85,0%	83,6%	82,4%	81,2%	79,7%	78,3%
Equity Multiplier	Times	2,5	2,4	2,4	2,4	2,4	2,4	2,3	2,3
Debt to EBITDA	Times	2,4	3,4	3,0	2,7	2,7	2,6	2,5	2,5
Interest Coverage Ratio	Times	10,7	6,8	7,8	9,4	10,1	9,7	11,3	11,0
<b>Value Creation and Cash Flow Ratios</b>									
Economic Value Added (EVA)	M€	75,33 €	25,44 €	5,24 €	25,07 €	28,67 €	32,10 €	42,10 €	47,22 €
ROIC	%	9,0%	4,4%	5,8%	7,3%	7,4%	7,6%	8,1%	8,4%
WACC	%	5,4%	5,6%	6,0%	6,1%	6,1%	6,1%	6,2%	6,2%
Debt Coverage	Times	0,2	0,2	0,2	0,2	0,3	0,3	0,3	0,3
Cash to Income	Times	0,3	0,2	0,2	0,2	0,2	0,2	0,2	0,2
Earnings Quality: CFO/(NP+D&A+NWC)	Times	3,6	0,9	1,2	1,0	1,1	1,0	1,1	1,1

Source: Author Estimates

## Appendix 5: Common-Size Income Statement

<b>Common Size - Income Statement</b>									
% of Revenues	2019	2020F	2021F	2022F	2023F	2024F	2025F	2026F	
Revenue	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	
Other operating income	2,3%	2,2%	2,4%	2,3%	2,4%	2,3%	2,3%	2,3%	
Change in the fair value of biological assets	0,7%	0,9%	0,7%	0,7%	0,7%	0,7%	0,8%	0,8%	
<b>Costs</b>	<b>-81,0%</b>	<b>-84,6%</b>	<b>-83,2%</b>	<b>-81,2%</b>	<b>-81,3%</b>	<b>-81,2%</b>	<b>-80,5%</b>	<b>-80,3%</b>	
COGS & Change in production	-42,3%	-41,3%	-41,3%	-41,2%	-41,2%	-41,2%	-41,2%	-41,3%	
External Services and Supplies	-27,7%	-30,5%	-29,3%	-28,5%	-28,4%	-28,4%	-27,8%	-27,6%	
Payroll costs	-8,6%	-10,0%	-9,8%	-8,9%	-8,8%	-8,9%	-8,8%	-8,8%	
Other costs and losses & Provisions	-2,4%	-2,8%	-2,8%	-2,7%	-2,8%	-2,8%	-2,7%	-2,8%	
<b>EBITDA</b>	<b>22,0%</b>	<b>18,5%</b>	<b>19,9%</b>	<b>21,7%</b>	<b>21,8%</b>	<b>21,8%</b>	<b>22,6%</b>	<b>22,8%</b>	
Depreciation, amortization and impairment losses	-8,2%	-10,5%	-9,7%	-9,2%	-8,9%	-8,7%	-8,5%	-8,4%	
<b>Operating results</b>	<b>13,8%</b>	<b>6,6%</b>	<b>8,8%</b>	<b>11,1%</b>	<b>11,6%</b>	<b>11,9%</b>	<b>12,8%</b>	<b>13,3%</b>	
Financial Income	0,2%	0,2%	0,2%	0,1%	0,3%	0,1%	0,2%	0,1%	
Financial Expenses	-1,3%	-1,2%	-1,3%	-1,3%	-1,3%	-1,3%	-1,2%	-1,3%	
Net financial results	-1,1%	-1,0%	-1,1%	-1,2%	-1,0%	-1,2%	-1,0%	-1,2%	
<b>Profit before tax</b>	<b>12,7%</b>	<b>7,0%</b>	<b>9,2%</b>	<b>11,4%</b>	<b>11,9%</b>	<b>11,9%</b>	<b>13,0%</b>	<b>13,3%</b>	
Income tax	-2,7%	-1,4%	-1,9%	-2,4%	-2,5%	-2,5%	-2,7%	-2,8%	
<b>Net Income</b>	<b>10,0%</b>	<b>5,5%</b>	<b>7,3%</b>	<b>9,0%</b>	<b>9,4%</b>	<b>9,4%</b>	<b>10,3%</b>	<b>10,5%</b>	
Non-controlling interests	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	
<b>Net profit for the period</b>	<b>10,0%</b>	<b>5,5%</b>	<b>7,3%</b>	<b>9,0%</b>	<b>9,4%</b>	<b>9,4%</b>	<b>10,3%</b>	<b>10,5%</b>	

Source: Author Estimates

## Appendix 6: Common-Size Statement of Financial Position

Common Size - Statement of Financial Position								
% of Total Assets	2019	2020F	2021F	2022F	2023F	2024F	2025F	2026F
<b>ASSETS</b>								
Non-Current Assets								
Goodwill	14,79%	15,39%	15,12%	14,99%	14,82%	14,74%	14,59%	14,45%
Other intangible assets	0,18%	0,18%	0,18%	0,18%	0,18%	0,18%	0,17%	0,17%
Plant, property and equipment	48,97%	48,01%	45,92%	44,54%	43,23%	42,34%	41,39%	40,61%
Right of use assets	1,78%	1,74%	1,66%	1,61%	1,56%	1,52%	1,48%	1,45%
Investment properties	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Biological assets	5,16%	5,90%	6,21%	6,55%	6,88%	7,27%	7,65%	8,08%
Non-Current Receivables	2,30%	1,69%	1,87%	1,85%	1,89%	1,87%	1,88%	1,87%
Available-for-sale financial assets	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Deferred tax assets	1,24%	1,29%	1,27%	1,26%	1,24%	1,24%	1,22%	1,21%
	74,44%	74,21%	72,24%	70,98%	69,80%	69,16%	68,39%	67,86%
Current Assets								
Inventories	8,54%	7,96%	7,84%	7,95%	7,91%	7,95%	7,86%	7,84%
Receivable and other current assets	9,70%	8,30%	8,50%	8,72%	8,73%	8,75%	8,73%	8,73%
Income Tax	0,99%	1,03%	1,01%	1,00%	0,99%	0,98%	0,97%	0,96%
Cash and cash equivalents	6,34%	8,52%	10,41%	11,35%	12,58%	13,15%	14,05%	14,61%
	25,56%	25,79%	27,76%	29,02%	30,20%	30,84%	31,61%	32,14%
Non-current assets held for sale	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
<b>Total Assets</b>	<b>100,00%</b>							
<b>EQUITY AND LIABILITIES</b>								
Capital and Reserves								
Share capital	19,60%	20,39%	20,04%	19,87%	19,64%	19,53%	19,33%	19,15%
Treasury shares	-0,79%	-0,82%	-0,81%	-0,80%	-0,79%	-0,79%	-0,78%	-0,77%
Fair value reserves	-0,25%	-0,26%	-0,26%	-0,25%	-0,25%	-0,25%	-0,25%	-0,24%
Legal Reserves	3,92%	4,08%	4,01%	3,97%	3,93%	3,91%	3,87%	3,83%
Other reserves	3,85%	4,52%	4,86%	5,22%	5,55%	5,96%	6,35%	6,79%
Currency translation reserves	-0,73%	-0,76%	-0,75%	-0,74%	-0,74%	-0,73%	-0,72%	-0,72%
Retained earnings	8,07%	11,19%	10,07%	9,06%	8,92%	9,08%	8,70%	8,75%
Net profit for the period	6,60%	3,14%	4,21%	5,36%	5,61%	5,64%	6,16%	6,28%
	40,25%	41,48%	41,37%	41,68%	41,87%	42,34%	42,65%	43,07%
Non-controlling interests	0,01%	0,01%	0,01%	0,01%	0,01%	0,01%	0,01%	0,01%
<b>Total Equity</b>	<b>40,27%</b>	<b>41,49%</b>	<b>41,39%</b>	<b>41,69%</b>	<b>41,88%</b>	<b>42,35%</b>	<b>42,67%</b>	<b>43,08%</b>
Non-current liabilities								
Deferred taxes liabilities	3,15%	3,28%	3,22%	3,20%	3,16%	3,14%	3,11%	3,08%
Pension liabilities	0,26%	0,24%	0,23%	0,23%	0,23%	0,22%	0,22%	0,22%
Provisions	0,78%	0,81%	0,80%	0,79%	0,78%	0,78%	0,77%	0,76%
Loans	33,86%	35,05%	34,52%	34,26%	33,91%	33,75%	33,40%	33,12%
Lease Liabilities	1,66%	1,63%	1,55%	1,50%	1,45%	1,42%	1,38%	1,35%
Non-current payables	1,21%	1,85%	1,87%	1,90%	2,01%	1,77%	1,92%	1,90%
	40,92%	42,86%	42,20%	41,88%	41,54%	41,08%	40,80%	40,44%
Current liabilities								
Loans	0,52%	0,67%	0,65%	0,57%	0,60%	0,62%	0,61%	0,59%
Lease Liabilities	0,17%	0,17%	0,16%	0,16%	0,15%	0,15%	0,14%	0,14%
Payables and other current liabilities	16,70%	13,34%	14,15%	14,27%	14,41%	14,39%	14,39%	14,37%
State and other public entities	1,42%	1,48%	1,45%	1,44%	1,42%	1,41%	1,40%	1,39%
	18,81%	15,65%	16,41%	16,44%	16,58%	16,57%	16,53%	16,49%
<b>Total liabilities</b>	<b>59,73%</b>	<b>58,51%</b>	<b>58,61%</b>	<b>58,31%</b>	<b>58,12%</b>	<b>57,65%</b>	<b>57,33%</b>	<b>56,92%</b>
<b>Total equity and liabilities</b>	<b>100,00%</b>							

Source: Author Estimates

## Appendix 7: Forecasting Assumptions – Income Statement

Income Statement									
	Unit	2020F	2021F	2022F	2023F	2024F	2025F	2026F	Description
Revenue	%								% Capacity Usage per segment
Paper									
Output	YoY	-14,00%	3,00%	2,00%	-1,10%	-1,10%	-1,10%	-1,10%	NVG's expectation's for Paper in 2020 and industry expected demand growth as an average from the last 3Y geographic production
	European Demand				-1,48%	-1,48%	-1,48%	-1,48%	FAO Data base production 3Y AV. Growth
	Worldwide demand				-0,72%	-0,72%	-0,72%	-0,72%	FAO Data base production 3Y AV. Growth
Sales	%	100,00%	99,61%	99,53%	99,62%	99,84%	99,72%	99,66%	"Stock levels control" NVG Q3 disclosure - AV. Sales per output from the last 5Y applied to the yearly output
Pulp									
Output	YoY	-7,75%	3,00%	2,00%	1,28%	1,28%	1,28%	1,28%	NVG's expectation's for Pulp and industry expected demand growth as na average from the last 3y geographic production
	European Demand				0,99%	0,99%	0,99%	0,99%	FAO Data base production 3Y AV. Growth
	Worldwide demand				1,56%	1,56%	1,56%	1,56%	FAO Data base production 3Y AV. Growth
Sales	%	29,70%	29,94%	30,18%	30,42%	30,66%	30,91%	31,15%	Q3 NVG disclosure of % sold with increasing expectations due to increasing volume (0,8%YoY) according to CEPI
Tissue									
Sales	YoY	8,00%	8,00%	7,0%	7,00%	4,50%	4,50%	4,50%	Market expected Growth by NVG until full capacity, then industry expected CAGR according to PG Paper Company Ltd estimates
Energy									
Output	%	-2,00%	4,67%	3,67%	2,39%	1,56%	1,56%	1,56%	Av. from other segments expectation due to high correlation with operations
Sales	%	79,64%	78,46%	78,62%	78,32%	77,89%	78,59%	78,37%	Av. % sold from output in the last 5Y
Other operating income	%	2,23%	2,36%	2,30%	2,40%	2,32%	2,32%	2,34%	Av. % in sales from last 5Y
Change in the fair value of biological assets	YoY								Depending on logging, forestry growth and wood price
COGS & Change in production	€	573 349 627,25 €	596 693 884,31 €	616 286 548,86 €	624 878 464,04 €	630 177 208,19 €	635 492 969,10 €	641 330 329,98 €	See Appendix 7.1 for further understanding
External Services and Supplies	€	-423 104 932 €	-423 425 394 €	-427 211 542 €	-431 104 836 €	-434 340 893 €	-427 837 519 €	-428 784 037 €	Measure fixed costs 5Y AV.
Payroll costs	€	-138 877 687 €	-141 806 114 €	-132 964 148 €	-133 584 622 €	-135 442 474 €	-135 542 948 €	-136 076 507 €	Remunerations + Social charges and other payroll costs (see appendix 7.2 for further information)
Other costs and losses & Provisions	%	2,82%	2,82%	2,67%	2,77%	2,75%	2,73%	2,75%	Av. % in sales from the last 2Y
Depreciation, amortization and impairment losses	%								Considering historical % D&A in Assets
Financial Income	€	2 133 278,99 €	3 274 148,74 €	2 131 661,19 €	3 951 867,45 €	2 040 936,91 €	3 415 869,51 €	2 125 821,17 €	See appendix 7.3 for further understanding
Financial Expenses	€	-16 440 276,61 €	-18 915 343,58 €	-19 916 056,51 €	-19 353 057,78 €	-20 615 960,68 €	-19 243 487,00 €	-20 431 588,67 €	See appendix 7.3 for further understanding
Income tax	%	-21%	-21%	-21%	-21%	-21%	-21%	-21%	Av. % from the last 2Y
Non-controlling interests	€	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	Assumed to be null because they are not relevant

Source: Author Estimates

## Appendix 7.1: GOGS Estimation

	Unit	2020F	2021F	2022F	2023F	2024F	2025F	2026F	Description
COGS & Change in production	€	573 349 627,25 €	596 693 884,31 €	616 286 548,86 €	624 878 464,04 €	630 177 208,19 €	635 492 969,10 €	641 330 329,98 €	See Appendix 7.1 for further understanding
Wood/Biomass (external acquisitions)	€	226 156 157,30 €	235 741 167,45 €	244 072 267,82 €	247 042 488,37 €	249 197 682,99 €	251 225 948,77 €	253 420 151,80 €	Depending on Sales YoY change
Natural Gas and Other Fuels	YoY	-17,8%	4,2%	3,5%	1,2%	0,9%	0,8%	0,9%	Av. % in sales from last 4Y
	% of sales	4,3%	4,2%	4,2%	4,3%	4,2%	4,2%	4,2%	Av. from the last 4Y
Chemicals	€	123 617 735,02 €	128 856 934,60 €	133 410 742,78 €	135 034 275,57 €	136 212 312,38 €	137 320 969,44 €	138 520 328,38 €	2Y Av. % in sales considering cost reduction programme and NVG Q3 disclosure
	% of sales	8,9%	8,9%	8,9%	8,9%	8,9%	8,9%	8,9%	
BEKP Pulp	€	15 286 613,96 €	15 745 212,38 €	16 060 116,62 €	16 265 095,66 €	16 472 690,89 €	16 682 935,70 €	16 895 863,92 €	NVG disclosure Q3
	BSKP average price	\$ 680,00	\$ 680,00	\$ 680,00	\$ 680,00	\$ 680,00	\$ 680,00	\$ 680,00	Av. rate in 2020
	EUR/USD	1,09	1,09	1,09	1,09	1,09	1,09	1,09	Efficiency* Yearly Pulp Output
	Quantity	20624	21243	21668	21944	22224	22508	22795	Av. % in pulp output from the last 3Y
	Pulp (purchased/output)	%	1,57%	1,57%	1,57%	1,57%	1,57%	1,57%	
Pine Pulp	€	43 238 107,89 €	45 197 839,29 €	45 763 876,11 €	46 519 087,65 €	47 026 171,45 €	47 670 255,58 €	48 256 463,18 €	Industry Experts Expected price (Norexco)
	NBSK average price	\$ 955,00	\$ 969,21	\$ 962,10	\$ 965,66	\$ 963,88	\$ 964,77	\$ 964,32	Av. rate in 2020
	EUR/USD	1,09	1,09	1,09	1,09	1,09	1,09	1,09	Efficiency* Yearly Pulp Output
	Quantity	41537	42783	43639	44196	44760	45331	45910	Av. % in pulp output from the last 3Y
	Pulp (purchased/output)	%	3,16%	3,16%	3,16%	3,16%	3,16%	3,16%	
Other COGS & Changes in Production	€	105 813 341,54 €	110 297 950,60 €	114 195 883,69 €	115 585 582,59 €	116 593 949,31 €	117 542 928,91 €	118 569 546,79 €	
	% of sales	7,63%	7,63%	7,63%	7,63%	7,63%	7,63%	7,63%	Av. % in sales from last 3 years

Source: Author Estimates

## Appendix 7.2: Payroll Costs Estimation

	Unit	2020F	2021F	2022F	2023F	2024F	2025F	2026F	Description
<b>Payroll costs</b>	€	<b>-138 877 687 €</b>	<b>-141 806 114 €</b>	<b>-132 964 148 €</b>	<b>-133 584 622 €</b>	<b>-135 442 474 €</b>	<b>-135 542 948 €</b>	<b>-136 076 507 €</b>	<b>Remunerations + Social charges and other payroll costs (see appendix 7.2 for further information)</b>
<b>Remunerations</b>	€	<b>-100 941 281,53 €</b>	<b>-103 589 979,96 €</b>	<b>-97 505 929,20 €</b>	<b>-98 202 845,20 €</b>	<b>-98 621 388,71 €</b>	<b>-99 032 040,44 €</b>	<b>-99 545 845,37 €</b>	% in sales considering layoff measures
Statutory bodies - fixed	€	-2 135 367,47 €	-1 930 172,89 €	-1 732 909,15 €	-1 520 987,31 €	-1 330 437,61 €	-1 163 085,35 €	-1 017 383,79 €	% in sales from 2019 considering average % decrease from the last 4 years
% sales	%	-0,15%	-0,13%	-0,12%	-0,10%	-0,09%	-0,08%	-0,07%	% in sales from 2019 considering the average % YoY change 4Y Av.
YoY change in % of sales	%	-13,28%	-13,28%	-13,28%	-13,28%	-13,28%	-13,28%	-13,28%	Considered to be null in 2020 (economical environment). After, % in sales considering Av. % decrease from the last 3 years
Statutory bodies - variable	€	0,00 €	-2 853 893,00 €	-2 674 610,34 €	-2 450 493,54 €	-2 237 513,87 €	-2 041 860,45 €	-1 864 414,77 €	% in sales from 2019 considering the average % YoY change 4Y Av.
% sales	%	0,00%	-0,20%	-0,18%	-0,16%	-0,15%	-0,13%	-0,12%	% in sales from 2019 considering the average % YoY change 4Y Av.
YoY change in % of sales	%	-9,48%	-9,48%	-9,48%	-9,48%	-9,48%	-9,48%	-9,48%	Only after 2022
Other remunerations	€	-98 805 914,07 €	-98 805 914,07 €	-93 098 409,70 €	-94 231 364,35 €	-95 053 437,23 €	-95 827 094,63 €	-96 664 046,80 €	Considering 13% layoff in 2020 and 6.5% in 2021
% sales	%			-6,22%	-6,22%	-6,22%	-6,22%	-6,22%	Only 6 months in 2020 and full 2021
% layoff	%	13,00%	6,50%	0,00%	0,00%	0,00%	0,00%	0,00%	% paid remuneration in layoff by the company
% yearly layoff	%	50,00%	100,00%	0,00%	0,00%	0,00%	0,00%	100,00%	Other remuneration 2019 * % layoff * % yearly layoff
% remuneration layoff	%	66,67%	66,67%	66,67%	66,67%	66,67%	66,67%	66,67%	Other remuneration 2019 * % layoff * % yearly layoff * % remuneration in layoff
Other remunerations layoff before 1st june	€	-6 564 617,80 €	-4 376 411,87 €						Other remuneration non layoff
Other remunerations layoff after 1st june	€	-4 376 411,87 €							
Other remunerations non layoff	€	-87 864 884,40 €	-94 429 502,20 €	-93 098 409,70 €	-94 231 364,35 €	-95 053 437,23 €	-95 827 094,63 €	-96 664 046,80 €	
<b>Social charges and other payroll costs</b>	€	<b>-37 936 405,26 €</b>	<b>-38 216 134,22 €</b>	<b>-35 458 218,37 €</b>	<b>-35 381 776,92 €</b>	<b>-36 821 085,60 €</b>	<b>-36 510 907,16 €</b>	<b>-36 530 661,19 €</b>	
Post-employment Benefits	€	-3 073 015,63 €	-3 133 664,25 €	-3 071 207,00 €	-3 017 835,30 €	-3 040 133,30 €	-3 071 795,03 €	-3 071 823,25 €	Av. % in remunerations from the last 3 years
% remunerations	%	3,04%	3,03%	3,15%	3,07%	3,08%	3,10%	3,09%	
Contributions to social security	€	-19 287 991,61 €	-19 977 894,71 €	-18 835 465,92 €	-19 132 785,20 €	-19 529 730,09 €	-19 211 539,63 €	-19 369 187,17 €	Av. % in remunerations from the last 5 years
% remunerations	%	19,11%	19,29%	19,32%	19,48%	19,80%	19,40%	19,46%	
Other payroll costs	€	-15 575 398,01 €	-15 104 575,26 €	-13 551 545,45 €	-13 231 156,42 €	-14 251 222,21 €	-14 227 572,50 €	-14 089 650,77 €	Av. % in remunerations from the last 5 years
% remunerations	%	15,43%	14,58%	13,90%	13,47%	14,45%	14,37%	14,15%	

Source: Author Estimate and Company Disclosures

## Appendix 7.3: Financial Income and Expenses Estimation

	Unit	2020F	2021F	2022F	2023F	2024F	2025F	2026F	Description
<b>Financial Income</b>	€	<b>2 133 278,99 €</b>	<b>3 274 148,74 €</b>	<b>2 131 661,19 €</b>	<b>3 951 867,45 €</b>	<b>2 040 936,91 €</b>	<b>3 415 869,51 €</b>	<b>2 125 821,17 €</b>	<b>See appendix 7.3 for further understanding</b>
Interest earned on financial investments	€	2 133 278,99 €	1 729 314,48 €	2 131 661,19 €	2 100 038,08 €	2 040 936,91 €	2 129 096,16 €	2 125 821,17 €	Av. % in sales from last 3 year
% sales	%	0,15%	0,12%	0,14%	0,14%	0,13%	0,14%	0,14%	
Gains on financial instruments - trading	€	0,00 €	1 544 834,26 €	0,00 €	1 851 829,37 €	0,00 €	1 286 773,35 €	0,00 €	Average % in Sales and External Costs from the last 5 years (NVG disclosure)
% in External Supplies and Services and Revenue	%	0,00%	0,08%	0,00%	0,10%	0,00%	0,07%	0,00%	Average from the last 5 years considering year in, year out
<b>Financial Expenses</b>	€	<b>-16 440 276,61 €</b>	<b>-18 915 343,58 €</b>	<b>-19 916 056,51 €</b>	<b>-19 353 057,78 €</b>	<b>-20 615 960,68 €</b>	<b>-19 243 487,00 €</b>	<b>-20 431 588,67 €</b>	<b>See appendix 7.3 for further understanding</b>
Interest paid on borrowings	€	-12 000 062,19 €	-10 701 138,82 €	-10 582 521,24 €	-10 993 731,41 €	-11 107 659,65 €	-10 864 294,54 €	-10 903 424,93 €	Av. % in Loans from last 4 year
% loans	%	-1,37%	-1,22%	-1,21%	-1,25%	-1,26%	-1,24%	-1,24%	
Interest Paid on lease liabilities	€	-1 662 453,24 €	-1 612 160,85 €	-1 572 608,00 €	-1 540 238,89 €	-1 513 286,52 €	-1 491 381,03 €	-1 474 075,30 €	Same % in lease liabilities from 2019
% total current and non current leases	%	-3,78%	-3,78%	-3,78%	-3,78%	-3,78%	-3,78%	-3,78%	
Losses on financial instruments - trading	€	0,00 €	0,00 €	-1 044 484,21 €	0,00 €	-1 139 769,18 €	0,00 €	-1 114 021,82 €	Assumed to be 0 in 2020 due to risk measures; After, Av. % in Sales and External Costs from the last 5 years (NVG disclosure)
% in External Supplies and Services and Revenue	%	-0,06%	0,00%	-0,05%	0,00%	-0,06%	0,00%	-0,06%	Av. from the last 5Y considering year in, year out
Losses on financial instruments - exchange rate hedging	€	0,00 €	-1 908 059,63 €	-1 905 956,46 €	-1 910 134,60 €	-1 913 509,20 €	-1 912 638,02 €	-1 913 473,51 €	Assumed to be 0 in 2020 due to risk measures; After, Av. % in Loans from the last 2Y due to correlation with interest rate hedging
% of Loans	%	-0,2%	-0,2%	-0,2%	-0,2%	-0,2%	-0,2%	-0,2%	
Losses on financial instruments - interest rate hedging	€	0,00 €	-1 798 495,28 €	-1 812 670,93 €	-1 874 655,51 €	-1 880 967,58 €	-1 889 492,71 €	-1 913 962,13 €	Assumed to be 0 in 2020 due to risk measures; After, Av. % in sales rom last 3Y
% sales	%	-0,13%	-0,12%	-0,12%	-0,12%	-0,12%	-0,12%	-0,12%	Av. from the last 3Y
Guarantees and bank charges	€	-2 777 761,18 €	-2 895 489,00 €	-2 997 815,67 €	-3 034 297,38 €	-3 060 768,54 €	-3 085 680,70 €	-3 112 630,98 €	Av. % in sales rom last 3 years
% sales	%	-0,20%	-0,20%	-0,20%	-0,20%	-0,20%	-0,20%	-0,20%	

Source: Author Estimates

## Appendix 8: Forecasting Assumptions – Set. Financial Position

Consolidated Statement of Financial Position - Assumptions									
	Unit	2020F	2021F	2022F	2023F	2024F	2025F	2026F	Description
<b>ASSETS</b>									
<b>Non-Current Assets</b>									
Goodwill	YoY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant
Other intangible assets	€	4 506 045,00 €	4 505 401,00 €	4 504 757,00 €	4 504 113,00 €	4 503 469,00 €	4 502 825,00 €	4 502 181,00 €	Not expected any CAPEX, IA decreasing considering amortization expenses
AMORT	€	-644,00 €	-644,00 €	-644,00 €	-644,00 €	-644,00 €	-644,00 €	-644,00 €	Same yearly amortization € amount
Plant, property and equipment	€	1 177 005 959,73 €	1 145 673 435,60 €	1 120 925 601,14 €	1 100 653 558,00 €	1 084 130 503,71 €	1 070 735 547,45 €	1 060 316 462,17 €	$PP\&E_{t-1} + CAPEX_t - D\&A_t$
Capex	€	67 539 893,72 €	103 470 392,67 €	107 643 878,47 €	109 925 883,95 €	111 427 170,22 €	113 102 372,01 €	114 858 393,23 €	See appendix 14 for further understanding
DEP	€	-140 185 532,99 €	-134 802 916,80 €	-132 391 712,93 €	-130 197 927,09 €	-127 950 224,51 €	-126 497 328,28 €	-125 277 478,51 €	$(PP\&E_{t-1} + CAPEX_t) * \% Dep$
Right of use assets	€	42 757 746,70 €	41 464 243,11 €	40 446 956,87 €	39 614 434,04 €	38 921 228,15 €	38 357 826,24 €	37 912 728,41 €	$ROUA_{t-1} + CAPEX_t - D\&A_t$
Capex	€	2 460 106,28 €	3 768 856,43 €	3 920 873,53 €	4 003 994,42 €	4 058 678,01 €	4 119 696,38 €	4 183 658,56 €	See appendix 14 for further understanding
DEP	€	-5 220 283,58 €	-5 062 360,02 €	-4 938 159,78 €	-4 836 517,25 €	-4 751 883,90 €	-4 683 098,29 €	-4 628 756,40 €	$(ROUA_{t-1} + CAPEX_t) * \% Dep$
Investment properties	YoY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant
Biological assets	€								See Appendix 11 for further understanding
Non-Current Receivables	%	20,34%	22,05%	21,20%	21,62%	21,41%	21,52%	21,46%	Av. % in receivables from the last 2 years
Available-for-sale financial assets	€	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	Assumed to be constant
Deferred tax assets	YoY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant
<b>Current Assets</b>									
Inventories	€	195 050 193,06 €	195 716 864,76 €	200 001 299,20 €	201 445 079,35 €	203 684 481,67 €	203 248 827,84 €	204 687 985,54 €	$\frac{Avg. inventory days from the last 2 Years}{365} * COGS$
	days	60,62	59,40	60,01	59,70	59,86	59,78	59,82	Av. from the last 2 years
Receivable and other current assets	€	203 370 841,52 €	211 990 158,38 €	219 481 897,34 €	222 152 867,08 €	224 090 925,05 €	225 914 842,31 €	227 887 978,58 €	$\frac{Receivable days}{365} * Revenue$
	days	53,50	53,50	53,50	53,50	53,50	53,50	53,50	Sames as the 2019
Income Tax	YoY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant
<b>EQUITY</b>									
<b>Capital and Reserves</b>									
Share capital	YoY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant
Treasury shares	YoY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant
Fair value reserves	YoY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant
Legal Reserves	YoY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant
Other reserves	YoY	12 768 202 €	10 366 712 €	9 990 624 €	10 135 004 €	11 123 173 €	11 837 222 €	12 864 682 €	Differences changes in fair value BA
Currency translation reserves	YoY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant
Retained earnings	€	274 294 573,00 €	251 249 124,35 €	227 891 643,28 €	227 001 382,47 €	232 386 074,73 €	225 181 204,82 €	228 448 256,64 €	$RE_{t-1} + NP_{t-1} - Dividends_t$
Net profit for the period	€								From income statement computation
Non-controlling interests	YOY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant
<b>LIABILITIES</b>									
<b>Non-current liabilities</b>									
Deferred taxes liabilities	YoY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant
Pension liabilities	%	-4,20%	-4,13%	-4,34%	-4,30%	-4,24%	-4,25%	-4,28%	Av. % from payroll costs from the last 4 years
Provisions	YoY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant
Loans	€								See Appendix 15 for further understanding
Lease Liabilities	%	93,26%	93,26%	93,26%	93,26%	93,26%	93,26%	93,26%	% in ROUA for the period
Non-current payables	%	13,88%	13,24%	13,28%	13,97%	12,32%	13,34%	13,23%	Av. % in current payables from the last 5 years
<b>Current liabilities</b>									
Loans	€								See Appendix 15 for further understanding
Lease Liabilities	%	9,66%	9,66%	9,66%	9,66%	9,66%	9,66%	9,66%	% in ROUA for the period
Payables and other current liabilities	€	327 047 068,18 €	353 045 996,68 €	359 239 209,46 €	366 790 901,09 €	368 386 930,48 €	372 193 750,68 €	375 036 728,27 €	$\frac{Avg. payable days from the last 2 Years}{365} * Revenue$
	days	86,04	89,10	87,57	88,34	87,95	88,14	88,05	Av. from the last 2 years
State and other public entities	YoY	0%	0%	0%	0%	0%	0%	0%	Assumed to be constant

Source: Author Estimates

## Appendix 9: Revenue Estimation – Segmentation/Facility Location

		Revenue Estimation (output) - Segmentation/Facility Location							
	Unit	2020F	2021F	2022F	2023F	2024F	2025F	2026F	Description
<b>Paper</b>									
	Production Capacity	1600							
Figueira da Foz	tAD	604	596	579	540	501	459	431	
Setúbal	tAD	635	626	606	563	520	481	451	
Total Paper Output	tAD	1239	1276	1302	1288	1273	1259	1246	Expected decrease in output (NVG Disclosure) and industry expectations
	% used capacity	77,45%	79,78%	81,37%	90,06%	90,36%	90,66%	90,96%	
Total Paper Sales	tAD	1239	1271	1296	1283	1271	1256	1241	Average Sales per output from the last 5 years applied to the yearly output
	Average selling price/tAD	€ 6821	€ 829	€ 837	€ 846	€ 854	€ 863	€ 871	NVG Q3 disclosure average decrease for 2020; slightly recovering after
<b>Pulp</b>									
	Production Capacity	1600							
Aveiro	tAD	308	317	323	328	332	336	340	
Figueira da Foz	tAD	529	535	536	532	531	527	533	
Setúbal	tAD	479	480	478	471	468	470	474	
Total Pulp Output	tAD	1315	1355	1382	1400	1418	1436	1454	Expected decrease in output (NVG Disclosure)
	% used capacity	82,22%	84,68%	86,38%	87,48%	88,60%	89,73%	90,87%	
Total Pulp Sales	tAD	391	406	417	426	435	444	453	Maintaining % sold from output from 2019
	Average selling price/tAD	€ 6466	€ 468	€ 470	€ 473	€ 475	€ 478	€ 480	20% drop in 2020 (NVG Q3 DISCLOSURE)
<b>Tissue</b>									
Total Capacity - Reels	tAD	130							
Reels output	tAD	110	119	127	130	130	130	130	
	% used capacity Reels	84,74%	91,52%	97,92%	100,00%	100,00%	100,00%	100,00%	
Finished product output	tAD	79	86	94	102	108	114	120	
Total Capacity - Finished Product	tAD	120							
	% used capacity Finished Product	65,70%	71,94%	78,06%	84,69%	89,77%	95,16%	100,00%	
Total tissue output	tAD	189	205	221	232	238	250	250	Expected increase in output (NVG Disclosure)
Total tissue sales	tAD	104	112	120	128	134	140	146	Average % sold from output
	Average selling price/tAD	€ 1360	€ 1371	€ 1381	€ 1387	€ 1375	€ 1375	€ 1378	Average from the last 5 years
<b>Energy</b>									
Output (Gwh)	GWh	2147	2247	2330	2386	2423	2460	2499	Average from other segments expectation due to high correlation with operations
Sales (electricity)	GWh	1710	1763	1832	1868	1887	1934	1958	
	Average selling price/Gwh	€ 28	€ 28	€ 28	€ 28	€ 28	€ 28	€ 28	Maintaining price from 2019

Source: Author Estimates

## Appendix 10: Revenue Estimation - € / Segment

		Revenue/Segment							
	Unit	2020F	2021F	2022F	2023F	2024F	2025F	2026F	
UWF Paper	€	1 017 283 242,22	1 054 134 545,29	1 085 115 329,16	1 084 921 835,77	1 086 002 124,45	1 083 518 805,91	1 081 691 468,89	
	YoY change	-22,92%	3,62%	2,94%	-0,02%	0,10%	-0,23%	-0,17%	
Pulp	€	181 969 824,17	189 872 992,00	196 195 914,53	201 291 057,11	206 518 518,84	211 881 736,01	217 384 234,15	
	YoY change	-0,46%	4,34%	3,33%	2,60%	2,60%	2,60%	2,60%	
Tissue	€	140 962 372,08	153 541 522,72	165 455 847,62	177 768 134,46	184 159 866,15	192 441 879,17	201 541 328,88	
	YoY change	6,80%	8,92%	7,76%	7,44%	3,60%	4,50%	4,73%	
Energy	€	47 211 821,70	48 680 509,72	50 572 277,53	51 580 109,17	52 102 357,58	53 383 490,88	54 069 920,15	
	YoY change	-11,38%	3,11%	3,89%	1,99%	1,01%	2,46%	1,29%	
<b>Total Sales</b>	€	<b>1 387 427 260,16</b>	<b>1 446 229 569,73</b>	<b>1 497 339 368,84</b>	<b>1 515 561 136,51</b>	<b>1 528 782 867,01</b>	<b>1 541 225 911,96</b>	<b>1 554 686 952,07</b>	
	YoY change	-17,80%	4,24%	3,53%	1,22%	0,87%	0,81%	0,87%	

Source: Author Estimates

## Appendix 11: Biological Assets Forecast - Breakdown

		Biological Assets							
	Unit	2020F	2021F	2022F	2023F	2024F	2025F	2026F	Description
Initial Balance	€	131 769 840,00	144 538 041,91	154 904 754,03	164 895 377,86	175 030 381,95	186 153 555,45	197 990 777,27	
Logging in the period	€	-19 967 775,37	-20 814 054,91	-21 549 624,27	-21 811 870,93	-22 002 157,34	-22 181 236,94	-22 374 967,48	
	% of revenue	-1,44%	-1,44%	-1,44%	-1,44%	-1,44%	-1,44%	-1,44%	Same % in revenues from 2019
Growth	€	14 183 168,14	14 767 438,74	15 973 236,00	16 784 341,44	18 146 719,14	19 115 725,62	20 356 906,99	
	% of initial balance	10,76%	10,22%	10,31%	10,18%	10,37%	10,27%	10,28%	Av. % in BA Initial Balance from the last 4Y
New planted areas and rep	€	3 344 593,74	3 486 345,20	3 609 552,75	3 653 478,95	3 685 351,84	3 715 347,59	3 747 797,38	
	% of revenue	0,24%	0,24%	0,24%	0,24%	0,24%	0,24%	0,24%	Av. % in revenues from the last 5Y
Other changes in fair value	€	15 208 215,40	12 926 983,09	11 957 459,36	11 509 054,63	11 293 259,86	11 187 385,55	11 134 944,68	
	YoY	-30,00%	-15,00%	-7,50%	-3,75%	-1,88%	-0,94%	-0,47%	Wood Price Forecasted Variation
Total changes	€	12 768 201,91	10 366 712,12	9 990 623,84	10 135 004,09	11 123 173,50	11 837 221,82	12 864 681,57	
Closing Balance	€	144 538 041,91	154 904 754,03	164 895 377,86	175 030 381,95	186 153 555,45	197 990 777,27	210 855 458,83	

Source: Author Estimates

## Appendix 12: Depreciation & Amortization Forecast - Breakdown

		Depreciation, Amortization and Impairment Losses							
		2020F	2021F	2022F	2023F	2024F	2025F	2026F	Description
PP&E	€	1 177 005 959,73	1 145 673 435,60	1 120 925 601,14	1 100 653 558,00	1 084 130 503,71	1 070 735 547,45	1 060 316 462,17	
% D&A	%	10,64%	10,53%	10,56%	10,58%	10,56%	10,57%	10,57%	Av. from the last 3Y
Depreciation of property, plant and equipment	€	-140 185 532,99	-134 802 916,80	-132 391 712,93	-130 197 927,09	-127 950 224,51	-126 497 328,28	-125 277 478,51	
Amortisation of intangible assets for the period	€	-644,00	-644,00	-644,00	-644,00	-644,00	-644,00	-644,00	Same Value as 2019 since there is no CAPEX
ROUA	€	42 757 746,70	41 464 243,11	40 446 956,87	39 614 434,04	38 921 228,15	38 357 826,24	37 912 728,41	
% D&A	%	10,88%	10,88%	10,88%	10,88%	10,88%	10,88%	10,88%	Same % depreciation from last year
Depreciation of assets under right of use for the period	€	-5 220 283,58	-5 062 360,02	-4 938 159,78	-4 836 517,25	-4 751 883,90	-4 683 098,29	-4 628 756,40	
Impairment losses	€	0,00	0,00	0,00	0,00	0,00	0,00	0,00	Assumed to be null since it's not relevant
<b>Total</b>	€	<b>-145 406 460,57</b>	<b>-139 865 920,82</b>	<b>-137 330 516,70</b>	<b>-135 035 088,34</b>	<b>-132 702 752,41</b>	<b>-131 181 070,57</b>	<b>-129 906 877,91</b>	

Source: Author Estimates

## Appendix 13: Net Working Capital Forecast - Breakdown

Net Working Capital							
	2020F	2021F	2022F	2023F	2024F	2025F	2026F
Inventories	195 050 193,06 €	195 716 864,76 €	200 001 299,20 €	201 445 079,35 €	203 684 481,67 €	203 248 827,84 €	204 687 985,54 €
Receivable and other current assets	203 370 841,52 €	211 990 158,38 €	219 481 897,34 €	222 152 867,08 €	224 090 925,05 €	225 914 842,31 €	227 887 978,58 €
(+)	<b>398 421 034,58 €</b>	<b>407 707 023,15 €</b>	<b>419 483 196,54 €</b>	<b>423 597 946,43 €</b>	<b>427 775 406,72 €</b>	<b>429 163 670,14 €</b>	<b>432 575 964,12 €</b>
Payables and other current liabilities	327 047 068,18 €	353 045 996,68 €	359 239 209,46 €	366 790 901,09 €	368 386 930,48 €	372 193 750,68 €	375 036 728,27 €
(-)	<b>327 047 068,18 €</b>	<b>353 045 996,68 €</b>	<b>359 239 209,46 €</b>	<b>366 790 901,09 €</b>	<b>368 386 930,48 €</b>	<b>372 193 750,68 €</b>	<b>375 036 728,27 €</b>
<b>NWC</b>	<b>71 373 966,40 €</b>	<b>54 661 026,47 €</b>	<b>60 243 987,08 €</b>	<b>56 807 045,34 €</b>	<b>59 388 476,25 €</b>	<b>56 969 919,46 €</b>	<b>57 539 235,85 €</b>
<b>ChangesNWC</b>	<b>32 283 055,40 €</b>	<b>-16 712 939,94 €</b>	<b>5 582 960,61 €</b>	<b>-3 436 941,73 €</b>	<b>2 581 430,90 €</b>	<b>-2 418 556,79 €</b>	<b>569 316,39 €</b>

Source: Author Estimates

## Appendix 14: Capital Expenditures Forecast - Breakdown

CAPEX ESTIMATION								Description
Capex/Segment	2020F	2021F	2022F	2023F	2024F	2025F	2026F	
UWF Paper	37 535 891,97 €	59 854 774,36 €	61 613 893,10 €	61 602 906,36 €	61 664 246,19 €	61 523 240,97 €	61 419 483,01 €	Last 2Y Av.
% in total capex	53,62%	55,81%	55,23%	54,07%	53,40%	52,48%	51,59%	
Pulp Market	8 868 017,86 €	19 207 819,95 €	19 847 455,72 €	20 362 887,53 €	20 891 704,94 €	21 434 255,56 €	21 990 896,04 €	Last 2Y Av.
% in total capex	12,67%	17,91%	17,79%	17,87%	18,09%	18,29%	18,47%	
Tissue Paper	19 425 808,22 €	21 473 081,58 €	23 139 323,16 €	24 861 220,50 €	25 755 116,66 €	26 913 372,34 €	28 185 948,14 €	Last 2Y Av.
% in total capex	27,75%	20,02%	20,74%	21,82%	22,30%	22,96%	23,68%	
Energy	4 170 281,95 €	6 703 573,22 €	6 964 080,03 €	7 102 863,97 €	7 174 780,44 €	7 351 199,53 €	7 445 724,60 €	Last 2Y Av.
% in total capex	5,96%	6,25%	6,24%	6,23%	6,21%	6,27%	6,25%	
<b>Total</b>	<b>70 000 000,00 €</b>	<b>107 239 249,11 €</b>	<b>111 564 752,00 €</b>	<b>113 929 878,37 €</b>	<b>115 485 848,23 €</b>	<b>117 222 068,40 €</b>	<b>119 042 051,80 €</b>	
<b>YoY Growth</b>	<b>-55,68%</b>	<b>53,20%</b>	<b>4,03%</b>	<b>2,12%</b>	<b>1,37%</b>	<b>1,50%</b>	<b>1,55%</b>	
<b>Capex/Sales</b>								
UWF Paper	3,69%	5,68%	5,68%	5,68%	5,68%	5,68%	5,68%	2020 - Company disclosure; 2021 - Last 2Y Av. % in sales
Pulp Market	4,87%	10,12%	10,12%	10,12%	10,12%	10,12%	10,12%	
Tissue Paper	13,78%	13,99%	13,99%	13,99%	13,99%	13,99%	13,99%	
Energy	8,83%	13,77%	13,77%	13,77%	13,77%	13,77%	13,77%	
<b>Total</b>	<b>5,05%</b>	<b>7,42%</b>	<b>7,45%</b>	<b>7,52%</b>	<b>7,55%</b>	<b>7,61%</b>	<b>7,66%</b>	
% PP&E in depreciable assets   CAPEX PP&E	67 539 893,72 €	103 470 392,67 €	107 643 878,47 €	109 925 883,95 €	111 427 170,22 €	113 102 372,01 €	114 858 393,23 €	Constant % in both assets
% ROU in total depreciable assets   CAPEX ROUA	2 460 106,28 €	3 768 856,43 €	3 920 873,53 €	4 003 994,42 €	4 058 678,01 €	4 119 696,38 €	4 183 658,56 €	

Source: Author Estimates

## Appendix 15: Debt Management Forecast - Breakdown

Loans								Description
	2020F	2021F	2022F	2023F	2024F	2025F	2026F	
Bond Loans	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	Constant Debt Profile
Commercial Paper	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	
Bank Loans	16 369 281,16 €	16 224 870,04 €	14 284 467,29 €	15 216 476,29 €	15 999 779,26 €	15 658 192,07 €	15 486 387,07 €	Mainly short-term credit lines
% of costs	1,39%	1,35%	1,17%	1,24%	1,29%	1,26%	1,24%	
Charges with bond issuances	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	Constant null values
Refundable grants	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	
Deferrals	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	Constant null values
<b>Current</b>	<b>16 369 281,17 €</b>	<b>16 224 870,05 €</b>	<b>14 284 467,30 €</b>	<b>15 216 476,30 €</b>	<b>15 999 779,27 €</b>	<b>15 658 192,09 €</b>	<b>15 486 387,08 €</b>	
% total debt	1,87%	1,85%	1,63%	1,73%	1,82%	1,78%	1,76%	
Bond Loans	445 000 000,00 €	445 000 000,00 €	445 000 000,00 €	445 000 000,00 €	445 000 000,00 €	445 000 000,00 €	445 000 000,00 €	Constant Debt Profile
Commercial Paper	295 000 000,00 €	295 000 000,00 €	295 000 000,00 €	295 000 000,00 €	295 000 000,00 €	295 000 000,00 €	295 000 000,00 €	
Bank Loans	82 882 325,83 €	84 875 997,61 €	85 851 208,51 €	86 913 272,14 €	87 655 272,81 €	87 579 500,88 €	88 143 344,09 €	Rollover assumption
% of costs	7,06%	7,06%	7,06%	7,06%	7,06%	7,06%	7,06%	
Charges with bond issuances	-2 985 348,79 €	-2 870 812,85 €	-2 872 920,91 €	-2 945 367,13 €	-2 918 612,42 €	-2 901 928,33 €	-2 909 707,20 €	Same % in total costs as 2019
% in bond loans	-0,67%	-0,65%	-0,65%	-0,66%	-0,66%	-0,65%	-0,65%	
Refundable grants	39 331 496,00 €	39 331 496,00 €	39 331 496,00 €	39 331 496,00 €	39 331 496,00 €	39 331 496,00 €	39 331 496,00 €	Same as 2019
Deferrals	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	0,00 €	1,00 €	
<b>Non Current</b>	<b>859 228 473,04 €</b>	<b>861 336 680,77 €</b>	<b>862 309 783,60 €</b>	<b>863 299 401,00 €</b>	<b>864 068 156,39 €</b>	<b>864 009 068,56 €</b>	<b>864 565 133,89 €</b>	
% total debt	98,13%	98,15%	98,37%	98,27%	98,18%	98,22%	98,24%	
<b>Total</b>	<b>875 597 754,21 €</b>	<b>877 561 550,82 €</b>	<b>876 594 250,91 €</b>	<b>878 515 877,31 €</b>	<b>880 067 935,66 €</b>	<b>879 667 260,64 €</b>	<b>880 051 520,97 €</b>	

Source: Author Estimates

## Appendix 16: Comparable Companies Analysis

Peers Multiples 2020								
Company		Market Cap. (B)	2019 Final Price	Price/Earnings	Price/Book	Price/Sales	EV/EBITDA	EV/SALES
Stora Enso	EUR	10,67	12,97	17,90	1,50	0,66	9,10	1,50
Mondi	EUR	8,19	21,01	14,50	2,20	1,19	8,40	1,70
Svenska Cellulosa	SEK	91,72	95,00	35,90	1,30	0,27	20,80	5,70
Metsa Board Oyj	EUR	2,18	2,28	14,50	2,22	0,93	8,60	1,50
<b>Mean (4)</b>				20,70	1,81	0,76	11,73	2,60
<b>Median (4)</b>				16,20	1,85	0,80	8,85	1,60
International Paper	USD	18,06	46,05	15,00	2,34	0,81	9,86	1,35
UPM	EUR	14,06	30,91	17,90	1,50	1,61	9,70	1,70
Altri	EUR	1,17	5,68	10,18	7,71	1,55	8,97	2,00
ENCE	EUR	0,90	3,67	125,60	1,40	1,23	8,10	1,40
<b>Mean (8)</b>				22,45	2,49	1,03	10,61	1,96
<b>Median (8)</b>				14,99	1,92	1,06	8,70	1,51
<b>Navigator</b>	EUR	2,55	2,32	14,20	1,40	0,98	7,27	1,43

Source: Author Estimates

## Appendix 17: Multiples Valuation

2021 VALUATION					
Full comparison (8)					
	Price/Earnings	Price/Book	Price/Sales	EV/EBITDA	EV/SALES
Peers Mean	22,4	2,5	1,0	10,6	2,0
Navigator	14,2	1,4	0,98	7,3	1,4
Target Price (2021)_8	€3,32	€3,61	€2,10	€4,29	€3,98
		€3,01		€4,14	
TP			€3,57		
Direct Comparables (4)					
	Price/Earnings	Price/Book	Price/Sales	EV/EBITDA	EV/SALES
Peers Mean	16,2	1,8	1,0	8,7	2,0
Navigator	14,2	1,4	1,0	7,3	1,4
Target Price	€2,39	€2,62	€2,10	€3,52	€3,98
		€2,37		€3,75	
TP (2021)			€3,06		

Source: Author Estimates

## Appendix 18: WACC Computation

WACC COMPUTATION									
	2020F	2021F	2022F	2023F	2024F	2025F	2026F	Terminal	Description
Risk Free Rate (Rf)	0,831%	0,831%	0,831%	0,831%	0,831%	0,831%	0,831%	0,831%	10YAv. German Bond Yield
Country Risk Premium (CRP)	2,293%	2,293%	2,293%	2,293%	2,293%	2,293%	2,293%	2,293%	Damodaran's info adjusted for revenue destination (appendix 18.1)
Market Risk Premium (MRP)	5,34%	5,34%	5,34%	5,34%	5,34%	5,34%	5,34%	5,34%	
Beta (B)	1,13	1,13	1,13	1,13	1,13	1,13	1,13	1,13	Av. between Pure-play method from peers and regression with PSI-20
<b>Cost of Equity</b>	9,49%	9,49%	9,49%	9,49%	9,49%	9,49%	9,49%	9,49%	$r_i = RFR + \beta_i^{mkt}(MRP + CRP)$
Cost of debt	1,62%	2,73%	2,73%	2,73%	2,73%	2,73%	2,73%	2,73%	NVG Q3 disclosure for 2020 and forward expected increase
Marginal tax rate	27,50%	27,50%	27,50%	27,50%	27,50%	27,50%	27,50%	27,50%	
<b>After tax cost of debt</b>	1,17%	1,98%	1,98%	1,98%	1,98%	1,98%	1,98%	1,98%	
Equity (M€)	1017	1033	1049	1066	1084	1104	1125	1125	
Debt (M€)	876	878	877	879	880	880	880	880	
V	1893	1910	1926	1945	1964	1983	2005	2005	
<b>WACC</b>	<b>5,64%</b>	<b>6,04%</b>	<b>6,07%</b>	<b>6,10%</b>	<b>6,13%</b>	<b>6,16%</b>	<b>6,19%</b>	<b>6,19%</b>	

## Appendix 18.1: ERP and CRP Estimation

ERP and CRP Estimation					
	%sales (2019)	ERP (Country)	ERP	CRP (Country)	CRP
Portugal	19,42%	8,46%	1,64%	3,23%	0,63%
Spain		7,58%		2,35%	
Germany		5,23%		0,00%	
France	49,80%	5,96%	3,32%	0,73%	0,72%
Italy		8,46%		3,23%	
Belgium		6,12%		0,89%	
Morocco		8,90%		3,67%	
Mozambique	11,37%	18,46%	1,53%	13,23%	0,94%
Uganda		13,32%		8,09%	
Ethiopia		13,32%		8,09%	
United States	10,79%	5,23%	0,56%	0,00%	0,00%
Australia		5,23%		0,00%	
China	8,62%	6,26%	0,57%	1,03%	0,01%
India		8,46%		3,23%	
<b>Total</b>			<b>7,64%</b>		<b>2,29%</b>

Source: Author Estimates

## Appendix 19: DCF – FCFF – WACC Method

FCFF									
Millions €	2019	2020F	2021F	2022F	2023F	2024F	2025F	2026F	Perpetuity
EBIT	234 €	111 €	148 €	188 €	195 €	201 €	217 €	225 €	
Tax rate	27,50%	27,50%	27,50%	27,50%	27,50%	27,50%	27,50%	27,50%	
D&A	139 €	145 €	140 €	137 €	135 €	133 €	131 €	130 €	
Changes in NWC	-186 €	32 €	-17 €	6 €	-3 €	3 €	-2 €	1 €	
CAPEX	158 €	70 €	107 €	112 €	114 €	115 €	117 €	119 €	
FCFF	336 €	124 €	157 €	156 €	166 €	160 €	173 €	173 €	175 €
n				1	2	3	4	5	6
WACC				6,07%	6,10%	6,13%	6,16%	6,19%	6,19%
Discounted				148 €	148 €	134 €	137 €	128 €	3 141 €

Source: Author Estimates

Enterprise Value	2021F	Description
Firm Value	694,17 €	
<b>Perpetuity</b>		
g	0,64%	PRAT Model Computation (Appendix 19.1)
TV	3 141 €	$TV/(1+WACC)^n$
PV(TV)	2 190 €	
Enterprise Value	2 884,04 €	<i>Firm Value + PV(TV)</i>
(1) Cash and cash equivalents	259,83 €	
(2) Loans	877,56 €	
(3) Provisions	19,95 €	
+(1)-(2)-(3)	-637,68 €	
Equity Value	2 246,36 €	
# shares out	711,2	
Price Target	3,16 €	
Stock Price	2,32 €	Price at 15 Sep 2020
Upside/downside Potential	36%	

Source: Author Estimates

## Appendix 19.1: Terminal Growth Rate – PRAT Model

Terminal Growth - PRAT Model									
Million €	2019	2020F	2021F	2022F	2023F	2024F	2025F	2026F	2020 - 2026
Net Income	168 €	77 €	105 €	135 €	143 €	144 €	159 €	164 €	
Dividends	200 €	100 €	100 €	128 €	136 €	137 €	152 €	156 €	
Sales	1 688 €	1 387 €	1 446 €	1 497 €	1 516 €	1 529 €	1 541 €	1 555 €	
Total Assets	2 552 €	2 452 €	2 495 €	2 517 €	2 546 €	2 561 €	2 587 €	2 611 €	
Total Equity	1 027 €	1 017 €	1 033 €	1 049 €	1 066 €	1 084 €	1 104 €	1 125 €	
Profit Margin	0,10	0,06	0,07	0,09	0,09	0,09	0,10	0,11	
Retention Rate	-0,19	-0,30	0,05	0,05	0,05	0,05	0,05	0,05	
Asset Turnover	0,66	0,57	0,58	0,59	0,60	0,60	0,60	0,60	
Financial Leverage	2,48	2,41	2,42	2,40	2,39	2,36	2,34	2,32	
g	-3,09%	-2,27%	0,49%	0,62%	0,65%	0,64%	0,70%	0,71%	0,64%

Source: Author Estimates

## Appendix 20: APV Method

APV Method									
Millions €	2019	2020F	2021F	2022F	2023F	2024F	2025F	2026F	Perpetuity
Income tax rate			27,5%						
Terminal growth rate			0,64%						
Operating profit	233,59 €	111,35 €	148,16 €	187,99 €	195,44 €	200,64 €	216,69 €	225,06 €	
Income taxes on operating profit	64,20 €	30,60 €	40,70 €	51,70 €	53,70 €	55,20 €	59,60 €	61,90 €	
NOPAT (Net Operating Profit After Taxes)	169,39 €	80,75 €	107,46 €	136,29 €	141,74 €	145,44 €	157,09 €	163,16 €	
Depreciation	138,54 €	145,41 €	139,87 €	137,33 €	135,04 €	132,70 €	131,18 €	129,91 €	
- Increase in WCR	186,18 €	32,28 €	16,71 €	5,58 €	3,44 €	2,58 €	2,42 €	0,57 €	
- CAPEX	157,95 €	70,00 €	107,24 €	111,56 €	113,93 €	115,49 €	117,22 €	119,04 €	
FCFF	336,15 €	123,87 €	156,80 €	156,47 €	166,28 €	160,07 €	173,47 €	173,45 €	174,60 €
Unlevered intrinsic EV									
Unlevered cost of capital			6,82%						
Terminal value									2 823,90 €
PV of explicit period of business cash flow			€ 681,52						
PV of terminal value			€ 1 900,98						
Unlevered intrinsic enterprise value			€ 2 582,51						
Evaluate Financing Effects									
Debt at terminal value									880,05 €
Cost of debt			1,62%						2,73%
Interest expenses			16,44 €	18,92 €	19,92 €	19,35 €	20,62 €	19,24 €	24,04 €
Interest tax shield			4,52 €	5,20 €	5,48 €	5,32 €	5,67 €	5,29 €	6,61 €
TV of tax shield			286,37 €						315,35 €
PV of explicit period			25,69 €						
PV of tax shield			312,06 €						
APV COMPUTATION									
Unlevered intrinsic company value			2 582,51 €						
PV of tax shield			312,06 €						
<b>Intrinsic enterprise value</b>			<b>2 894,57 €</b>						
+ Cash			259,83 €						
- Debt			877,56 €						
<b>Equity value</b>			<b>2 276,84 €</b>						
# shares			711,20						
Price target			3,20 €						

Source: Author Estimates

## Appendix 22: Sensitivity & Scenario Analysis

FCFF PRICE TARGET SENSITIVITY							
Change in Terminal Growth (2021F-2026F)							
	-0,9%	-0,4%	0,1%	0,6%	1,1%	1,6%	2,1%
DCF new target price	2,47 €	2,66 €	2,89 €	3,16 €	3,48 €	3,87 €	4,36 €
Change to initial target	-21,86%	-15,69%	-8,49%		10,17%	22,57%	38,02%
Upside/downside Potential	6,4%	14,8%	24,6%		50,0%	66,9%	87,9%
<b>Recommendation</b>	<b>REDUCE</b>	<b>HOLD</b>	<b>BUY</b>	<b>BUY</b>	<b>STRONG BUY</b>	<b>STRONG BUY</b>	<b>STRONG BUY</b>
Change in Beta (2021F-2026F)							
	0,68	0,83	0,98	1,13	1,28	1,43	1,58
DCF new target price	5,40 €	4,42 €	3,71 €	3,16 €	2,72 €	2,37 €	2,08 €
Change to initial target	70,81%	40,05%	17,38%		-13,74%	-24,88%	-34,07%
Upside/downside Potential	132,55%	90,67%	59,81%		17,43%	2,28%	-10,24%
<b>Recommendation</b>	<b>STRONG BUY</b>	<b>STRONG BUY</b>	<b>STRONG BUY</b>	<b>BUY</b>	<b>HOLD</b>	<b>REDUCE</b>	<b>SELL</b>
Change in Perpetuity WACC							
	4,7%	5,2%	5,7%	6,2%	6,7%	7,2%	7,7%
DCF new target price	4,67 €	4,05 €	3,56 €	3,16 €	2,83 €	2,55 €	2,31 €
Change to initial target	47,93%	28,33%	12,71%		-10,53%	-19,38%	-26,91%
Upside/downside Potential	101,40%	74,71%	53,45%		21,81%	9,76%	-0,50%
<b>Recommendation</b>	<b>STRONG BUY</b>	<b>STRONG BUY</b>	<b>STRONG BUY</b>	<b>BUY</b>	<b>BUY</b>	<b>REDUCE</b>	<b>SELL</b>
Change in tax rate (2021F-2026F)							
	21,5%	22,5%	23,5%	24,5%	25,5%	26,5%	27,5%
DCF new target price	3,41 €	3,37 €	3,33 €	3,29 €	3,24 €	3,20 €	3,16 €
Change to initial target	8,05%	6,72%	5,39%	4,05%	2,71%	1,36%	
Upside/downside Potential	47,10%	45,29%	43,48%	41,66%	39,83%	37,99%	
<b>Recommendation</b>	<b>STRONG BUY</b>	<b>STRONG BUY</b>	<b>BUY</b>	<b>BUY</b>	<b>BUY</b>	<b>BUY</b>	<b>BUY</b>

Source: Author Estimates

		Change in BEKP price						
		-7,50%	-5,00%	-2,50%	0,00%	2,50%	5,00%	7,50%
Change in Pine pulp Prices	-7,5%	3,48 €	3,45 €	3,42 €	3,40 €	3,37 €	3,34 €	3,31 €
	-5,0%	3,40 €	3,37 €	3,34 €	3,31 €	3,29 €	3,26 €	3,23 €
	-2,5%	3,32 €	3,29 €	3,26 €	3,24 €	3,21 €	3,18 €	3,15 €
	0,0%	3,24 €	3,21 €	3,19 €	3,16 €	3,13 €	3,11 €	3,08 €
	2,5%	3,16 €	3,14 €	3,11 €	3,08 €	3,06 €	3,03 €	3,01 €
	5,0%	3,09 €	3,06 €	3,03 €	3,01 €	2,98 €	2,96 €	2,93 €
	7,5%	3,01 €	2,99 €	2,96 €	2,94 €	2,91 €	2,89 €	2,86 €

Scenario Analysis			
Variable	Grey Sky	Base Case	Blue Sky
Terminal Growth Rate	0,14%	0,64%	1,14%
2021 TP	2,89 €	3,16 €	3,87 €
Recommendation	<b>BUY</b>	<b>BUY</b>	<b>STRONG BUY</b>
Beta	1,43	1,13	0,83
2021 TP	2,37 €	3,16 €	4,42 €
Recommendation	<b>REDUCE</b>	<b>BUY</b>	<b>STRONG BUY</b>
WACC	7,19%	6,19%	5,19%
2021 TP	2,55 €	3,16 €	4,05 €
Recommendation	<b>REDUCE</b>	<b>BUY</b>	<b>STRONG BUY</b>
UWF Av. selling price	812,67 €	820,88 €	829,09 €
2021 TP	2,78 €	3,16 €	3,58 €
Recommendation	<b>HOLD</b>	<b>BUY</b>	<b>STRONG BUY</b>
BSKP Av. Selling price	461,10 €	465,75 €	470,41 €
2021 TP	3,09 €	3,16 €	3,23 €
Recommendation	<b>BUY</b>	<b>BUY</b>	<b>BUY</b>

Source: Author Estimates

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### Recommendation System

Level of Risk	SELL	REDUCE	HOLD/NEUTRAL	BUY	STRONG BUY
High Risk	0%≤	>0% & ≤10%	>10% & ≤20%	>20% & ≤45%	>45%
Medium Risk	-5%≤	>-5% & ≤5%	>5% & ≤15%	>15% & ≤30%	>30%
Low Risk	-10%≤	>-10% & ≤0%	>0% & ≤10%	>10% & ≤20%	>20%