

**MASTER OF SCIENCE IN  
FINANCE**

**MASTERS FINAL WORK  
PROJECT**

EQUITY RESEARCH GALP ENERGIA SGPS SA:  
MOZAMBIQUE - GALP'S GREENER FUTURE IS  
A REAL OPTION

JORGE MANUEL SARROERIA SANTOS ALVES DE FARIA

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**SUPERVISOR:**  
VICTOR MAURÍLIO SILVA BARROS

NOVEMBER 2020

## Abstract

This project is an Equity Research of Galp Energia S.G.P.S., S.A. (GALP.LS), with a particular focus on GALP's activities and projects in Mozambique. The Equity Research was conducted following ISEG's Master in Finance framework and follows the CFA Institute guidelines. Only public information until November 12th, was considered.

GALP is a Portuguese company that operates in the Oil & Gas industry. The company is present in some of the most profitable Upstream projects in the world and is market leader in Portugal in the Downstream segment.

For the valuation of the company, we decided to apply a SoP Free Cash Flow to the Firm approach. We reached a BUY recommendation with a price target of €12.06/sh, implying a +26% upside potential from the March 9th, 2020 closing price.

Following the original research, a complementary analysis of GALP's two natural gas projects in Mozambique - Coral South FLNG and Rovuma LNG- was carried out. Although these projects were considered in our initial valuation, this complementary analysis provides a more in depth look to each of them, as well as, suggesting some adaptations to our initial valuation due to changes in market and economic conditions. Finally, a new valuation method for the Rovuma LNG project is suggested - valuing the project using a Real Options approach.

JEL classification: G10; G32; G34; G35, G38

Keywords: Equity Research; Valuation; Discounted Cash Flow; Natural Gas; Oil; Real Options

## Resumo

Este projeto é um Equity Research da Galp Energia S.G.P.S., S.A. (GALP.LS), com particular incidência nas atividades e projetos da GALP em Moçambique. O Equity Research foi realizado no âmbito do Mestrado em Finanças do ISEG e segue as orientações do CFA Institute. Apenas informação pública até à data de 12 de novembro foi considerada.

A GALP é uma empresa portuguesa que opera na indústria de Óleo e Gás. A empresa está presente em alguns dos projetos de Upstream mais rentáveis do mundo e é líder de mercado em Portugal no segmento de Downstream.

Para a avaliação da empresa, decidimos aplicar um modelo de DCF - soma das partes. Obtivemos uma recomendação de COMPRA, com um preço-alvo de € 12,06/ação, o que implica um potencial de subida de + 26% em relação ao preço de fecho a 9 de março de 2020.

Foi realizada uma análise complementar dos dois projetos de gás natural da GALP em Moçambique - Coral South FLNG e Rovuma LNG-. Embora estes projetos tenham sido considerados na nossa avaliação inicial, esta análise fornece uma visão mais aprofundada de cada um deles, sugerindo algumas adaptações à nossa avaliação inicial devido a mudanças nos mercados e, em particular, na economia moçambicana. Finalmente, sugere-se uma forma diferente de avaliar o projeto Rovuma LNG, seguindo uma abordagem de Opções Reais.

Classificação JEL: G10 ; G32; G34; G35, G38

Palavras-Chave: Equity Research; Avaliação de Empresas; DCF; Gás Natural; Petróleo; Opções Reais

## Acknowledgements

To my parents and brother. Thank you for always being there and believing in me, even when I did not. You made all of this possible, and I can never thank you enough.

To my aunt and uncle. You welcomed me in your house when I first arrived in Lisbon and always cared for me like a son of your own. I will always be in debt to you.

To my amazing CFA team: César, Ticha, Arthur and Margarida. I could have never asked for a better team. You are all so talented and hardworking. It was a privilege living this adventure with you.

To my dear friends from ISEG and Entroncamento, and to “The Sweets”. You make life worth living. Thank you for all the moments we have spent together. I cannot wait to celebrate you once the pandemic is over.

To prof. Victor Barros, a mentor in the real sense of the word. Without your support we could never have achieved what we did. Thank you for all the advice and availability. Any student is lucky to have a professor like you. Also, thank you for the Swiss chocolate – undoubtedly one of the best forms of motivation.

To prof. Clara Raposo and prof. Tiago Gonçalves. We felt your support throughout the entire project. Thank you for all the kind words and motivation.

Finally, I also want to thank GALP. It was a pleasure valuing your company.

# Disclosures

A significant portion of this report was submitted by a group of students from ISEG, including the candidate, for the 2020 CFA Institute Research Challenge Portuguese Local Final. Upon winning the local final, the same report advanced as the representative report for CFA Society Portugal in the 2020 EMEA Regional Final, which this year happened online due to the pandemic.

This report is published for educational purposes by Master students at ISEG and is not an investment recommendation. This report must be read with the Disclosures and Disclaimer at the end of this report. Appendices that support this report may be obtained from the author upon request.

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**Date:** January 2<sup>nd</sup>, 2020  
**Ticker:** GALP.LS (Reuters)

**Current Price:** EUR 14.98  
 EUR 1.000: USD 1.121

**Recommendation:** **BUY** (21% Upside) High-Risk  
**Price Target:** **EUR 18.1** (USD 20.3) 2020YE

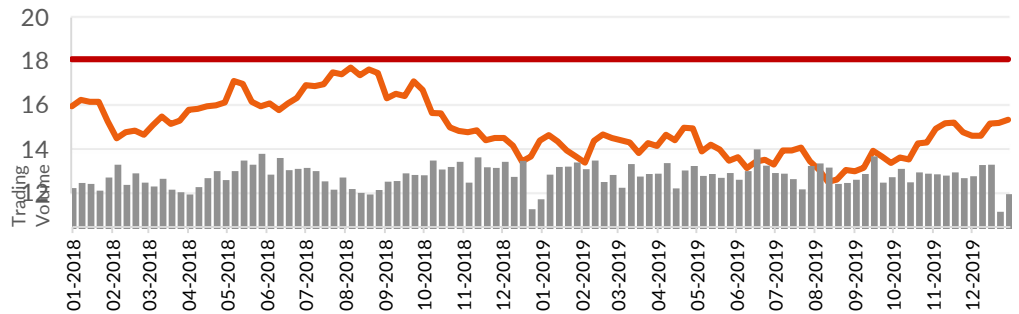
**Table 1:** GALP's Market Data

Market Profile	
Closing Price (January 2nd, 2020)	14.98
52w Price Range	12.4 - 15.4
52w Daily Volume	1.5M
Shares Outstanding	829.3M
Market Capitalization (January 2nd, 2020)	12.4B
Free Float	59.2%
Dividend Yield <sup>2020YE</sup>	4.4%
ROE <sup>2020YE</sup>	16.6%
D/E <sup>2020YE</sup> (Mkt Value)	0.7
P/BV <sup>2020YE</sup>	2.5
P/E <sup>2020YE</sup>	39.8

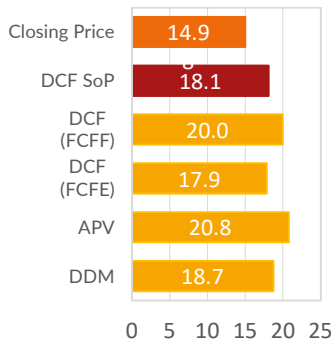
**Source:** Thomson Reuters, Team Estimates

## GALP: Strong, Strategic and Sustainable

### A closer look at GALP's greener future

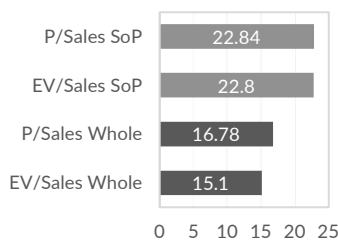


**Figure 1:** GALP's Price Target (€)



**Source:** Team estimates

**Figure 2:** GALP's Price Target with Multiples



**Source:** Team estimates

**Table 2:** Industry's Abbreviations

Abbreviations	
bbl	Barrel of Oil
kb/d	Thousand bbl per Day
mb/d	Million bbl per Day
boe	Barrel of Oil Equivalent
mboe	Million boe
kboe/d	Thousand boe per Day
mton	Million Tonnes
mta	Million Tonnes per Annum
IOC	Integrated Oil Company
NOC	National Oil Company
WIP	Working Interest Production
FPSO	Floating Production Storage and Offloading

**Source:** Team estimates

## Research Snapshot

**BUY** is our recommendation for Galp Energia S.G.P.S., S.A. (GALP) with a price target of €18.1/sh for 2020YE using a DCF model, implying a 21% upside potential from the January 2<sup>nd</sup>, 2020 closing price of €14.98/sh, but we assess it as high-risk. GALP is an Integrated Oil Company (IOC) operating mainly in 6 countries across all Oil & Gas segments. We see a leading company in Portugal, with a solid market share above 40% in the downstream, while being present in several and profitable exploration projects worldwide. With a stable 2020F cash flow yield around 7%, the company will keep growing robust driven by its increasing production, supported by the oil and gas demand outlook. We see GALP as a buy stock because it is Strong, Strategic and Sustainable.

**Strong**, due to its cash flow generation from all segments, but mostly from the Upstream business. Sales from this segment grew strong +22.5% CAGR from 2015 to 2019E and are expected to grow further +7.0% until 2025, fueled by its E&P projects. By being an IOC, there is a natural hedging effect that partially protects the firm's strong cash flow generation. **Strategic**. GALP shows how they operate businesses by having stakes in some of the most profitable exploration projects in the world, mainly the Lula field in Brazil and the Rovuma in Mozambique. The company is highly dependent on oil, being the primary cash flow driver. Yet, the CAPEX allocation for the G&P segment doubling is a step towards a more sustainable portfolio. **Sustainable**. is in the pole position in the Dow Jones Sustainability Index between its peers, ranking 1<sup>st</sup> in the DJSI Europe for Oil & Gas (3<sup>rd</sup> place at global level). Furthermore, the company is also financially sustainable. Operationally, GALP has a strong financial discipline, setting a max of 2.0x for Net Debt/EBITDA, currently at 0.9x 2019E, giving room to embrace new projects.

**Mozambique: GALP's greener future is a Real Option** | May it be for ESG purposes, a genuine care about the environment or, simply, to look good for investors, fact is that numerous Oil & Gas companies are looking into reducing their carbon footprints. GALP is no exception. With a stake in two projects – Coral South FLNG and Rovuma LNG – in Area 4 in Mozambique, GALP expects to alter its energy production mix to 70% oil and 30% natural gas. Due to the importance of Mozambique in GALP's strategy, we believe the 2 projects mentioned before deserve a more in-depth look. Lastly, we decided to look (and value) the Rovuma LNG project through a Real Options perspective. This consists in valuing a project applying the same rational that we apply to value financial options. Rovuma LNG partners have the rights to explore the area for the next 29 years, hence, Area 4 partners may wait and choose the best time to invest in this project. They have an Option to Wait, and this option has value.

**Table 3:** Sensitivity Analysis on Oil Price

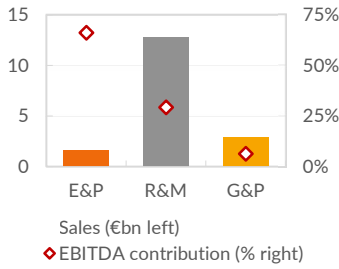
Oil Price 2025F	66.0	66.5	67.0	67.5	68.0	68.5	69.0	69.5
Price Target	16.10	16.60	17.10	17.60	18.10	18.60	19.10	19.60
Upside/Downside	7.5%	10.8%	14.2%	17.5%	20.8%	24.2%	27.5%	30.8%

**Source:** Team Estimates

**Table 6:**  
 Sensitivity  
 Analysis on Oil  
 Price

# Business Description

Figure 3: Sales & EBITDA 2018



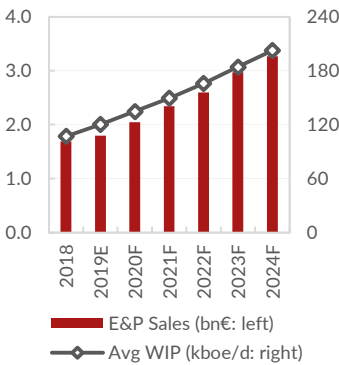
Source: GALP

Figure 4: GALP's Main Upstream Locations



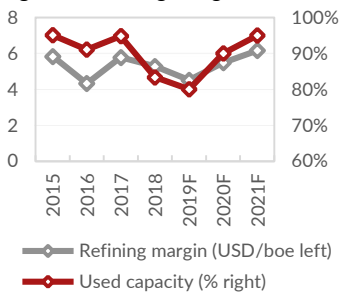
Source: GALP, Team Analysis

Figure 5: E&P Sales vs WIP



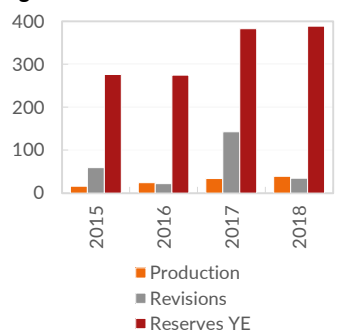
Source: Galp & Team Estimates

Figure 6: Refining Margin and % Used



Source: GALP

Figure 7: Revisions and Production



Source: GALP (kboe)

Galp Energia S.G.P.S., S.A. (GALP) is a leading Portuguese IOC. The company operates within the oil and gas value chain, both in Upstream, by searching, recovering and producing crude oil and natural gas (NG), and in Downstream, with refining and commercialization. The Upstream (Exploration & Production or E&P) is GALP's value driver with €1.7 bn 2018 sales, representing 11% of total sales, and EBITDA of €1.4bn, contributing 70% to company's 2018 EBITDA. The Downstream has two segments: the Refining & Marketing (or R&M) segment, with €12.8bn sales, accounting for 73% 2018 sales; and the Gas & Power (or G&P) segment, that recorded sales of €2.9bn, only contributing 5% to the company's EBITDA. GALP's 2018YE revenue of €17.2bn places the company among the top 15 largest oil and gas players in Europe.

## History of the company

GALP's history goes back to 1976 when the merger of the four largest Portuguese players in the oil sector originated Petrolgal, the leader in the R&M sector. Its position as the leading player in Portugal was consolidated in 1999, by the aggregation of Petrolgal and GdP (Gás de Portugal), establishing Galp Energia. In 1982, the company entered the E&P segment with the acquisition of a stake in block 1/82 in Angola. GALP started its strong development in the E&P business in 2007, with the largest ultra-deepwater oil discovery of the last 30 years in block BM-S-11 Lula/Iracema in Brazil. From there onward, the company has been highly focused on growing this segment. The E&P's sales growth skyrocketed at +23.1% CAGR, from €140 million to €1.69 billion 2006-2018, making the segment the main contributor of GALP's EBITDA. In recent years, the company entered a B2C business in the electricity sector.

## Operational segments

**E&P** | GALP's E&P sales are fueled by the average daily production (WIP of 107 kboe/d 2018YE). In 2018, with a \$15/boe increase in GALP's oil and gas average selling price and the preservation of production costs, the segment registered a positive YoY change in its EBITDA of 70% to €1.44 bn. Currently, E&P sales come mostly from projects in Brazil, with GALP's operations in Angola showing a temporary slowdown, with blocks 14/14k in production decline and block 32 in ramp-up. The segment's value driver is the Lula-Iracema project, with a production of 98 kboe/d 2018YE (91% of total WIP). This project alone accounts for 8% (€1.42bn) of GALP's total sales. The next big project is expected to be Mozambique's Rovuma Liquefied Natural Gas (LNG). This new project signals GALP's aim in reducing the dependency of its operations in oil production, and, consequently, increasing the stability of the energy mix. It will be mainly through Rovuma LNG that GALP will achieve its 25-30% target for NG contribution in the company's WIP 2030F.

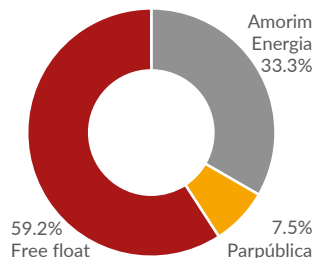
**R&M** | GALP's R&M sales increased in 2018 (1.6% YoY), mainly explained by higher Iberian energy demand. Nonetheless, maintenance operations in the refineries, accompanied by higher oil prices, led to a decrease in the company's refining margin by \$0.8/boe YoY to \$5.0/boe. Subsequently, the margins were profoundly affected, which resulted in a 17% YoY decrease in the R&M EBITDA to €0.6bn. GALP is responsible for 20% of the Iberian Peninsula refining capacity, presenting a combined installed capacity of 330 kb/d. GALP is the leading player in the retail network in Portugal (c.40% market share), and a significant one in the Iberian market (9% market share). In Portugal, GALP possesses the total refining capacity through its refineries in Sines and Matosinhos. GALP's marketing segment is responsible for the commercialization of refined products. It sold 16.8 mton of oil products in 2018YE (-7.6% YoY), explained by the decrease in refineries' used capacity from 95% to 83%. Direct sales account for 51% of marketing sales in 2018YE, 61% of which correspond to wholesale operations (+2% YoY). Exports are the runner-up with a c.29% of marketing sales in 2018YE.

**G&P** | GALP's G&P sales increased 11% YoY 2018YE to € 2.9bn, mainly explained by the +8% YoY in NG sales to direct clients and the +7% YoY change in electricity sold to clients. The amount of electricity sold to the grid decreased by 14%, but the effect on sales was greatly offset by the previously mentioned increases in sales. There was a small impact on its EBITDA, increasing only 4% YoY. Most of the sourcing of NG comes from long-term contracts in Algeria (Sonatrach) and Nigeria (Nigeria LNG). However, GALP expects to sign a contract in 2022 with a US company, to diversify its portfolio through an increase in trading activity. GALP leads the supply to industrial and large consumers in 3Portugal with 61% of total NG sales. Regarding Power, a significant part of the electricity sold to the grid comes from cogeneration units in the refineries. Nonetheless, aligned with its low carbon strategy, the company is actively working on the development of solar and wind power generation projects.

## Key drivers of profitability

**Oil and gas prices** | GALP is highly exposed to commodity prices, as a variation of \$5/bbl reflects a ΔEBITDA of around €200m. The upstream segment is more sensitive than the downstream. However, with a portfolio breakeven of \$25/bbl due to investments in the most profitable projects in the pre-salt region, the company has a reasonable margin against oil prices decrease. This low value is mostly achieved by the high profitability of Lula-Iracema projects, driven mainly by low production costs. 2018YE oil prices of \$62.6/bbl (+31.5% YoY) and expectations for 2025F at \$65-70/bbl show good promise for GALP'S future.

Figure 8: Shareholder Structure



Source: GALP

Table 4: Executive Committee

Executive Committee	
Carlos Gomes da Silva	Vice-Chairman, CEO
Filipe Crisóstomo Silva	CFO
Thore E. Kristiansen	COO (Upstream)
Carlos Costa Pina	COO (Infrastructure)
José Carlos Silva	COO (Midstream)
Sofia Tenreiro	COO (Comercial)
Susana Quintana Plaza	COO (Renewables and New Business)

Source: GALP

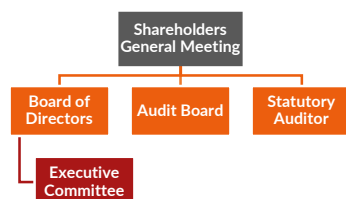
Table 5: Non-Executive Directors

List of Non-Executive Directors		
Paula Amorim	Amorim Group	Chairwoman, NED
Miguel A. Marques	LID	Vice-chairman, NED
Marta Amorim	Amorim Group	NED
Francisco T. Rêgo	Amorim Group	NED
Carlos Pinto	Sonangol E.P.	NED
Luís Todo Bom	Independent	NED
Jorge S. de Freitas	Amorim Group	NED
Diogo M. Tavares	Amorim Group	NED
Rui P. Gonçalves	Amorim Group	NED
Edmar de Almeida	Independent	NED
Cristina N. Fonseca	Independent	NED
Adolfo M. Nunes	Independent	NED

Source: GALP

Notes: LID - Lead Independent Director

Figure 9: Governance Structure



Source: GLP

**WIP and reserve levels** | GALP's upstream sales are also dependent on reserves and the ability to turn them into WIP. The company must simultaneously maintain a reasonable level of reserves that will assure the sustainability of the E&P segment. GALP's reserves have been increasing mostly via revisions of project's estimates. WIP has been in an upward trend, with a +24% CAGR 2014-2018. The average WIP should reach 223 kboe/d by 2025F, higher by 115 kboe/d (+ 11% CAGR) 2018YE.

### Company Strategies

**Upstream and Downstream: different focus** | GALP's strategy in the upstream is to develop its current portfolio. The company targets highly profitable and low-risk projects levered by competitive advantages in its current geographies.

In the downstream, the focus is to increase the efficiency of the refining system and to optimize the distribution of oil products in Iberia and Africa. GALP also aims to take advantage of existing opportunities in the global energy markets and grow as a gas supplier.

**Energy Transition** | GALP has already started the shift towards sustainable energy sources by focusing on NG and power generation through electricity (G&P segment). Also, measures are being taken to reduce the carbon intensity of its assets despite the focus of strategies on oil and NG. GALP aims to allocate 5-15% of its CAPEX to increase its market share in the G&P segment, develop new solutions and explore business projects supported by low-carbon energy (currently focusing on solar).

**Financial Discipline** | GALP's Net Debt/EBITDA 2018YE is 0.8x, with a maximum for this ratio set at 2x. This financial discipline allows the company to keep its focus on current objectives and decide upon new projects, not jeopardizing the future. Nowadays, GALP has room to undertake new projects as they come and to sustain the attractive dividends, even in a lower-profits scenario.

**Dividend policy** | The company has a strong commitment to its dividend policy aiming to increase the DPS around 10% per year, with its distribution depending on the capital structure, the cash flow generation and value-adding investments. GALP's DPS in 2018 was €0.6325 (15% increase YoY), to be paid semiannually. The total cash paid reached €525m, representing a payout ratio of 74% and an attractive 5% dividend yield.

### Shareholder structure

GALP has 92.5% shares quoted in the market and the remaining 7.5% indirectly held by the Portuguese state through Parpública. Its largest shareholder is Amorim Energia B.V. with 33% of shares. The remaining shares account for 59%, mostly held by institutional investors from around the world. Individual investors account for 2% of GALP's share capital. Currently, GALP does not hold treasury shares. However, until October 2020, the BoD may proceed to an acquisition of up to 10% of GALP's capital, following a General Meeting decision from 2019Q2. Major shareholders may be allowed to divest through this mechanism.

## Governance

Ms. Paula Amorim is GALP's chairwoman since 2016, after succeeding her father in the role. Before, she was the vice-chair and has been in the company's Board since 2012. She is also part of the family that owns Amorim Energia B.V. Since 2015, GALP's CEO is Mr. Carlos Gomes da Silva, a 52-year-old engineer with an MBA from ESADE, with over 30 years of experience, mostly in the energy sector. Throughout the years he took different roles in several divisions of GALP and most recently acted as COO in two distinct business units before being appointed CEO. The remaining 6 executive members have a similar academic background and relevant tenure in the company (Appendix 24).

### Board Structure and Remuneration Policy

The Board of Directors (BoD) is composed of 19 members, including 12 Non-Executive Directors (NED), 5 of whom are independent (Table 5). In compliance with the By-laws, the Remuneration Committee is controlled by 3 shareholders not belonging to the Board. The remuneration policy is mixed. A fixed amount is paid to NED, while executive members get a fixed component plus a variable, based on the annual and three-year performance levels (Appendix 24). The former accounts for half, being 65% based on yearly value-added, total shareholder return and EBITDA, while the remaining 35% are of qualitative nature. Additionally, there is a retirement savings plan, equaling 25% of the fixed part.

The board turnover in 2019 was positive for gender equality. Women on Board increased from 2 to 5, with 2 of them being appointed to the executive committee, which was previously wholly composed by men. GALP's diversity policy is set from top to bottom.

### Governance Model and Shareholders

GALP's governance model separates powers between different corporate bodies to ensure the transparency and effectiveness of governance. The Anglo-Saxon model is followed, and members are elected for a 4-year term. The Corporate Governance Code (CGC) of the Portuguese Institute of Corporate Governance (IPCG) is the benchmark in the country, to which GALP adopts 49 of the 60 recommendations. This represents 82%, which is close to 84% of average adoption from companies in the PSI20.

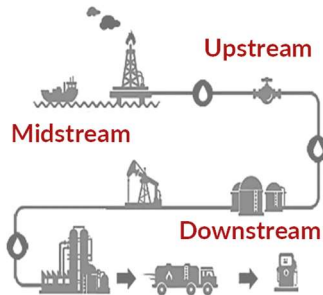
The By-laws of the company foresees a one-share-one-vote principle, without limiting voting rights. With an average 77% of the capital attending the Shareholder Meeting, Amorim Energia B.V. may exert relevant controlling voting power. Furthermore, most shareholders' resolutions only require a simple majority (exception relates to the company's Management; amendments to By-laws; and company

**Table 6: Key ESG Metrics**

Governance Metrics	
Metric	GALP
Shareholder Meeting Attendance (3-year average)	77%
Independent Directors	26%
CGC Compliance	82%
Average Tenure (years)	5.8
DSJI Europe	1st
DSJI World	3rd
ESG Score	67th
Environmental Pillar Score	A+
Social Pillar Score	A-
Governance Pillar Score	C

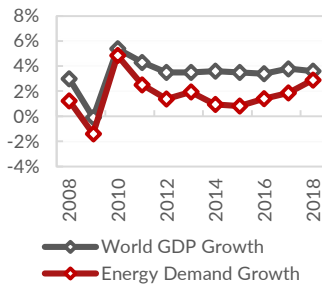
Source: GALP, Thomson Reuters

**Figure 10: Oil Value Chain**



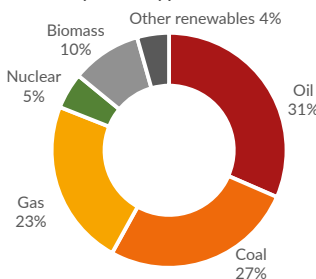
Source: Allied Consultants

**Figure 11: Global GDP & Energy Demand Growth**



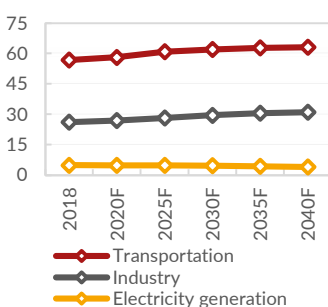
Source: IMF, BP & Team Estimates

**Figure 12: 2018 World Energy Demand by Fuel Type**



Source: OPEC

**Figure 13: Sectors in Oil Consumption**



Source: OPEC (mb/d)

transformation/mergers). Additionally, the chairwoman and 5 NED have links to Amorim's business, increasing, even more, the influence of this company over GALP. The second-largest shareholder is the state-owned holding Parública, and it is not directly represented in the BoD, despite the 7.5% stake.

The evident influence that Amorim Energia B.V. has over the BoD may increase the apparent absence of protection that minority shareholders have over the group's decisions. The Amorim family has shown a commitment for a stable and robust dividend policy in companies other than GALP (e.g., Corticeira Amorim SGPS SA), thus mitigating potential value extraction effects, not expected to put growth opportunities at risk. Still, we believe that the current governance structure of GALP does not jeopardize our buy recommendation.

**(Going) Sustainable and (being) Socially Responsible**

In the Dow Jones Sustainability Indices (DJSI), GALP ranks 1<sup>st</sup> in the DJSI Europe for Oil & Gas (3<sup>rd</sup> place at a global level). Awards for sustainability are recurring and GALP's Thomson Reuters ESG score of 44.8, in line with Oil & Gas companies (median of 41.7). The score is timid, yet the company is the only one that received an A and A- classification from CDP in the categories of water security and climate change, respectively.

Social responsibility is also in the company's DNA. In 2009, the Galp Foundation was born. Governed by the Chairwoman, CEO and CFO, with a total budget of €19.4m in 2018, the Foundation targets project in areas such as Social Development, Energy and Environment and Education and Culture, operating in Portugal, Guinea-Bissau and Mozambique. Currently, the leading project is "Energiza" which aims to install a photovoltaic system to provide access to energy in Mozambique. The location of this project signals a clear concern with the communities where the company operates. GALP is at the forefront regarding sustainability and social responsibility, yet new challenges such as the energy transition will put the company to the test.

**Industry Overview and Competitive Positioning**

The Oil & Gas industry operates around the value chain of fossil fuels. It starts in the Upstream sector (E&P), covering all activities of searching, recovering, and producing crude oil and NG. Entering this segment requires participating in each producer country's bidding rounds, which is extremely capital intensive (Appendix 21). On the opposite side of the chain, the Downstream sector (R&M and G&P) includes refining the crude oil, processing the raw NG, and covering marketing and distribution of their by-products, along with the production and commercialization of electricity. Both segments are supported by the Midstream, acting as the bridge between them, yet GALP is not intensively operating in this middle part. The Oil & Gas industry is the world's most profitable industry, according to Forbes. Aggregated profits increased YoY by 36% in 2018. Currently, global E&P alone represents 3% of the worldwide economy.

**World population, GDP Growth and Energy Demand** | The Oil & Gas industry will keep robust, as current levels of energy sources will be insufficient to meet increases in global energy demand. Increasing world population and expected economic growth are to blame. World population will increase by 21% until 2040, with this growth coming mostly from developing countries. Yet, growth rates will be decelerating. The global GDP growth is slowing down and is expected to be at 3.2% in 2019. With the stabilization of trade problems in the most developed countries by 2024, expected by OECD, the world's GDP growth should increase to 3.4% going forward. As in Figure, GDP growth and energy demand are tied together. Supply has a role to play.

**International Outlook: GALP's Upstream Outlook**

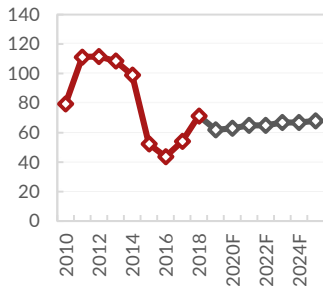
There is a common misconception about the looming energy transition – the focus will shift entirely to low carbon alternatives and renewable energy. However, fossil fuels are responsible for more than 50% of the world primary energy demand. Despite the transition, fossil fuels are expected to maintain its dominant share in the decades to come.

**Energy Demand Growth** | According to the International Energy Agency, world energy consumption was 286 mboe/d 2018YE, with oil, coal and NG representing 32%, 27% and 23%, respectively. Energy demand is expected at 358 mboe/d by 2040, representing +1% CAGR, mainly driven by the upward trend in urbanization and population growth in developing countries. But the global energy mix will change over this period. Even with oil demand continuously increasing, its contribution to the world's primary energy demand is expected to decrease by around 3%. Still, the fuel will keep leading the energy mix (28%). The predicted increase in NG demand will turn it the world's second most consumed source (25% 2040F), surpassing coal. Renewable sources will also climb in the mix because of declining production costs. It will make renewables more competitive than ever. Over the next decade, they will register the fastest percentage growth whereas NG will grow the most in volumetric terms.

**Oil Demand Drivers** | Oil demand was 99 mb/d 2018YE, and it is expected to reach 111 mb/d by 2040 (+0.5% CAGR). The decelerated growth over the next years is mainly due to lower global GDP growth, improved energy efficiency and continued substitution of oil. Yet, none of the issues above should reverse the outlook for energy demand. The sectors with the biggest footprint on demand are transportation, industry (mainly petrochemicals) and electricity generation. All transportation types take the largest portion of current global oil demand, accounting for about 58%. This share is expected to remain stable until 2040. The electricity generation is the one that should offset oil demand trends, decreasing by 1 mb/d by 2040.

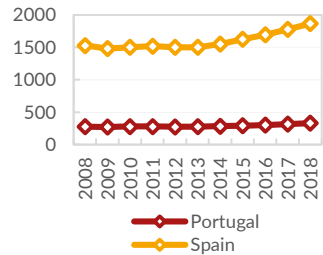
**OPEC** | The cartel is composed of 14 of the world's largest oil-exporting nations. Together they are responsible for around 42% of total world oil production and 80% of the global proved oil reserves. They

**Figure 14: Brent Price (\$)**



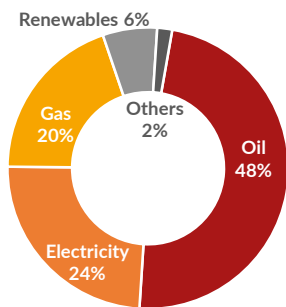
Source: Reuters, Deloitte

**Figure 15: Iberian Energy Demand**



Source: BP (mboe)

**Figure 16: Iberian Energy Mix in 2020F (outside) vs 2025F (inside)**



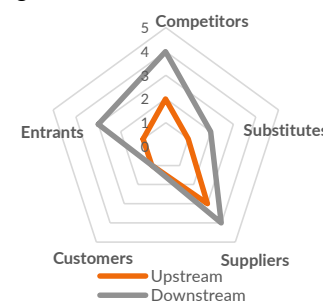
Source: European Commission

**Figure 17: Refineries in Iberia**



Source: INE, Team Analysis

**Figure 18: Porter's Five Forces**



Source: Team Analysis

exert power in the sector. OPEC can change production to influence the global supply and thus oil prices. Current tensions in the middle east yield volatility to the sector, but we foresee that cartel's share will keep robust.

**World Liquids Supply** | World liquids supply is expected to reach 105.0 mb/d in 2024, growing at +1.0% CAGR. It includes crude oil, natural gas liquids, biofuels and other liquid. Non-OPEC liquid supply represents about 63% of the total supply and is expected to fall to 60% by 2040. This decrease will take place after the expected non-OPEC supply peak around 2026, followed by the US supply, both reaching peaks by the same time. After that, OPEC expects that Brazil will lead the supply growth among non-OPEC members, with 1.9 mb/d.

**Oil Prices** | Crude oil prices are extremely volatile and heavily affected by exogenous variables (Figure). Forecasting is not easy. Currently, the US shale oil production, the US crude oil stocks, and the OPEC oil supply are the main elements weighting price expectations – these are controlling forces of the global oil supply. Fluctuations in oil prices may occur for several reasons. Historically, the major price crashes occurred following either OPEC or US oversupply. Therefore, a healthy demand growth aligned with OPEC maintaining discipline over its production levels is expected to result in average prices of \$65-70/bbl 2021E.

**Oil in Brazil** | Brazil's total production was 2.6 mb/d 2018YE and expectations from ANP point to a total output of 7.5 mb/d by 2030. The country is expected to be within the Top 8 world's oil producers by 2040, fueled by its offshore potential. Lula and Iracema, located in the pre-salt Santos basin, are considered one of the most significant and most productive deep-water oil discoveries in the world for decades. It currently has 9 FPSOs producing at plateau level, accounting for 1.5 mboe/d, more than half of Brazil's total output. GALP has a stake of 10% in Iracema area whereas for Lula the share decreased to 9.2%, after the approval of the unitization process in 2019 (a unitisation process was required as the Lula discoveries extended outside the area first licensed, towards the adjacent areas of South of Tupi, a Transfer of Rights area and an open area. The agreement determined the new stakes attributable to each party (Petrobras, Shell and GALP)). Through its Brazilian subsidiary, Petrogal Brasil, GALP is the 3<sup>rd</sup> largest producer in the country.

**NG in Mozambique** | Mozambique's current NG production of 0.2 tcf is expected to grow at +13.7% CAGR to 2.8 tcf by 2040. This will represent the world's sharpest growth rate, nearly 10x higher than the world's average of 1.4%. By 2030, Mozambique is expected to become the largest gas producer in sub-Saharan Africa, surpassing Nigeria. Mozambique's current NG proven reserves are of 2.6 tcf. Due to the discovery of over 180 tcf of NG proven reserves, the Rovuma basin will constitute the world's 4<sup>th</sup> largest offshore gas project, becoming a major exporter by 2023. This project will be focused on LNG, which consists of NG that is converted to a liquid state to facilitate transportation. GALP is part of the consortium operating in Area 4 with a 10% stake. The block (Area 4) will comprise the offshore Coral South, with production expected to start in 2022, and the onshore Rovuma LNG, which will fuel the increase in NG in GALP's portfolio by 2030.

**Domestic Outlook: GALP's Downstream Outlook**

An increase in the demand for primary energy sources results from an increase in demand for by-products. The main measure of profitability in the downstream segment is the refining margin, defined as the difference between the price realized for the products to be sold and the cost of the crude delivered to the refinery.

**Iberian GDP Growth** | Both Portugal and Spain have been recovering from the financial crisis and subsequent sovereign debt crisis. Portugal's GDP is already reaching pre-crisis figures, while Spain is still on its path to a full recovery. In 2018, both countries grew similarly – GDP growth of 2.4% for Portugal and 2.6% for Spain. Yet, both rates are likely to decrease around 100 bps by 2024. A contraction in fixed investment and a decrease in net external demand should be the main slowdown drivers.

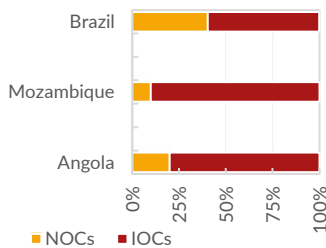
**Iberian Energy Demand** | Energy consumption in the Iberian market is mainly sourced by oil, accounting c.50% of the total. It is explained by the weight of manufacturing and transportation (c.65%). Both countries expect a drop in oil and oil by-products consumption by 203, because oil demand should decrease by 0.4% CAGR. However, oil will still lead the energy mix for this region (45% and 51% for Spain and Portugal, respectively). Electricity will continue to be the second most consumed energy for both countries, with its demand increasing 0.5% CAGR until 2030. The energy mix will be reshaped. The transportation sector is highly dependent on oil products, but Iberian countries also rely deeply on them <for heating or electricity generation. The consumption of NG products has been increasing significantly over the last years in Iberia. Authorities in both countries are encouraging the shift for cleaner energy sources with Portugal aiming an energy mix coal-free by 2030.

**Iberian Refining Capacity, Utilization and Margin** | There are 10 refineries in the Iberian Peninsula – 2 in Portugal, held by GALP, and 8 in Spain owned by Repsol, CEPSA and BP (Figure 17). In 2018, the total refining capacity was 1894 kb/d and average utilization rate 85%. GALP's refining capacity of 330 kb/d accounts for 20% of the Iberian total and average utilization rate was 83% 2015-2018. In 2018 and 2019, this rate was negatively affected by maintenance operations in both GALP refineries, reducing the refining margin. Now, GALP is fully operational. GALP's 2018 refining margin was \$5.0 per barrel, below Iberian average of \$6.2 per barrel. But the company targets a 2020 refining margin around \$6.0.

**Competitive Positioning**

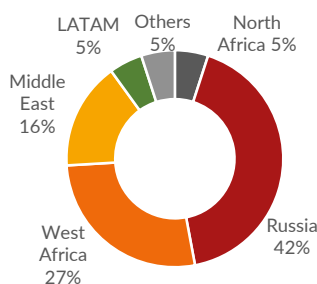
The market for oil and gas is best described as oligopolistic. However, the upstream and downstream idiosyncrasies will influence the positioning of GALP. In the upstream, the company is a relatively small but very profitable player. In the downstream, the company is market leader in the retail segment. Prices

**Figure 19: %NOC vs IOC in projects**



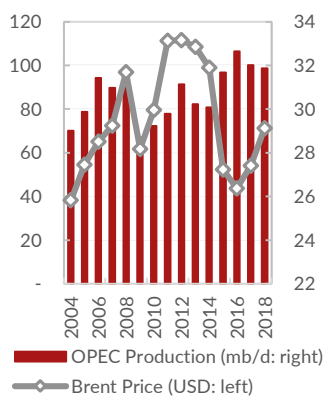
Source: Team Estimates

**Figure 20: Downstream Suppliers**



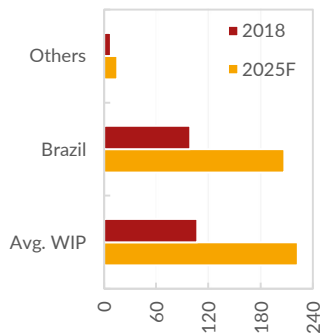
Source: GALP, Team Estimates

**Figure 2112: OPEC Oil Production vs Brent Price**



Source: Team Estimates

**Figure 22: GALP's Average WIP 2018 vs 2025F**



Source: GALP, Team Estimates

in Portugal will be significantly defined by the crude price but also by the taxation imposed by the government. Product differentiation will be relatively similar in both ends of the value chain.

**Rivalry Among Existing Competitors** | In the Upstream, competitors' partner up with each other. CAPEX is massive and so, risk sharing is key. Companies share the control over blocks, as agreed in the bidding rounds, where they compete for a share on the projects. The rivalry between competitors is more significant in the Downstream. GALP faces fierce competition in a perfect competition Marketing segment in Iberia. The homogeneity of the oil derived products leads to stiff competition in attracting and retaining customers. Yet, the Refining segment is monopolistic in Portugal and oligopolistic in Spain (Figure 16). Only four companies have refining capacity in Iberia.

**Threat of Substitute Products** | Oil and Gas are expected to keep increasing demand, keeping the fitness of GALP's portfolio. As a Downstream player, GALP will be exposed to the new dynamics in the secondary energy sources as its operations are connected to oil by-products and electricity. GALP's portfolio is mainly focused on oil by-products, but the presence in the electricity segment ensures some protection.

**Bargaining Power of Customers** | The main customers of the Upstream are the players in the Downstream. Usually, IOCs sell to other OCs. GALP does not fuel the downstream with the oil produced in the upstream, as it is a financially IOC. Other players work similarly, so they have to resort to the open market. Either way, customers will have small influence setting prices. Regarding the Downstream, end consumers are highly dependent on oil and gas by-products and, consequently, have no relevant pricing power.

**Bargaining Power of Suppliers** | Governments can influence the bidding rounds related to reserves in their country. Usually, the preferred conditions and a higher percentage of the projects are attributed to their NOCs. As governments influence the share each company controls in the blocks, they also affect the companies' amount of crude oil for the E&P. In the Downstream, we find suppliers in two parts of the value chain. First, the Upstream players which supply oil to refineries. GALP is exposed to their power because the company buys oil in the open market. Yet, this exposition will be naturally hedged at group level by their Upstream operations. Second, the refineries that supply by-products to the marketing segment. In this case, GALP runs the two existent refineries in Portugal, being the leading supplier. Therefore, we expect suppliers to exert medium-high bargaining power.

**Threat of New Entrants** | Operating in the Upstream segment requires know-how and investment capacity. New joiners are unlikely because knowledge is critical, while the high CAPEX needs may benefit from economies of scale. The uncertainty around E&P projects also makes it difficult for new companies to justify high licensing fees, resulting in a low threat of new entrants. In the Downstream segment, the risk coming from new entrants is dissimilar. In the Marketing segment, it is high, while low for the Refining. The investment needed to build a Refinery is massively higher than running service stations. Yet, GALP's reputation is an asset.

## Investment Summary

Our recommendation for GALP stands at BUY, with a 2020YE target price of €18.1/sh, representing a 21% upside potential to the company's stock price of €14.98/sh at January 2<sup>nd</sup>, 2020, but with high-risk. The mispricing is expected because of current uncertainties. GALP is trading at a discount against our target price because of concerns around oil prices volatility. The high potential of growth for the WIP in the Upstream (+10% CAGR 2019-2025), combined with the leading position in Portugal in the Downstream (>40% market share), and the recovery in the R&M (\$6.3/boe 2020F refining margin) should drive GALP's price up during the year. Value from the upcoming project for NG in Mozambique accounts for €0.90/sh in our estimations, but cash will only flow starting in 2025.

### Key-Value Drivers

**Strategic Management of the E&P Portfolio:** There is risk, yet diversification is strategic to the company. GALP's E&P portfolio, with a breakeven of \$25/boe, gives the company a safety net against oil prices fluctuations. The presence in the Brazilian pre-salt, considered the benchmark worldwide, drives most of the company's E&P production and economic profit.

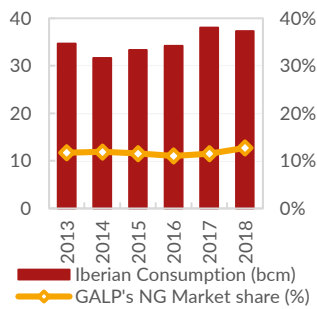
The accelerated production growth in ongoing projects (+24% CAGR 2015-2018) placed the company as the 3<sup>rd</sup> largest producer in the region. We forecast that GALP will maintain its strong position. The historical growth comes from the addition of 2 FPSOs during 2017-2019. The 9 FPSOs can easily increase up to 11 until 2025F because GALP and their partners in the area plan to increase the recovery rate of discovered resources from 37% to 40%. We expect an increase in production in the Lula-Iracema projects (130 kboe/d 2020F), keeping the lead of GALP's WIP and sustaining the attractive breakeven.

The projects in Mozambique will enter capital intensive phases in the new NG explorations. The Coral South FLNG and Rovuma LNG will add to the company's sustainability. Recent acquisitions in the area lead us to believe that GALP's stake in the Rovuma LNG could value up to €1.1bn in run rate.

**Strong Synergies in the R&M Segment:** GALP is the undisputed Portuguese market leader in refining and marketing. The dominant position should be maintained, growing steadily as the demand in the Iberian market increases. Margins in 2019 dropped due to maintenance operations. Now GALP is ready to pick up the refining margin from \$4.5/bbl 2019E to about \$6.2/bbl by 2022F.

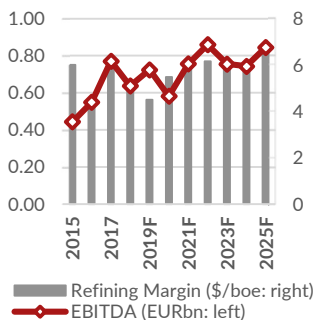
Refining Sales depend on the used capacity of the 2 refineries, with the estimated average rate 2019E-2025F converging to a historical top of 91% (2015-2018). The marketing segment should benefit

**Figure 23: Iberian NG Consumption V GALP's NG market share**



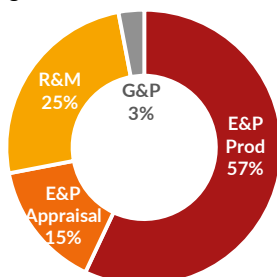
Source: BP, GALP, Team Estimates  
bcm: billion cubic meters

**Figure 24: Refining Margin vs. R&M EBITDA**



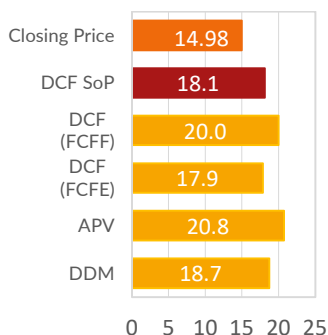
Source: GALP, Team Estimates

**Figure 25: CAPEX Allocation 2025F**



Source: Team Estimates

**Figure 26: GALP's Price Target (€)**



Source: Team Estimates

from the Refining unit improvements as the result of synergies that come from the operational vertical integration. This unit is expected to grow steadily to match energy demand (1.7% GAGR 2018-2025F), averaging 3% EBITDA margin 2019E-2025F.

**Growing Sustainability through G&P** | GALP is an IOC but is making efforts to become an Integrated Energy Company. CAPEX will play a role in the efforts. The company will grow its share in electricity generation and gas supply to bring more sustainable sources to the portfolio. Renewables, mainly solar, will be key for the company. We expect increases in sales of electricity to the grid, powered by energy generation in refineries and investment in renewable sources (1.7% CAGR 2018-2025F). We also expect stable growth from the supply, as GALP's 12% market share in Portugal is here to stay. The trading activities are expected to significantly increase in 2021F, because a new NG contract will increase the tradeable NG by 30%. The segment's cash flow generation is timid compared to other segments but is the more stable and sustainable.

**Strong financial position; short, medium- and long-term focus** | GALP's strong cash-flow generation from operations leads us to believe that GALP is in an interesting position. Economies of scale allow the company to increase its production levels and decrease OPEX, even in the absence of new projects. Yet, this fact is not stopping the company to keep searching for new investments: the new LNG projects in Mozambique brings a new energy source, a new location and adds to the sustainability of the portfolio. We believe that GALP will keep searching for new opportunities in this segment, with at least 12% of the CAPEX of the company being allocated in Exploration and Appraisal. Moreover, the G&P segment has a role to play in the long run for the company. Our analysis considers increases in energy demand from renewables in Iberia. GALP is investing now to prepare for the future, more than doubling their CAPEX for this segment.

The strategic management of the company, along with the strong synergies and strong financial position, we believe that GALP is a buy stock, despite the relevant risks. Also, investing in GALP today should secure a dividend yield of 7-8% 2025F.

### Valuation methods

We used a DCF model based on a SoP FCFF by segments to achieve a price target of €18.1/sh. To complement our analysis, we run alternative valuation methods (Figure 35), all of them yielding price targets with upside. First, a DCF based on a global FCFF, reading €19.5/sh. Second, an FCFE approach with upside to €17.9/sh. Also, the DDM because of the company's focus on the dividend policy. The dividend approach points to a price target of €18.7/sh. The constant debt level led us to forecast GALP's target price using the APV approach, yielding €20.8/sh. Lastly, multiples. However, approaches of multiples per segment or considering GALP as a whole point to unreliable figures. Different risks in the segments make it difficult to assess the company through peers. The market has been trading GALP with a premium to its peers. All targets include an additional €0.9/sh from the new projects in Mozambique starting in 2025, although based on conservative transaction multiples.

### Risks to achieve the price target

Investors must be aware of the impact of commodity prices, as GALP's biggest driver to E&P's value. Sales are directly linked to oil and gas prices. Increasing importance and reliance on Brazilian operations (98% of WIP 2020E) entail the risk of impacting profitability as a result of regional misbalances, although some comfort comes from the LNG production starting soon in Mozambique. Additionally, FX should be taken into account, as the industry operates in USD, but GALP consolidates EUR. Our recommendation is set with a long run Brent price of about \$68/bbl.

## Valuation

### Free Cash Flow to the Firm: A Sum-of-the-Parts Approach (SoP)

We value GALP using a Discounted Cash Flow (DCF) method. The unique characteristics of GALP's segments allow us to value them separately and follow a FCFF (SoP) approach. Additional approaches are used to complement our base model (overall FCFF, FCFE, APV, DDM and Multiples). Our SoP approach yields a 2020YE price target of €18.1/sh (Appendix 15). This price target includes an additional € 1.05/sh that accounts for a conservative approach on the valuation of the Rovuma LNG project.

We follow the same valuation technique for each operational segment, applying a two-stage growth model that considers detailed annual FCFF forecasts for the 2019-2025F period and assuming a constant growth rate for the perpetual period. The main assumptions inherent to our FCFF valuation relates to forecasting sales and costs for each segment are below.

### Upstream: Main cash-flow driver

WIP and oil prices drive the sales. We forecast that GALP's WIP will grow at a 10.8% CAGR 2019-2025F, reaching 223 kboe/d, doubling the WIP of 2018. Growth is high, but reasonable. Production in Brazil is the main contributor, yet operations in Africa are also expected to grow until the end of the decade.

The Average Selling Price (ASP) will likely increase, as most forecasts indicate an increase in the Brent price (\$68/boe 2025F), with sales reaching €3.6bn by 2025F, yielding a 12.3% CAGR 2019-2025F. Since most of the production will still come from Brazil, it is expected that the production costs and royalties will be relatively stable throughout the forecast. Thus, we expect EBITDA margin to follow the historical trend, averaging 81% 2020-2025F.



**Table 7: GALP's SoP Price Target**

Segment	Model	g	%	EUR
E&P	FCFF	2.75%	66.3%	13 440.67
R&M	FCFF	1.70%	23.3%	4 731.62
G&P	FCFF	1.70%	10.3%	2 093.92
Adjustments				6 123.42
Equity Value				14 142.79
Shares Outstanding				829.25
Price Target 2020YE without Mz				17.05
Mozambique				1.05
Price Target 2020YE with Mz				18.1

Source: GALP, Team Estimates

**Table 8: WACC E&P, R&M and G&P**

E&P	2020E	Terminal Value
Equity (Market Values)	79.93%	80.00%
Debt (Market Values)	20.07%	20.00%
WACC	9.78%	9.82%

R&M	2020E	Terminal Value
Equity (Market Values)	79.93%	80.00%
Debt (Market Values)	20.07%	20.00%
WACC	6.56%	6.51%

G&P	2020E	Terminal Value
Equity (Market Values)	79.93%	80.00%
Debt (Market Values)	20.07%	20.00%
WACC	4.64%	4.64%

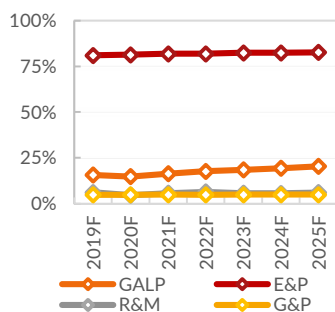
Source: Team Estimates

**Table 9: Rovuma LNG**

Mozambique		
Acquisition	Exxon	Total
Area	Area 4 Rovuma	Area 1 MZ LNG
Capacity (mta)	15.2	12.9
Stake bought	25.0%	26.5%
Price paid (mUSD)	2 800	3 900
P/mta (mEUR)	614.4	1 015.4
Galp ownership in mta	1.5	
Galp Stake in mEUR	933.9	1 543.3
Galp MZ value (mEUR)	1 238.6	
Value per share (EUR/sh)	1.49	
Uncertainty factor	30%	
Addition to price target (EUR/sh)	1.05	

Source: GALP, Team Estimates

**Figure 27: Forecasted EBITDA Margin**



Source: Team Estimates

**Brazil** | This location will keep being GALP's biggest value driver, with an increasing number of FPSO's in its current projects. Most of the projected growth of the WIP comes from the Brazilian pre-salt, that also benefits from low costs (the breakeven from this region is around \$30/bbl). At least 3 new blocks will start production until 2023F, but the main contributor to the company's WIP will come from the Lula-Iracema block. If all the FPSOs installed in Brazil by 2025F would be in plateau the WIP could reach 231 kboe/d by 2025F. Although, decreases in the capacity of older FPSOs are expected, so we estimate that Brazil operations will contribute with 207 kboe/d (93% of the WIP).

**Angola** | Blocks 14 and 14k in Angola are declining, whereas a new block is now in production - Block 32. This block will keep the contribution from Angola relatively stable. GALP expects Angola's production to represent around 1% of total WIP by 2025.

**Mozambique** | Gas reserves in the Rovuma Basin are among the biggest ever found. Here Galp has two projects: Coral FLNG, that starts production in 2022 and Rovuma LNG that starts in 2025. These projects will add up to the company energy mix, but we consider that the target of 70% oil and 30% gas mix will only be achieved later in this decade. For our forecast we consider gas to account for 12% in the mix.

To properly capture the potential of Rovuma project, we decided to value GALP's stake separately based on recent transactions. There are the two transactions we deemed considerable: one from Exxon and one from TOTAL. Although this second is in a different block, it is in a surrounding area. This valuation yielded an additional € 1.05 to the price target (Table 9 - Appendix 18).

**Downstream: One part leading, one part growing**

GALP operates in a mature market with a rather stable growth. Sales growth are forecasted to follow Portugal's economy. Different assumptions were used for the two segments. GALP's strong position in both segments lead us to a less conservative approach.

**R&M** | GALP is market leader in this segment where competition is fierce. In the refining business unit (BU) GALP's installed capacity gives them an advantage over their rivals, with the ASP expected to increase due to the increase in Brent Price. We forecast that the Refining Margin will increase when compared with historical values, averaging \$5.8/boe for 2020-2025. The sales from the marketing BU will be linked to the demand in the Iberian market. Knowing that the energy demand is linked with the GDP growth, we expect that sales will increase in average 1.7% in 2019-2025F. The operational improvements in the segment will lead to a 6.4% CAGR 2019-2025F of the EBITDA. More detailed information about Refining and Marketing can be found in Appendix 9.

**G&P** | GALP's two main BUs in this segment are the Supply & Trade of NG and the supply of Power. The Supply & Trade of NG sales will be linked to the increase in demand of NG in Portugal and the amount of tradeable NG that GALP has available. The NG demand in Portugal is expected to be 1.8% per year and the tradeable NG will increase significantly in 2022F. The power demand in Portugal is expected to increase 1.41% but GALP power unit is likely going to grow above it based on its investments in the renewables sector. This segment will represent the smallest contribution for the companies' cash flow generation, but the low capital needs and the relatively high stability of the segment will turn the segment into a valuable asset for the company, with its significance expected to grow throughout the decade. More detailed information about the Gas and Power can be found in Appendix 10.

**Capex and D&A**

Considering the historical investment and the company's targets for CAPEX, we see an increase for all segments, all for different reasons, always above € 1bn, even reaching almost 1,2 in 2023F. Includes IFRS 16 effects. E&P CAPEX is the most demanding, consuming around 70% of the total. R&M segment will have a significant decrease in their CAPEX since historically most of its expenditures come from maintenance operations. No further operations are expected to happen throughout the forecast horizon. D&A rates for each segment are obtained via historical percentages, but differently for all segments, as some also consider production. More detailed information about the Upstream can be found in Appendix 11.

**Weighted Average Cost of Capital**

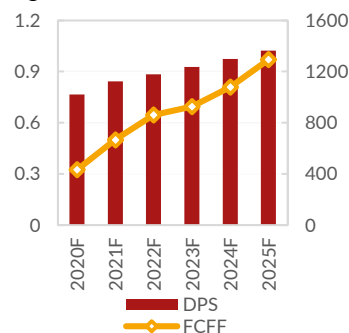
To discount FCFF we used four different WACC rates in order to account for different risks in operations and countries. We followed the CAPM approach for the computation of the **Cost of Equity**. As a proxy for the RFR we used a 10-year normalized 10Y German Government Bond Yield and added a CRP for Portugal and Brazil. Betas for the segments were estimated by computing unlevered betas for all segment peers and adjust them for GALP's capital structure and tax rate. Cost of equity ranges between 5.2% and 10.5%. To compute GALP's **Cost of Debt** we considered, again, the 10-year normalized 10Y German Government Bond Yield as the RFR, added the CRPR and, although GALP is not rated by rating agencies, we decided to add a spread of 75bp. - according to a synthetic rating of AAA. Adjusting for taxes, we reached an after-tax cost of debt of 2.3%. Both cost of equity and cost of debt are expected to remain constant for the duration of the forecasted period, meaning that changes in WACC will only arise from changes in the capital structure.

**FCFE and DDM**

These complementary approaches are an interesting proxy to our price target of €18.1/sh. In the case of FCFE, it is supported by the stable capital structure the company has maintained and is expected to maintain. The use of the DDM is justified with the stable dividend payment of the company.

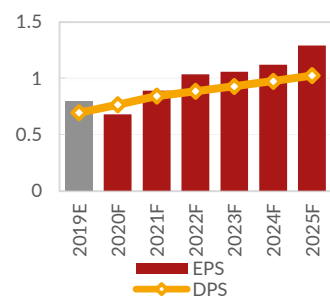
**Dividend Policy**

**Figure 28: Dividend vs FCFF**



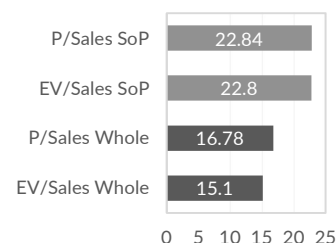
Source: Team Estimates

**Figure 29: Dividend Policy**



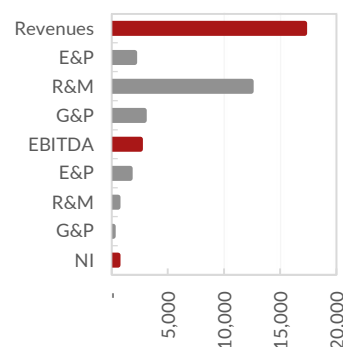
Source: Team Estimates

**Figure 30: Multiples Valuation**



Source: Team Estimates

**Figure 31: P&L Breakdown 2020YE**



Source: Team Estimates

GALP aims at a 10% YoY dividend growth from 2019 to 2021. We deem this increase until 2021F feasible, reaching almost € 0,85/sh. From 2021 onwards, we set a 5% YoY growth that will reach a bit above €1 in 2025, representing a 6,6% CAGR 2019-2025F. In Figure 38, we can see a sustainable Payout ratio.

**Peer's Selection**

For GALP's peer group selection, 2 approaches were followed, consistently with our perspective so far: one group through a SoP and another looking at the company as a whole. For both approaches, we first narrowed the comparable companies based on their geographical location and then considering the similarity of various key financial results. We reached 7 peer companies for the company as a whole and never less than 4 per segment, considering the SoP (Appendix 19).

**Relative Valuation**

We used Relative Valuation Multiples as a complementary valuation method to the DCF, considering EV/Sales and P/Sales multiples. GALP is trading at a premium based on both multiples, EV/Sales (which is mainly explained by its potential to grow as a consequence of its high profitability E&P projects). Using EV/Sales we reach a price target of € 15.10/sh whereas the P/Sales yields a price of € 16.78/sh, which sustains our buy recommendation using DCF approach (Appendix 20).

**Financial Analysis**

**Strong Cash Flow Generation** | Despite the general public idea, we believe that oil and gas companies will stay for good. Due to GALP's ability to generate strong CF from operations, its FCFF will increase in the 2019-2025F period (+25% CAGR). The company also presents high liquidity, mostly due to the significant levels of cash holdings. GALP should pay attractive dividends, keeping debt at low levels and still managing the working capital efficiently to present a current ratio of 1.7x to 1.8x in the upcoming years. Cash from operations will also be enough to offset demanding CAPEX requirements of up to €1.2 bn/year.

**Mature industry, stable financials** | Pricier R&M will affect performance. Net increase in R&M deteriorates inventory turnover, although the cash conversion cycle will stabilize around 75 days. The mature nature of the business, both in the Upstream and Downstream segments, does not require relevant working capital adjustments. Also, efficiency levels will keep stable. Asset turnover of around 1.2x is within the historical range and above peers.

**Debt management** | GALP's debt level is below the industry average. This does not come with a surprise, as the company is among the more profitable IOC players and has proved itself to generate stable cash flows. Book D/E is around 0.71x, while peers set the level below at 0.49x. Again, we believe that future investments are not at risk because the company can easily fund new projects with outside capital. The EBITDA margin, along with low leverage, put the debt coverage above 10x with room to improve to 16x by 2025F. Net Debt/EBITDA is comparable across the industry and GALP shows a ratio that is very close to its peers, despite the higher leverage. The ratio of 0.9x contrasts with peers 1.0x. Figures do not lie when it comes to showing how GALP is sustainably managing debt.

**Profitability** | E&P revenues are fueled by 2P Reserves (755 mmboe 2018YE) and average WIP (107 kboe/d). In 2018, with a \$15/boe increase in GALP's oil and gas average selling price and the preservation of production costs, the company registered a positive YoY EBITDA margin to c.70% or €1.44 bn. In the coming years, the margin in the segment is expected to evolve positively to 83% 2025F.

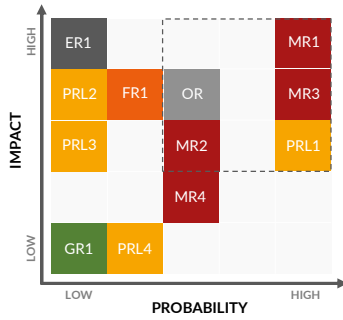
Regarding revenues of the R&M segment, they increased in 2018, mainly due to higher ASP (c.27% YoY). This factor, aligned with higher maintenance operations in the refineries, led to a decrease in the company's refining margin of \$0.8/boe YoY to \$5.0/boe 2018YE. Consequently, margins were heavily affected in that year, resulting in a 17% YoY decrease in the R&M EBITDA to EUR 637mn, with margin of 5%. We take a conservative approach and forecast margins to be stable at 6% going forward.

**G&P** revenues increased 11% YoY to €2.9 bn 2018, mainly explained by the +8% YoY in NG sales to direct clients and the +6.7% YoY change in electricity sold to clients. The amount of electricity sold to the grid decreased by 14%, but the previously mentioned increases in sales offset much of its effects on the revenues. These changes had a small impact in the segment's EBITDA, increasing only 3.8% YoY and setting the margin at 5% 2025F.

All segments make a positive whole. GALP's overall profitability is showing an upward trend since 2015. EBITDA is expected to continue evolving at +8.5% CAGR 2019-2025F, exceeding the 4% CAGR for sales. Figures are already accounting for IFRS 16 effects starting in 2019. Operational profit will grow 9.5% CAGR, regardless of operational costs increases over the years, due to augmented production and sales. The growth and later stability in generating profits will allow growing dividends distribution.

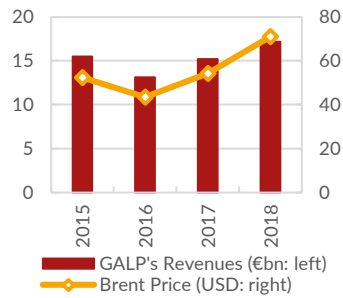
**ROE at unusual levels** | All drivers above will set GALP's ROE averaging 18% 2019-2025F. Yet, shareholders' value in the company will also reflect the dividend distribution. Shareholders can also assess value creation through the average EVA® of about €1.0 bn 2019-2025F. Peer's average ROE 2019F of 11.5% show GALP's strategic way of operating businesses. The main driver for a better outlook

Figure 32: Risk Matrix



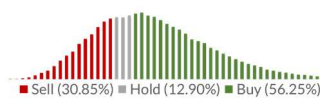
Source: Team estimates

Figure 33: GALP's Rev. vs Brent Price



Source: GALP, Thomson Reuters

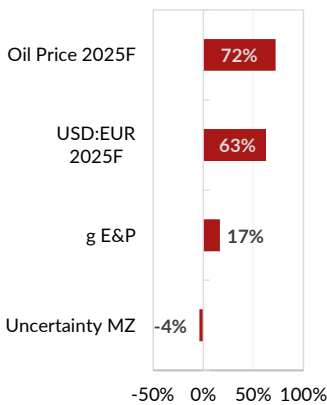
Figure 34: Monte Carlo Simulation



Mean: 18.45; Median: 18.01

Source: Team Estimates

Figure 35: Monte Carlo Simulation Variables



Source: Team Estimates

Table 11: Sensitivity Analysis

Price target	Oil Price 2025F											
	18.10	65.00	65.50	66.00	66.50	67.00	67.50	68.00	68.50	69.00	69.50	70.00
0.85	14.63	14.87	15.12	15.37	15.62	15.88	16.15	16.41	16.68	16.96	17.23	17.23
0.86	15.10	15.35	15.60	15.85	16.11	16.37	16.64	16.91	17.18	17.46	17.74	17.74
0.87	15.57	15.82	16.08	16.33	16.59	16.86	17.13	17.40	17.68	17.96	18.24	18.24
0.88	16.04	16.29	16.55	16.81	17.07	17.34	17.61	17.89	18.17	18.45	18.74	18.74
0.89	16.51	16.76	17.02	17.29	17.55	17.83	18.10	18.38	18.66	18.95	19.24	19.24
0.90	16.97	17.23	17.50	17.76	18.03	18.31	18.59	18.87	19.15	19.44	19.74	19.74
0.91	17.44	17.70	17.97	18.24	18.51	18.79	19.07	19.35	19.64	19.94	20.23	20.23
0.92	17.90	18.17	18.44	18.71	18.98	19.27	19.55	19.84	20.13	20.43	20.73	20.73
0.93	18.36	18.63	18.90	19.18	19.46	19.74	20.03	20.32	20.62	20.92	21.22	21.22

Source: Team Estimates

for GALP is the operations in the Lula-Iracema region that are among the most profitable blocks worldwide, and with room to grow.

## Investment Risks

### Market Risk | Commodity Prices (MR1)

Commodity prices are unavoidable risks for Oil and Gas companies. GALP is highly exposed to both oil and NG prices, as any change in these variables directly affects the company's sales for both Upstream (selling price of extracted products) and Downstream (buying prices of raw material plus its effect on the by-products). Prices are mostly affected by market dynamics which GALP cannot influence.

By being an IOC, there is a natural hedging effect that works as a risk mitigating factor. Simultaneously, the risk will be softened by the use of derivatives.

### Market Risk | Exchange Rates (MR2)

GALP operates in several locations. It is mostly exposed to USD, the standard currency for the Oil & Gas industry, but also to BRL, as GALP's Brazilian subsidiary (Petrogal Brasil) reports in its domestic currency. Both Upstream and Downstream sales are sensitive to FX because GALP consolidates in EUR. The exposition to USD is unquestionably significant. We estimate a  $\Delta$ EBITDA of €110-120m from a +0.05 (500 pips) variation in EUR: USD. The natural hedge that comes from the presence in the Upstream and Downstream will decrease the impact of the risk. GALP also manages to mitigate it at a corporate level, mainly through derivatives.

### Market Risk | Energy Transition (MR3)

The worldwide economy is highly dependent on fossil fuels, but the expectation is for this dependence to decrease in the following decades. This decrease will come from the growth of renewable sources of energy generation and the substitution of fossil fuels for electricity, mostly in terms of transportation. The electrification of other industries is also unavoidable (e.g. construction). The other big shift in the energy segment will be the surpassing of coal by NG as the second most used fossil fuel. This is aligned with the expected evolution in GALP's WIP, where the current mix of oil and gas is 90% and 10%, respectively, and the expected mix is 70% and 30%. The company is trying to follow the trend of electrification to mitigate energy transition risks through investments in the renewable energies' segment (10 to 15% of CAPEX).

### Operational Risk | E&P Uncertainty (OR)

The selection of E&P projects is fundamental for IOCs, but this process encompasses a relevant uncertainty to predict the economic value. If the company manages to efficiently select its projects, it still has to overcome the possible problems that will arise with their execution, development and operation. Too many projects without commercially recoverable reserves might weight heavily on the balance sheet and jeopardize the whole group. This risk is highly diminished by the strategic choices of the company, with most of the projects being explored in locations where the company and their partners are already experienced (i.e. ultra-deep waters). The use of new technologies, e.g. AI, to diminish the uncertainty risk has become the norm in the industry. GALP is following suit, working with IBM to enhance seismic interpretation.

### Political, Regulatory and Legal Risks | IMO 2020 and Paris Agreement (PRL1)

High-sulfur fuel was very common for marine bunkers, and this type of fuel leads to both CO<sub>2</sub> emissions and high sulfur dioxides emissions. The latter is linked to acid rain and lung cancer. IMO 2020 will limit the global bunker fuel to 0.5% sulfur content, lowering it from the current 3.5%. In 2018YE, marine bunkers represented 21% of the company's R&M wholesale unit. To comply with IMO 2020, GALP has already implemented the required changes in its refining processes. In the past years, GALP has also been adjusting its operations to reduce the GHG emissions as required by the Paris Agreement. In the case of new regulations, further changes will need to be made. These changes will lead to periods of maintenance and adaptation, negatively impacting usage capacity and refining margins, and, consequently, the profitability of the R&M segment. GALP is actively working to gradually diversify their portfolio, reducing the operational impact that more strict regulations would have.

Table 10: Sensitivity Analysis Terminal Growth Rate

Change in g	-0.75%	-0.50%	-0.25%	0%	0.25%	0.50%	0.75%
Price Target	17.00	17.32	17.69	18.10	18.57	19.12	19.75
Upside/Downside	13.5%	15.6%	18.1%	20.8%	24.0%	27.6%	31.9%
Recommendation	Hold	Hold	Buy	Buy	Buy	Strong	Strong

Source: Team Estimates

## Covid-19 Update

### GALP: Strong, Strategic and Sustainable

We issue BUY recommendation in our updated equity research for Galp Energia S.G.P.S., S.A. (GALP), with a price target of €12.1/sh for 2020YE using a DCF model, implying a 26% upside potential from the March 9th, 2020 closing price of €9.58/sh, but we assess it as high-risk. Our additional valuation methods still support our updated valuation, with the exception of the DDM, with this method becoming an outlier, given GALP's dividend growth profile.

The first version of this report was finished in January 15th, 2020. Since then, the world has changed. The COVID-19 pandemic changed everything in our daily lives, and it also impacted the world economy like never before. Most of the global industries were negatively impacted by the pandemic, and the Oil & Gas industry was not an exception.

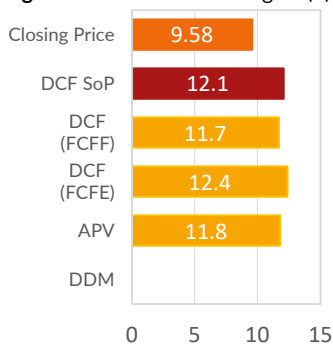
Firstly, all of the energy sector was negatively affected by the decrease in demand of all types of energy. Most countries applied some sort of lockdown, leading to a major crash in demand. Specifically, the oil industry suffered from all fronts. The decrease in demand for the final consumer, either households or businesses, made the need of refined oil products to decrease. The decrease in the use of installed refining capacity all over the industry impacted negatively the need for the acquisition of oil, leading to a snowball effect that made the oil price reach historically low prices. Even though the problems inside the OPEC between Saudi Arabia and Russia were resolved, this settlement wasn't enough to offset the major impact that the pandemic had in the oil prices.

Due to the major impacts caused by the pandemic, the team made a new update in March, reflecting the new reality. We review our whole forecast to understand what the impacts on GALP's operations are. With that in mind, adjustments needed to be done. As seen in the figure X, our oil price forecast was adjusted in order to capture the new reality. Our average Brent price for our forecast period went from \$65.67 to \$54.50, with the 2020F being the one with the biggest adjustment, going from \$63.00 to \$43.00. There's an expectation that with the combination of the new agreement that the OPEC with the possible return to normal in the next couple of years the oil price will eventually recover to previous values. However, we decided that would be prudent to have a conservative approach, and in the terminal period our forecasted Brent Price registered a decrease of \$8.00, being fixated now at \$60.

Operationally, just a few adjustments were made. We strongly believe that the company has the capacity to quickly recover to previous operational levels, and so we forecasted that the main impact would be felt during this year. Accordingly, we made an adjustment for the growth in production in 2020 for the E&P segment (from 12% to 7%) but maintained the growth that we forecasted for the rest of the years. We expected the R&M segment to be able to maintain its production levels, being mainly affected by the decrease in their refining margin, mainly explained by the decrease in the ASP. This decrease made the average Refining Margin for the forecasted period to go from \$6.08/boe to \$4.53/boe. Dividends were adjusted for 2020, as we truly believe GALP will strategically adjust their financial decisions to the current moment. GALP's partnerships are important in a normal scenario, and even more important in crisis. By working together, all companies can assure that operations continue as planned.

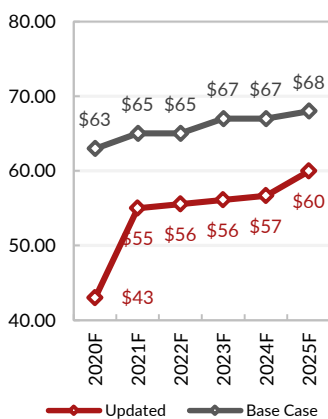
Even with all the necessary adjustments that were made in order to capture new reality in which the company operates, we still see GALP as a strong, strategic and sustainable company. Due to a strong production portfolio that's able to add value even in situations of low oil prices, the company is strategically positioned to keep growing in the years to come, driven by its increasing production and investments in new BUs aligned with the upcoming Energy Transition, either in solar power with ACS or natural gas with Mozambique. That sets the base for a sustainable growth, both financial and environmentally, in the medium and long term.

Figure 36: GALP's Price Targets (€)



Source: Team estimates

Figure 37: Oil Prices Forecast (\$/boe)



Source: Team estimates

# Mozambique - GALP's greener future is a Real Option

Galp has been operating in the upstream business in Mozambique since 2007. This entry into the country was marked by the signing of a contract with the Italian Eni and the Empresa Nacional de Hidrocarbonetos (ENH) – a Mozambican state-owned company – for the exploration of Area 4 in the Rovuma basin with water depths that range from shallow to ultra-deep (where GALP has an extensive knowledge, mainly derived from the many years of off-shore oil exploration in Angola). With an amount of around 85 tcf of gas initially in place (GIIP) identified in 2011 in this area, the Rovuma basin became one of the world's most important regions for the future of natural gas production and assumes a key role in GALP's strategy towards a greener and more sustainable energy mix, reducing carbon emissions. Mozambique is set to become one of the world's largest suppliers of natural gas.

Today, GALP has a 10% stake in this area and is working in 2 big projects (Coral South FLNG and Rovuma LNG) along with the Mozambique Rovuma Venture S.p.A. which has a 70% stake and is composed by 3 giants of the Oil & Gas industry: ExxonMobil (40% stake and operator of the onshore Rovuma LNG project); Eni (40% stake and operator of the off-shore Coral South FLNG); and China National Petroleum Corporation (CNPC) (20% stake). The remaining 20% are owned by the Japanese Kogas and Empresa Nacional de Hidrocarbonetos (ENH), with equal parts each.

**Coral South FLNG** | The Coral South project that has reached final investment decision (FID) in 2017, consists of the construction of a FLNG (floating liquified natural gas) vessel - in the southern part of the Coral field (16 tcf of GIIP) - capable of producing more than 3.4 million tons per year (mtpa). This FLNG unit will be fed by six wells placed about 2000m under water and with an average depth of 3000m. First gas is expected in 2022.

**Rovuma LNG** | The Rovuma LNG project will explore the enormous reserves of natural gas in the Mamba field. These reserves are straddled between Area 1 (operated by Total) and Area 4 - in 2019 an unification agreement between these 2 areas was approved by the Mozambique authorities. The project will consist of the construction of two onshore LNG trains (with a capacity of approximately 7.6 mtpa, supplied by 24 subsea wells), and the gas treatment, liquefaction, storage, and export. ExxonMobil will lead the construction and operation of onshore facilities and related liquefaction trains, while ENI will lead the Upstream developments and operations.

The Mamba field stands out not only because of the great level of reserves, but also because of the quality of these reserves. The gas there is unusually "clean", reducing the need for extensive treatment processes (e.g., CO2 and mercury removal) reducing production costs and adding to the attractiveness of this project.

In May 2019, the Mozambique government approved the project's development plan for the production, liquefaction, and marketing of natural gases from three of the reservoirs in the Mamba complex. Following this approval, GALP and its partners in area 4 awarded the EPC (engineering, procurement and construction) contract for Phase I of the onshore facilities to the JFT consortium – the Japanese group JGC Corp, the American Fluor and the British TechnipFMC. This EPC will allow for the start of the midstream and upstream early projects activities, estimated at c.\$500m.

It is through Rovuma LNG that GALP expects to reach its goal of 30% of the WIP being natural gas production by 2030.

## Current Outlook

Since the beginning of 2020 that the Oil & Gas industry has been suffering consecutive blows. Oil prices fell massively in 2020 and the main contributors to this fall are the COVID-19 pandemic and the oil prices war that erupted because of it.

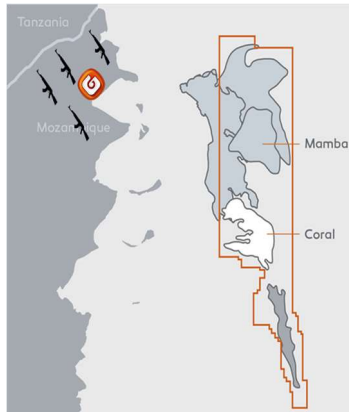
**The effects of COVID-19** | Following the most recent energy report from the International Energy Agency (IEA) "the Covid-19 pandemic has caused more disruption to the energy sector than any other event in recent history". With people locked at home with their cars in the garage, airplanes on the ground and boats stranded, energy demand has sharply declined during the months of lockdown. IEA estimates that in 2020 global energy demand is set to drop by 5%. The impact on oil demand will be even greater (-8%), while natural gas will see a softer decrease (-3%).

**2020 Russia-Saudi Arabia oil price war** | In March 2020, presented with a reduction in oil and gas prices, OPEC countries agreed on a production cut that would, hopefully stabilise prices. However, Russia refused to join OPEC in this effort of reducing production. In response to Russia's denial, Saudi Arabia increased production – pumping more than 11 million barrels a day – and a price war began.

By the time the two giant producers finally agreed to cut back production, the markets were already extremely oversupplied, and, in April 20, the world saw, for the first time, negative oil prices – producers were paying buyers to take the commodity off their hands over fears that they would run out of storage capacity in May.

**Armed conflict in Mozambique** | For the past 3 years, Cabo Delgado (the Mozambican province where Rovuma LNG onshore operations are located) have been afflicted by armed conflicts between ISIS and Mozambican troops. More than 1000 people have been killed and numerous infrastructures have been vandalised/destroyed. Oil & Gas companies operating in the province have not been spared and workers from the French company Total and the American Anadarko are among the victims of these attacks.

**Figure 38:** Armed Conflicts in Cabo Delgado, Mozambique



Source: GALP, Exxon Mobil

**Table 12:** Rovuma LNG Comparable Transactions approach updated

Mozambique		
Acquisition	Exxon	Total
Area	Area 4 Rovuma	Area 1 MZLNG
Total capacity (mta)	15.2	12.9
Stake bought	25.0%	26.5%
Price paid (mUSD)	2,800	3,900
P/mta (mEUR)	614.4	1,015.4
Galp ownership in mta	1.5	
Galp Stake in mEUR	933.9	1,543.3
Galp MZ value (mEUR)	1,238.6	
Value per share (EUR/sh)	1.49	
Uncertainty factor	45%	
Addition to price target (EUR/sh)	0.82	

Source: GALP, Team Estimates

### But how will the current outlook affect our valuation?

**Coral South FLNG** | Our chosen method of valuation is a DCF with a period of analysis ending in 2025. As first gas in Coral South FLNG is expected in 2022, we believe our DCF valuation captures well the cash flows from this project and, therefore, there was no need for an alternative method of valuation.

The construction of the Coral South FLNG vessel has already started and total costs for the Coral South project are expected at c.\$7 billion. The project will be partly funded by venturers' capital and partly through Export Credit Agencies and commercial banks. However, as soon as, performance tests of the vessel are validated and production starts, Area 4 partners will have their financing obligations towards the lenders terminated and lenders will be guaranteed only by the cash flows of the sale of LNG produced in the FLNG vessel.

Furthermore, the LNG produced in this project already has a destiny. A long-term sale and purchase agreement was done between the Area 4 concession partners and BP - for the following 20 years after the start of production, BP will buy all LNG produced in Coral South FLNG.

For these reasons, the risk associated to this project is well diversified between the Area 4 partners, the lenders and BP.

Being inserted into the DCF valuation, this project is affected by the COVID-19 update that we made to our valuation – we decreased expected oil (and gas) prices along with a reduction in production growth. **Further updates are not expected to the valuation of this project.**

**Rovuma LNG** | This project was valued separately to our main valuation. As first gas was expected in 2025, right at the end of our analysis period, the DCF valuation we used did not capture the future cash flows produced and we decided to value the Rovuma LNG separately using comparable transactions that occurred in the market in 2017 and 2019.

As this project was valued separately, our COVID-19 update did not affect our valuation for the Rovuma LNG and the addition to the price target from this project remained at €1.05/share. However, with all the recent events regarding oil and gas prices and the armed conflict in Mozambique, the valuation of this project must be reviewed.

ExxonMobil, the operator in this project, decided on a 30% cut on capital expenditures and 15% in operating expenses in 2020 mainly due to falling oil prices. For this reason, the final investment decision on this project that was due in late 2020 (after being postponed in 2019) was again postponed by Exxon with no new target date. This may represent a 2-year delay in the start of production.

The combination of this delay with the armed conflicts in Mozambique (and a possible escalation), lead me to **suggest an adjustment to our previous valuation**: an increase in the uncertainty factor associated to this project from 30% to 45% (6% for each year of delay and 3% relating to the armed conflicts). Therefore, the new expected value added to our valuation from the **Rovuma LNG is now €0.82/share** (Table 12).

**Alternatively**, this project may be valued using a **Real Options approach**. With the signing of the Exploration and Production Concession Contract (EPCC) in 2006, Area 4 partners secured the rights to explore the land until 2049. Being shielded from any competition in Area 4, GALP and its partners may choose the best time to invest and start exploration. In other words, they have an Option to Wait. And this option has value.

This approach is particularly relevant considering the two times that the FID has been postponed for the Rovuma LNG project. Area 4 partners wish to invest when market conditions – mainly oil and natural gas prices – are more favourable.

This Option to Wait is nothing more than an American call option with an underlying value of \$10.2b, corresponding to the discounted cash flows of the project for a period of 30 years and a strike price equal to fixed costs of \$29.9b. The option matures in 29 years (ending in 2049 with the end of EPCC), considers a 5-year annualized volatility of gas prices of c.25% and has a dividend yield of 3.3%, representing the annual cost of delay. (Table 13)

The option was computed using a Binomial model - which allows for the early exercise of the option (in this case, starting the investment in the project) – with 29 steps.

With estimated CAPEX of \$29.9b and OPEX of \$13.5b and, considering today's market prices for NG the project would not be viable. However, when valuing the project using a Real Options approach, we reach a value of \$5.50b (€4.69b) for Rovuma LNG (Table 14).

Considering GALP's 10% stake in the project, the **value added to the price target from Rovuma LNG is €0.57/sh.**

### The other side of the coin: Impact from these projects in the Mozambican communities

The enormous investments and the presence of such large companies in an undeveloped country like Mozambique, may be a game changer if managed well.

Standard Bank Group, one of the largest African banks, published a macroeconomic study where they demonstrate the potential of the Rovuma LNG project in transforming Mozambique through the

**Table 13: Inputs for the Real Option**

Maturity (years)	29
Volatility Gas Prices	25.1%
Underlying Asset Value (USD)	11,974,960,303
Strike Price (USD)	29,850,000,000
Interest Rate (Mozambique)	15.9%
Dividend Yield	3.33%
Gas Prices (\$/MMBtu)	4.33

**Source:** Bloomberg, GALP, Standard Bank, Team Estimates

**Table 14: GALP's stake through a Real Options approach**

Rovuma LNG	
Real Option Value (USD)	5,496,191,273
Exchange Rate (Eur/USD) (16/10/20)	1.17
Real Option Value (EUR)	4,690,383,404
GALP's 10% stake (EUR)	469,038,340
n° shares	829,250,635
Addition to price target (EUR/sh)	€ 0.57

**Source:** Team Estimates

reinvestment of its revenues into economic and social development. According to SB, the project has the potential to add at least c.\$15 billion to the country's GDP (doubling Mozambique's current GDP) and to create c.257,000 national job opportunities at an economy level.

Adding to the positive externalities that arise from the massive investment in Mozambique, Galp and its partners are also actively seeking to enhance the lives of many Mozambicans. May it be for increasing ESG ratings or for a genuine care about the local communities, fact is that GALP and its partners in Area 4 are motivated to work for a brighter future for the communities of the areas where they operate. These may be through initiatives aimed at education, healthcare or even protection (e.g. recently ExxonMobil donated \$50,000 to the initiative "Coração Solidário - Cabo Delgado" which aims to assist those affected by the armed conflict in the country). Furthermore, Area 4 partners have already announced that once production starts in the Rovuma LNG, they will provide Mozambique with up to 17,000 tonnes of LNG per year.

# Appendices

## Appendix 1: Income Statement (GALP)

Income Statement (mEUR)	2017	2018	2019E	2020F	2021F	2022F	2023F	2024F	2025F	CAGR 19-25F
<b>Operating Income</b>										
Sales and service rendered	15,201.0	17,182.0	16,206.5	17,177.4	18,349.0	18,959.4	19,339.7	19,716.5	20,726.3	4.2%
Exploration & Production	1,044.0	1,687.0	1,795.0	2,042.8	2,339.5	2,596.9	2,971.2	3,268.3	3,648.8	12.6%
Refining & Marketing	11,722.0	12,780.0	11,768.9	12,411.4	13,279.4	13,295.8	13,260.1	13,340.0	13,974.9	2.9%
Gas & Power	2,593.0	2,885.0	2,816.0	2,900.1	2,910.6	3,250.8	3,296.1	3,299.8	3,298.0	2.7%
Other	134.0	142.0	144.4	146.9	149.4	151.9	154.5	157.1	159.8	1.7%
Eliminations	-292.0	-312.0	-317.8	-323.8	-329.8	-336.0	-342.3	-348.7	-355.2	1.9%
Other operating income	105.0	141.0	143.4	145.8	148.3	150.8	153.4	156.0	158.7	1.7%
<b>Total operating income</b>	<b>15,307.0</b>	<b>17,322.0</b>	<b>16,349.9</b>	<b>17,323.2</b>	<b>18,497.3</b>	<b>19,110.3</b>	<b>19,493.1</b>	<b>19,872.6</b>	<b>20,885.0</b>	<b>4.2%</b>
<b>Operating costs</b>										
Cost of sales & Production costs	13,524.0	15,077.0	13,808.7	14,764.4	15,489.7	15,764.2	15,922.9	16,066.2	16,638.4	3.2%
Exploration & Production	194.0	247.0	340.1	381.0	423.1	469.8	521.7	574.0	631.7	10.9%
Refining & Marketing	10,951.0	12,143.0	11,044.4	11,829.0	12,523.2	12,435.0	12,504.4	12,596.5	13,129.4	2.9%
Gas & Power	2,461.0	2,748.0	2,677.7	2,760.1	2,768.8	3,093.2	3,136.0	3,139.6	3,137.8	2.7%
Other	104.0	116.0	116.6	117.7	120.1	123.2	125.0	127.2	129.7	1.8%
Eliminations	292.0	317.0	305.2	323.4	345.5	357.0	364.2	371.3	390.3	4.2%
RCA Effect	116.0	-65.0	-65.0	-65.0	-65.0	-65.0	-65.0	-65.0	-65.0	0.0%
<b>EBITDA IFRS</b>	<b>1,899.0</b>	<b>2,180.0</b>	<b>2,541.3</b>	<b>2,558.8</b>	<b>3,007.6</b>	<b>3,346.1</b>	<b>3,570.2</b>	<b>3,806.4</b>	<b>4,246.6</b>	<b>8.9%</b>
Exploration & Production	850.0	1,440.0	1,454.9	1,661.8	1,916.4	2,127.1	2,449.6	2,694.3	3,017.2	12.9%
Refining & Marketing	771.0	637.0	724.5	582.4	756.2	860.8	755.8	743.4	845.5	2.6%
Gas & Power	132.0	137.0	138.3	140.0	141.7	157.6	160.1	160.1	160.1	2.5%
Other	30.0	26.0	27.8	29.2	29.3	28.7	29.5	29.9	30.1	1.3%
Eliminations	0.0	5.0	-12.7	-0.3	15.7	21.0	21.9	22.6	35.1	-
<b>D&amp;A, Provisions &amp; Impairments</b>	<b>784.0</b>	<b>682.0</b>	<b>774.1</b>	<b>840.9</b>	<b>894.4</b>	<b>938.8</b>	<b>988.8</b>	<b>1,032.0</b>	<b>1,093.7</b>	<b>5.9%</b>
Exploration & Production	383	329	465.702	500.1	535.9	576.4	621.9	668.3	719.3	7.5%
Refining & Marketing	357	337	235.453	258.3	269.4	268.6	256.0	255.7	267.4	2.1%
Gas & Power	18	21	43.9934	45.1	58.6	61.6	77.6	76.0	74.5	9.2%
Other	4.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Eliminations	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Provisions (including CESE)	22	-9	29	37.3	30.4	32.3	33.3	32.0	32.5	1.9%
<b>Total operating costs</b>	<b>14,308.0</b>	<b>15,759.0</b>	<b>14,582.8</b>	<b>15,605.3</b>	<b>16,384.1</b>	<b>16,702.9</b>	<b>16,911.7</b>	<b>17,098.2</b>	<b>17,732.1</b>	<b>3.3%</b>
<b>EBIT IFRS</b>	<b>1,115.0</b>	<b>1,498.0</b>	<b>1,767.1</b>	<b>1,717.9</b>	<b>2,113.2</b>	<b>2,407.3</b>	<b>2,581.4</b>	<b>2,774.4</b>	<b>3,152.9</b>	<b>10.1%</b>
Exploration & Production	467.0	1,111.0	989.2	1,161.7	1,380.5	1,550.7	1,827.7	2,026.0	2,297.8	15.1%
Refining & Marketing	414.0	300.0	489.0	324.0	486.8	592.2	499.8	487.7	578.1	2.8%
Gas & Power	114.0	116.0	94.3	94.9	83.1	96.0	82.6	84.1	85.7	-1.6%
Other	26.0	22.0	27.8	29.2	29.3	28.7	29.5	29.9	30.1	1.3%
Eliminations	0.0	5.0	-12.7	-0.3	15.7	21.0	21.9	22.6	35.1	-
Net financial expenses	-14.0	-12.0	-82.1	-95.9	-101.6	-106.1	-111.5	-116.9	-122.2	6.8%
Exchange gains/losses & derivatives	-18.0	-59.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Operating leases interest (IFRS 16)	0.0	0.0	-92.2	-86.0	-80.6	-76.4	-73.2	-70.9	-68.9	-4.7%
Results from financial investments	163.0	129.0	129.0	129.0	129.0	129.0	129.0	129.0	129.0	0.0%
<b>Financial result</b>	<b>131.0</b>	<b>58.0</b>	<b>-45.3</b>	<b>-52.9</b>	<b>-53.2</b>	<b>-53.5</b>	<b>-55.7</b>	<b>-58.8</b>	<b>-62.0</b>	<b>5.4%</b>
<b>Profit before taxes</b>	<b>1,246.0</b>	<b>1,556.0</b>	<b>1,721.8</b>	<b>1,665.1</b>	<b>2,060.1</b>	<b>2,353.8</b>	<b>2,525.7</b>	<b>2,715.5</b>	<b>3,090.9</b>	<b>10.2%</b>
Income taxes	-496.0	-736.0	-542.4	-524.5	-648.9	-741.5	-795.6	-855.4	-973.6	10.2%
SPT&IRP	0.0	0.0	-296.8	-348.5	-414.1	-465.2	-548.3	-607.8	-689.4	15.1%
Energy sector extraordinary contribution (CESE)	-64.0	-60.0	-64.8	-64.2	-63.2	-63.0	-63.8	-63.6	-63.4	-0.3%
<b>Net Income</b>	<b>686.0</b>	<b>760.0</b>	<b>817.9</b>	<b>727.9</b>	<b>933.8</b>	<b>1,084.1</b>	<b>1,118.0</b>	<b>1,188.8</b>	<b>1,364.5</b>	<b>8.9%</b>
Non-controlling interests	-88.0	-151.0	-158.8	-163.8	-195.7	-226.2	-240.8	-259.7	-294.6	10.9%
<b>Net income to common shareholders</b>	<b>598.0</b>	<b>609.0</b>	<b>659.1</b>	<b>564.1</b>	<b>738.1</b>	<b>857.9</b>	<b>877.2</b>	<b>929.0</b>	<b>1,069.8</b>	<b>8.4%</b>
<b>Shares outstanding (million)</b>	<b>829.3</b>	<b>829.3</b>	<b>829.3</b>	<b>829.3</b>	<b>829.3</b>	<b>829.3</b>	<b>829.3</b>	<b>829.3</b>	<b>829.3</b>	<b>0.0%</b>
<b>Basic and diluted EPS</b>	<b>0.72</b>	<b>0.73</b>	<b>0.79</b>	<b>0.68</b>	<b>0.89</b>	<b>1.03</b>	<b>1.06</b>	<b>1.12</b>	<b>1.29</b>	<b>8.4%</b>
<b>DPS</b>	<b>0.00</b>	<b>0.63</b>	<b>0.70</b>	<b>0.77</b>	<b>0.84</b>	<b>0.88</b>	<b>0.93</b>	<b>0.97</b>	<b>1.02</b>	<b>6.6%</b>
<b>Dividend (€m)</b>	<b>0.0</b>	<b>524.5</b>	<b>577.0</b>	<b>634.6</b>	<b>698.1</b>	<b>733.0</b>	<b>769.7</b>	<b>808.2</b>	<b>848.6</b>	<b>6.6%</b>
<b>Payout</b>	<b>0.00</b>	<b>0.69</b>	<b>0.71</b>	<b>0.87</b>	<b>0.75</b>	<b>0.68</b>	<b>0.69</b>	<b>0.68</b>	<b>0.62</b>	<b>-2.1%</b>



**Appendix 2: Common-size Income Statement (GALP)**

Income Statement - Common-size	2017	2018	2019E	2020F	2021F	2022F	2023F	2024F	2025F
<b>Operating Income</b>									
Sales and service rendered	99.31%	99.19%	99.12%	99.16%	99.20%	99.21%	99.21%	99.21%	99.24%
Exploration & Production	6.82%	9.74%	10.98%	11.79%	12.65%	13.59%	15.24%	16.45%	17.47%
Refining & Marketing	76.58%	73.78%	71.98%	71.65%	71.79%	69.57%	68.02%	67.13%	66.91%
Gas & Power	16.94%	16.66%	17.22%	16.74%	15.73%	17.01%	16.91%	16.60%	15.79%
Other	0.88%	0.82%	0.88%	0.85%	0.81%	0.79%	0.79%	0.79%	0.77%
Eliminations	-1.91%	-1.80%	-1.94%	-1.87%	-1.78%	-1.76%	-1.76%	-1.75%	-1.70%
Other operating income	0.69%	0.81%	0.88%	0.84%	0.80%	0.79%	0.79%	0.79%	0.76%
<b>Total operating income</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>
<b>Operating costs</b>									
Cost of sales & Production costs	88.35%	87.04%	84.46%	85.23%	83.74%	82.49%	81.68%	80.85%	79.67%
Exploration & Production	1.27%	1.43%	2.08%	2.20%	2.29%	2.46%	2.68%	2.89%	3.02%
Refining & Marketing	71.54%	70.10%	67.55%	68.28%	67.70%	65.07%	64.15%	63.39%	62.87%
Gas & Power	16.08%	15.86%	16.38%	15.93%	14.97%	16.19%	16.09%	15.80%	15.02%
Other	0.68%	0.67%	0.71%	0.68%	0.65%	0.64%	0.64%	0.64%	0.62%
Eliminations	1.91%	1.83%	1.87%	1.87%	1.87%	1.87%	1.87%	1.87%	1.87%
RCA Effect	0.76%	-0.38%	-0.40%	-0.38%	-0.35%	-0.34%	-0.33%	-0.33%	-0.31%
<b>EBITDA IFRS</b>	<b>12.41%</b>	<b>12.59%</b>	<b>15.54%</b>	<b>14.77%</b>	<b>16.26%</b>	<b>17.51%</b>	<b>18.32%</b>	<b>19.15%</b>	<b>20.33%</b>
Exploration & Production	5.55%	8.31%	8.90%	9.59%	10.36%	11.13%	12.57%	13.56%	14.45%
Refining & Marketing	5.04%	3.68%	4.43%	3.36%	4.09%	4.50%	3.88%	3.74%	4.05%
Gas & Power	0.86%	0.79%	0.85%	0.81%	0.77%	0.82%	0.82%	0.81%	0.77%
Other	0.20%	0.15%	0.17%	0.17%	0.16%	0.15%	0.15%	0.15%	0.14%
Eliminations	0.00%	0.03%	-0.08%	0.00%	0.08%	0.11%	0.11%	0.11%	0.17%
<b>D&amp;A, Provisions &amp; Impairments</b>	<b>5.12%</b>	<b>3.94%</b>	<b>4.73%</b>	<b>4.85%</b>	<b>4.84%</b>	<b>4.91%</b>	<b>5.07%</b>	<b>5.19%</b>	<b>5.24%</b>
Exploration & Production	2.50%	1.90%	2.85%	2.89%	2.90%	3.02%	3.19%	3.36%	3.44%
Refining & Marketing	2.33%	1.95%	1.44%	1.49%	1.46%	1.41%	1.31%	1.29%	1.28%
Gas & Power	0.12%	0.12%	0.27%	0.26%	0.32%	0.32%	0.40%	0.38%	0.36%
Other	0.03%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Eliminations	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Provisions (including CESE)	0.14%	-0.05%	0.18%	0.22%	0.16%	0.17%	0.17%	0.16%	0.16%
<b>Total operating costs</b>	<b>93.47%</b>	<b>90.98%</b>	<b>89.19%</b>	<b>90.08%</b>	<b>88.58%</b>	<b>87.40%</b>	<b>86.76%</b>	<b>86.04%</b>	<b>84.90%</b>
<b>EBIT IFRS</b>	<b>7.28%</b>	<b>8.65%</b>	<b>10.81%</b>	<b>9.92%</b>	<b>11.42%</b>	<b>12.60%</b>	<b>13.24%</b>	<b>13.96%</b>	<b>15.10%</b>
Exploration & Production	3.05%	6.41%	6.05%	6.71%	7.46%	8.11%	9.38%	10.19%	11.00%
Refining & Marketing	2.70%	1.73%	2.99%	1.87%	2.63%	3.10%	2.56%	2.45%	2.77%
Gas & Power	0.74%	0.67%	0.58%	0.55%	0.45%	0.50%	0.42%	0.42%	0.41%
Other	0.17%	0.13%	0.17%	0.17%	0.16%	0.15%	0.15%	0.15%	0.14%
Eliminations	0.00%	0.03%	-0.08%	0.00%	0.08%	0.11%	0.11%	0.11%	0.17%
Net financial expenses	-0.09%	-0.07%	-0.50%	-0.55%	-0.55%	-0.56%	-0.57%	-0.59%	-0.58%
Exchange gains/losses & derivatives	-0.12%	-0.34%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Operating leases interest (IFRS 16)	0.00%	0.00%	-0.56%	-0.50%	-0.44%	-0.40%	-0.38%	-0.36%	-0.33%
Results from financial investments	1.06%	0.74%	0.79%	0.74%	0.70%	0.68%	0.66%	0.65%	0.62%
<b>Financial result</b>	<b>0.86%</b>	<b>0.33%</b>	<b>-0.28%</b>	<b>-0.31%</b>	<b>-0.29%</b>	<b>-0.28%</b>	<b>-0.29%</b>	<b>-0.30%</b>	<b>-0.30%</b>
<b>Profit before taxes</b>	<b>8.14%</b>	<b>8.98%</b>	<b>10.53%</b>	<b>9.61%</b>	<b>11.14%</b>	<b>12.32%</b>	<b>12.96%</b>	<b>13.66%</b>	<b>14.80%</b>
Income taxes	-3.24%	-4.25%	-3.32%	-3.03%	-3.51%	-3.88%	-4.08%	-4.30%	-4.66%
SPT&IRP	0.00%	0.00%	-1.82%	-2.01%	-2.24%	-2.43%	-2.81%	-3.06%	-3.30%
Energy sector extraordinary contribution (CESE)	-0.42%	-0.35%	-0.40%	-0.37%	-0.34%	-0.33%	-0.33%	-0.32%	-0.30%
<b>Net Income</b>	<b>4.48%</b>	<b>4.39%</b>	<b>5.00%</b>	<b>4.20%</b>	<b>5.05%</b>	<b>5.67%</b>	<b>5.74%</b>	<b>5.98%</b>	<b>6.53%</b>
Non-controlling interests	-0.57%	-0.87%	-0.97%	-0.95%	-1.06%	-1.18%	-1.24%	-1.31%	-1.41%
<b>Net income to common shareholders</b>	<b>3.91%</b>	<b>3.52%</b>	<b>4.03%</b>	<b>3.26%</b>	<b>3.99%</b>	<b>4.49%</b>	<b>4.50%</b>	<b>4.67%</b>	<b>5.12%</b>

**Appendix 3: Statement of Financial Position (GALP)**

Balance Sheet (m€)	2017	2018	2019E	2020F	2021F	2022F	2023F	2024F	2025F	CAGR 19-25F
Non-current assets	7,806.0	7,960.0	9,571.4	9,940.2	10,292.7	10,647.9	11,006.9	11,297.7	11,513.5	3.1%
Tangibles assets	5,193.0	5,333.0	5,508.9	5,693.9	5,853.6	6,016.7	6,180.4	6,288.2	6,324.5	2.3%
Rights of Use (IFRS 16)	0.0	1,282.0	1,245.8	1,215.5	1,192.0	1,175.8	1,166.4	1,155.7	1,144.0	-1.4%
Goodwill	84.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	0.0%
Intangible assets	407.0	547.0	666.0	736.7	806.6	876.9	947.1	1,006.1	1,053.5	7.9%
Investments in associates and joint ventures	1,483.0	1,295.0	1,424.0	1,553.0	1,682.0	1,811.0	1,940.0	2,069.0	2,198.0	7.5%
Deferred tax assets	350.0	369.0	369.0	369.0	369.0	369.0	369.0	369.0	369.0	0.0%
Other receivables	254.0	298.0	239.7	254.1	271.4	280.4	286.1	291.6	306.6	4.2%
Other financial assets	35.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	33.0	0.0%
Current assets	4,245.0	4,726.0	4,998.9	5,025.7	5,196.4	5,466.7	5,715.8	6,061.5	6,675.5	4.9%
Inventory	970.0	1,171.0	1,029.8	1,122.0	1,199.9	1,245.3	1,283.2	1,321.4	1,397.1	5.2%
Other financial investments	66.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	200.0	0.0%
Trade receivables	1,018.0	1,032.0	1,296.5	1,417.1	1,559.7	1,658.9	1,740.6	1,823.8	1,969.0	7.2%
Other receivables	535.0	640.0	595.8	631.5	674.5	697.0	710.9	724.8	761.9	4.2%
Other receivables - Sinopec	459.0	176.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Cash and cash equivalents	1,197.0	1,508.0	1,876.8	1,655.1	1,562.3	1,665.5	1,781.0	1,991.5	2,347.4	3.8%
<b>Assets</b>	<b>12,051.0</b>	<b>12,687.0</b>	<b>14,570.3</b>	<b>14,965.9</b>	<b>15,489.1</b>	<b>16,114.6</b>	<b>16,722.6</b>	<b>17,359.2</b>	<b>18,189.0</b>	<b>3.8%</b>
Equity	5,779.0	6,047.0	6,287.0	6,380.2	6,615.9	6,967.0	7,315.3	7,696.0	8,211.9	4.6%
Share capital and share premium	911.0	911.0	911.0	911.0	911.0	911.0	911.0	911.0	911.0	0.0%
Reserves & Retained earnings	3,433.0	3,675.0	3,757.2	3,686.6	3,726.6	3,851.5	3,959.1	4,080.0	4,301.2	2.3%
Total equity attributable to shareholders	4,344.0	4,586.0	4,668.2	4,597.6	4,637.6	4,762.5	4,870.1	4,991.0	5,212.2	1.9%
Non-controlling interests	1,435.0	1,460.0	1,618.8	1,782.6	1,978.2	2,204.5	2,445.2	2,705.0	2,999.6	10.8%
Liabilities	6,272.0	6,640.0	8,283.3	8,585.7	8,873.3	9,147.6	9,407.3	9,663.2	9,977.1	3.1%
Non-current liabilities	3,842.0	4,006.0	5,529.4	5,658.7	5,741.0	5,863.4	5,986.2	6,093.4	6,174.3	1.9%
Debt	2,532.0	2,686.0	3,167.2	3,321.7	3,422.7	3,549.5	3,664.7	3,763.8	3,834.5	3.2%
Operating Leases (IFRS 16)	0.0	1,089.0	1,012.2	949.6	900.5	863.9	838.1	814.2	791.8	-4.0%
Other payables	286.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	0.0%
Post-employment liabilities	326.0	304.0	304.0	304.0	304.0	304.0	304.0	304.0	304.0	0.0%
Deferred tax liabilities	76.0	196.0	196.0	196.0	196.0	196.0	196.0	196.0	196.0	0.0%
Other financial instruments	3.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0	0.0%
Provisions (including CESE)	619.0	658.0	687.0	724.3	754.8	787.0	820.4	852.4	884.9	4.3%
CESE	272.0	297.0	326.0	363.3	393.8	426.0	459.4	491.4	523.9	8.2%
Others	347.0	361.0	361.0	361.0	361.0	361.0	361.0	361.0	361.0	0.0%
Current liabilities	2,430.0	2,634.0	2,753.9	2,927.0	3,132.3	3,284.2	3,421.1	3,569.8	3,802.9	5.5%
Debt	551.0	559.0	622.4	693.0	771.7	859.2	956.7	1,065.2	1,186.1	11.3%
Operating Leases (IFRS 16)	0.0	113.0	108.9	101.2	95.0	90.0	86.4	83.8	81.4	-4.7%
Trade payables & Other payables	1,743.0	1,891.0	1,838.6	1,948.8	2,081.7	2,150.9	2,194.1	2,236.8	2,351.4	4.2%
Other financial instruments	21.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	102.0	0.0%
Current income tax payable	115.0	82.0	82.0	82.0	82.0	82.0	82.0	82.0	82.0	0.0%
<b>Equity and Liabilities</b>	<b>12,051.0</b>	<b>12,687.0</b>	<b>14,570.3</b>	<b>14,965.9</b>	<b>15,489.1</b>	<b>16,114.6</b>	<b>16,722.6</b>	<b>17,359.2</b>	<b>18,189.0</b>	<b>3.8%</b>

Balance sheet - Common-Size	2017	2018	2019E	2020F	2021F	2022F	2023F	2024F	2025F
Non-current assets	64.8%	62.7%	65.7%	66.4%	66.5%	66.1%	65.8%	65.1%	63.3%
Tangibles assets	43.1%	42.0%	37.8%	38.0%	37.8%	37.3%	37.0%	36.2%	34.8%
Rights of Use (IFRS 16)	0.0%	10.1%	8.6%	8.1%	7.7%	7.3%	7.0%	6.7%	6.3%
Goodwill	0.7%	0.7%	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%
Intangible assets	3.4%	4.3%	4.6%	4.9%	5.2%	5.4%	5.7%	5.8%	5.8%
Investments in associates and joint ventures	12.3%	10.2%	9.8%	10.4%	10.9%	11.2%	11.6%	11.9%	12.1%
Deferred tax assets	2.9%	2.9%	2.5%	2.5%	2.4%	2.3%	2.2%	2.1%	2.0%
Other receivables	2.1%	2.3%	1.6%	1.7%	1.8%	1.7%	1.7%	1.7%	1.7%
Other financial assets	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Current assets	35.2%	37.3%	34.3%	33.6%	33.5%	33.9%	34.2%	34.9%	36.7%
Inventory	8.0%	9.2%	7.1%	7.5%	7.7%	7.7%	7.7%	7.6%	7.7%
Other financial investments	0.5%	1.6%	1.4%	1.3%	1.3%	1.2%	1.2%	1.2%	1.1%
Trade receivables	8.4%	8.1%	8.9%	9.5%	10.1%	10.3%	10.4%	10.5%	10.8%
Other receivables	4.4%	5.0%	4.1%	4.2%	4.4%	4.3%	4.3%	4.2%	4.2%
Other receivables - Sinopec	3.8%	1.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Cash and cash equivalents	9.9%	11.9%	12.9%	11.1%	10.1%	10.3%	10.7%	11.5%	12.9%
<b>Assets</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
Equity	48.0%	47.7%	43.1%	42.6%	42.7%	43.2%	43.7%	44.3%	45.1%
Share capital and share premium	7.6%	7.2%	6.3%	6.1%	5.9%	5.7%	5.4%	5.2%	5.0%
Reserves & Retained earnings	28.5%	29.0%	25.8%	24.6%	24.1%	23.9%	23.7%	23.5%	23.6%
Total equity attributable to shareholders	36.0%	36.1%	32.0%	30.7%	29.9%	29.6%	29.1%	28.8%	28.7%
Non-controlling interests	11.9%	11.5%	11.1%	11.9%	12.8%	13.7%	14.6%	15.6%	16.5%
Liabilities	52.0%	52.3%	56.9%	57.4%	57.3%	56.8%	56.3%	55.7%	54.9%
Non-current liabilities	31.9%	31.6%	37.9%	37.8%	37.1%	36.4%	35.8%	35.1%	33.9%
Debt	21.0%	21.2%	21.7%	22.2%	22.1%	22.0%	21.9%	21.7%	21.1%
Operating Leases (IFRS 16)	0.0%	8.6%	6.9%	6.3%	5.8%	5.4%	5.0%	4.7%	4.4%
Other payables	2.4%	1.0%	0.9%	0.8%	0.8%	0.8%	0.8%	0.7%	0.7%
Post-employment liabilities	2.7%	2.4%	2.1%	2.0%	2.0%	1.9%	1.8%	1.8%	1.7%
Deferred tax liabilities	0.6%	1.5%	1.3%	1.3%	1.3%	1.2%	1.2%	1.1%	1.1%
Other financial instruments	0.0%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%
Provisions (including CESE)	5.1%	5.2%	4.7%	4.8%	4.9%	4.9%	4.9%	4.9%	4.9%
CESE	2.3%	2.3%	2.2%	2.4%	2.5%	2.6%	2.7%	2.8%	2.9%
Others	2.9%	2.8%	2.5%	2.4%	2.3%	2.2%	2.2%	2.1%	2.0%
Current liabilities	20.2%	20.8%	18.9%	19.6%	20.2%	20.4%	20.5%	20.6%	20.9%
Debt	4.6%	4.4%	4.3%	4.6%	5.0%	5.3%	5.7%	6.1%	6.5%
Operating Leases (IFRS 16)	0.0%	0.9%	0.7%	0.7%	0.6%	0.6%	0.5%	0.5%	0.4%
Trade payables & Other payables	14.5%	14.9%	12.6%	13.0%	13.4%	13.3%	13.1%	12.9%	12.9%
Other financial instruments	0.2%	0.8%	0.7%	0.7%	0.7%	0.6%	0.6%	0.6%	0.6%
Current income tax payable	1.0%	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
<b>Equity and Liabilities</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

**Appendix 4: Cash-Flow Statement and Common-size (GALP)**

Cash Flow Statement (mEUR)	2019E	2020F	2021F	2022F	2023F	2024F	2025F	CAGR 19-25F
<b>OPERATING ACTIVITIES</b>	1,392.1	1,468.9	1,733.4	1,969.5	2,066.6	2,181.6	2,361.7	9.2%
EBIT IFRS	1,767.1	1,717.9	2,113.2	2,407.3	2,581.4	2,774.4	3,152.9	10.1%
Non-Cash Charges	774.1	840.9	894.4	938.8	988.8	1,032.0	1,093.7	5.9%
Corporate Income Taxes and oil and gas production taxes	-903.9	-937.2	-1,126.3	-1,269.7	-1,407.7	-1,526.8	-1,726.4	11.4%
-DNWC	-245.2	-152.7	-147.9	-106.9	-96.0	-98.1	-158.5	-7.0%
<b>INVESTMENT ACTIVITIES</b>	-643.9	-934.7	-972.1	-1,020.7	-1,071.7	-1,050.3	-1,029.3	8.1%
CAPEX for tangible and intangible assets	-911.9	-1,029.0	-1,070.1	-1,123.6	-1,179.8	-1,156.2	-1,133.1	3.7%
CAPEX for Oper. Leases (IFRS 16)	92.0	94.3	98.1	103.0	108.1	106.0	103.8	2.0%
Other receivables - Sinopec	176.0	0.0	0.0	0.0	0.0	0.0	0.0	-
<b>FINANCING ACTIVITIES</b>	-379.5	-756.0	-854.1	-845.6	-879.3	-920.8	-976.6	17.1%
Financial Result	-82.1	-95.9	-101.6	-106.1	-111.5	-116.9	-122.2	6.8%
Dividends paid	-577.0	-634.6	-698.1	-733.0	-769.7	-808.2	-848.6	6.6%
Debt issuances/repayments	544.6	225.1	179.6	214.3	212.6	207.7	191.6	-16.0%
Interest relating to leasing	-92.2	-86.0	-80.6	-76.4	-73.2	-70.9	-68.9	-4.7%
Payments relating to leasings (IFRS 16)	-172.9	-164.6	-153.4	-144.5	-137.6	-132.5	-128.6	-4.8%
Change in cash & cash equivalents	368.8	-221.7	-92.8	103.2	115.6	210.5	355.9	-0.6%
Beginning cash	1,508.0	1,876.8	1,655.1	1,562.3	1,665.5	1,781.0	1,991.5	4.7%
Ending cash	1,876.8	1,655.1	1,562.3	1,665.5	1,781.0	1,991.5	2,347.4	3.8%

Cash Flow Statement - Common-size	2019E	2020F	2021F	2022F	2023F	2024F	2025F
<b>OPERATING ACTIVITIES</b>	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
EBIT IFRS	126.9%	117.0%	121.9%	122.2%	124.9%	127.2%	133.5%
Non-Cash Charges	55.6%	57.2%	51.6%	47.7%	47.8%	47.3%	46.3%
Corporate Income Taxes and oil and gas production taxes	-64.9%	-63.8%	-65.0%	-64.5%	-68.1%	-70.0%	-73.1%
-DNWC	-17.6%	-10.4%	-8.5%	-5.4%	-4.6%	-4.5%	-6.7%
<b>INVESTMENT ACTIVITIES</b>	-46.3%	-63.6%	-56.1%	-51.8%	-51.9%	-48.1%	-43.6%
CAPEX for tangible and intangible assets	-65.5%	-70.0%	-61.7%	-57.1%	-57.1%	-53.0%	-48.0%
CAPEX for Oper. Leases (IFRS 16)	6.6%	6.4%	5.7%	5.2%	5.2%	4.9%	4.4%
Other receivables - Sinopec	12.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
<b>FINANCING ACTIVITIES</b>	-27.3%	-51.5%	-49.3%	-42.9%	-42.5%	-42.2%	-41.4%
Financial Result	-5.9%	-6.5%	-5.9%	-5.4%	-5.4%	-5.4%	-5.2%
Dividends paid	-41.4%	-43.2%	-40.3%	-37.2%	-37.2%	-37.0%	-35.9%
Debt issuances/repayments	39.1%	15.3%	10.4%	10.9%	10.3%	9.5%	8.1%
Interest relating to leasing	-6.6%	-5.9%	-4.6%	-3.9%	-3.5%	-3.3%	-2.9%
Payments relating to leasings (IFRS 16)	-12.4%	-11.2%	-8.9%	-7.3%	-6.7%	-6.1%	-5.4%
Change in cash & cash equivalents	26.5%	-15.1%	-5.4%	5.2%	5.6%	9.6%	15.1%
Beginning cash	108.3%	127.8%	95.5%	79.3%	80.6%	81.6%	84.3%
Ending cash	134.8%	112.7%	90.1%	84.6%	86.2%	91.3%	99.4%

**Appendix 5: Key Financial Ratios**

Key Financial Ratios	2015	2016	2017	2018	2019F	2020F	2021F	2022F	2023F	2024F	2025F
<b>Efficiency Ratios</b>											
Fixed Assets Turnover (x)	1.97	1.70	2.12	2.01	1.81	1.85	1.91	1.90	1.87	1.86	1.92
Total Assets Turnover (x)	1.21	1.05	1.26	1.35	1.11	1.15	1.18	1.18	1.16	1.14	1.14
Receivables Turnover (x)	11.22	8.21	9.79	10.28	8.56	8.38	8.21	8.05	7.89	7.74	7.59
Collection Period (DSO) (days)	32.54	44.44	37.29	35.52	42.62	43.53	44.44	45.36	46.27	47.18	48.09
Inventory Turnover (x)	16.41	13.50	13.94	12.88	13.41	13.16	12.91	12.66	12.41	12.16	11.91
Days in Inventory (DIO) (days)	22.24	27.04	26.18	28.35	27.22	27.74	28.28	28.83	29.41	30.02	30.65
Payables Turnover (x)	9.55	6.76	7.76	7.97	7.51	7.58	7.44	7.33	7.26	7.18	7.08
Payables Period (DPO) (days)	38.21	54.01	47.04	45.78	48.60	48.18	49.05	49.80	50.29	50.82	51.58
Net Operating Cycle or Cash Cycle (days)	16.56	17.46	16.43	18.09	21.24	23.09	23.67	24.39	25.39	26.38	27.16
Operating Cycle	54.77	71.47	63.47	63.87	69.84	71.27	72.72	74.19	75.68	77.20	78.74
<b>Solvency Ratios</b>											
Long and short-term Debt Ratio (%)	27.77%	23.38%	25.58%	25.58%	26.01%	26.83%	27.08%	27.36%	27.64%	27.82%	27.60%
Long-term Debt Ratio (%)	23.91%	20.73%	21.01%	21.17%	21.74%	22.20%	22.10%	22.03%	21.91%	21.68%	21.08%
Debt to Equity Ratio (x)	0.74	0.58	0.71	0.71	0.81	0.87	0.90	0.93	0.95	0.97	0.96
Equity Multiplier (x)	2.07	1.90	2.09	2.10	2.32	2.35	2.34	2.31	2.29	2.26	2.21
Debt Ratio	0.52	0.47	0.52	0.52	0.57	0.57	0.57	0.57	0.56	0.56	0.55
Net Debt to EBITDA (x)	2.06	1.35	0.99	0.80	0.75	0.92	0.88	0.82	0.80	0.75	0.63
Interest Coverage Ratio (x)	8.83	16.39	79.64	124.83	10.14	9.45	11.60	13.19	13.98	14.77	16.50
<b>Liquidity Ratios</b>											
Current Ratio (x)	2.02	1.91	1.75	1.79	1.82	1.72	1.66	1.66	1.67	1.70	1.76
Quick Ratio (x)	1.24	1.22	1.13	1.21	1.37	1.27	1.21	1.22	1.24	1.27	1.34
Cash Ratio (x)	0.56	0.48	0.49	0.57	0.68	0.57	0.50	0.51	0.52	0.56	0.62
<b>Profitability Ratios</b>											
EBITDA Margin (%)	7.58%	10.57%	12.49%	12.69%	15.68%	14.90%	16.39%	17.65%	18.46%	19.31%	20.49%
EBIT Margin (%)	2.73%	4.12%	7.34%	8.72%	10.90%	10.00%	11.52%	12.70%	13.35%	14.07%	15.21%
Net Profit Margin (%)	1.44%	2.27%	3.93%	3.54%	4.07%	3.28%	4.02%	4.53%	4.54%	4.71%	5.16%
ROA (%)	1.74%	2.40%	4.96%	4.80%	4.52%	3.77%	4.77%	5.32%	5.25%	5.35%	5.88%
ROIC (%)	5.84%	5.25%	11.97%	12.89%	14.36%	13.22%	15.63%	17.12%	17.75%	18.60%	20.79%
NOPAT	288.6	368.3	759.0	1 019.8	1 203.0	1 169.5	1 438.6	1 638.8	1 757.3	1 888.7	2 146.4
Invested Capital	4 939.0	7 011.0	6 339.0	7 912.0	8 375.7	8 846.3	9 205.3	9 570.3	9 901.5	153.7	323.7
ROCE (%)	3.94%	5.26%	11.59%	14.90%	14.95%	14.27%	17.10%	18.76%	19.41%	20.12%	21.92%
Capital Employed	10 761.0	10 281.0	9 621.0	10 053.0	11 816.4	12 038.9	12 356.8	12 830.4	13 301.5	13 789.3	14 386.2
ROE (%)	4.67%	5.98%	13.77%	13.28%	14.12%	12.27%	15.92%	18.01%	18.01%	18.61%	20.53%
ROE (%) - DuPont Approach	4.67%	5.98%	13.77%	13.28%	14.12%	12.27%	15.92%	18.01%	18.01%	18.61%	20.53%
NI / S	1.44%	2.27%	3.93%	3.54%	4.07%	3.28%	4.02%	4.53%	4.54%	4.71%	5.16%
S / A	1.21	1.05	1.26	1.35	1.11	1.15	1.18	1.18	1.16	1.14	1.14
A / E	2.68	2.50	2.77	2.77	3.12	3.26	3.34	3.38	3.43	3.48	3.49
<b>Value Creation and Cash Flow Ratios</b>											
Economic Value Added (EVA) (M€)					599.0	530.0	774.5	948.3	1 042.8	1 156.1	1 401.9
Debt Coverage (%)					17.39%	14.05%	17.60%	19.46%	18.98%	19.24%	21.31%
Cash to Income					0.79	0.86	0.82	0.82	0.80	0.79	0.75
Earnings Quality					0.91	1.05	1.06	1.12	1.14	1.14	1.08

## Appendix 6: Income Statement Assumptions

Assumption	Unit	2019F	2020F	2021F	2022F	2023F	2024F	2025F	Notes
Portuguese GDP growth	YoY	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%	Data from European Commission.
Sales and service rendered	mEUR	Sum of segments							
Exploration & Production	mEUR	1,795.0	2,042.8	2,339.5	2,596.9	2,971.2	3,268.3	3,648.8	See Appendix 7.
Refining & Marketing	mEUR	11,768.9	12,411.4	13,279.4	13,295.8	13,260.1	13,340.0	13,974.9	See Appendix 8.
Gas & Power	mEUR	2,816.0	2,900.1	2,910.6	3,250.8	3,296.1	3,299.8	3,298.0	See Appendix 9.
Other	YoY	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%	Not a business unit, it is expected to follow the economy. Grows at Portugal GDP growth.
Eliminations	% Sales	1.87%	1.87%	1.87%	1.87%	1.87%	1.87%	1.87%	Sales between segments are eliminated. Historical average.
Other operating income	YoY	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%	1.70%	Company does not disclose much information about it, so we expect it to grow with the economy. Grows at Portugal's GDP.
Cost of sales & Production costs	mEUR	Sum of segments							
Exploration & Production	% Sales	18.95%	18.65%	18.08%	18.09%	17.56%	17.56%	17.31%	See Appendix 7.
Refining & Marketing	% Sales	93.84%	95.31%	94.31%	93.53%	94.30%	94.43%	93.95%	See Appendix 8.
Gas & Power	% Sales	95.09%	95.17%	95.13%	95.15%	95.14%	95.15%	95.14%	See Appendix 9.
Other	% Sales	80.8%	80.1%	80.4%	81.1%	80.9%	81.0%	81.2%	4Y Moving Average.
Eliminations	% Sales	1.88%	1.88%	1.88%	1.88%	1.88%	1.88%	1.88%	2Y Average over Sales.
RCA Effect	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	RCA adjustment was added back to treat the data based on IFRS standard. We forecast no change in this value since it is too difficult to do so without a high level of uncertainty.
EBITDA	mEUR	Sum of segments							
Exploration & Production	% Sales	81.1%	81.3%	81.9%	81.9%	82.4%	82.4%	82.7%	See Appendix 7.
Refining & Marketing	% Sales	6.2%	4.7%	5.7%	6.5%	5.7%	5.6%	6.1%	See Appendix 8.
Gas & Power	% Sales	4.9%	4.8%	4.9%	4.8%	4.9%	4.9%	4.9%	See Appendix 9.
Other	% Sales	19%	20%	20%	19%	19%	19%	19%	4Y Moving Average.
Eliminations	% Sales	4%	0%	-5%	-6%	-6%	-6%	-10%	2Y Average over Sales.
D&A, Provisions & Impairments	mEUR	Sum of segments							
Exploration & Production	mEUR	573.1	641.9	712.5	790.9	877.9	731.5	146.3	See Appendix 10 for detailed forecast
Refining & Marketing	mEUR	279.6	314.6	332.1	332.1	314.6	91.2	1,283.6	See Appendix 10 for detailed forecast
Gas & Power	mEUR	45.5	48.3	64.5	69.7	91.2	1,283.6	0.0	See Appendix 10 for detailed forecast
Other	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	No historical values.
Eliminations	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	No historical values.
Provisions	YoY	12%	12%	11%	11%	11%	10%	10%	Decommissioning/Environmental Matters Costs represent half of the value. With the increase in production/drills, it's expected to increase over time based on the increase in WIP. The increase is based on the WIP CAGR
Net financial expenses	%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	Average cost of financial debt reported in 2018. Will be multiplied by the debt from t-1.
Exchange gains/losses & derivatives	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	No change YoY. Mostly related to Hedging Instruments, of which there's not enough data available to correctly predict its value
Operating leases interest (IFRS 16)	%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	7.7%	% over Operating Leases Liabilities. Gathered from historical information
Results from financial investments	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	No change YoY. Mostly related to ventures connected to the operational segments, of which there's not enough data available to correctly predict its value
Income taxes	% EBT	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	Both taxes were calculated through the historical data made available by the company in the income statement and the note regarding the effective tax rate
SPT&IRP	% EBIT	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	
Energy sector extraordinary contribution (CESE)	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2Y Moving Average. Related to the operations in the R&M and G&P.
Non-controlling interests	% EBIT	9.0%	9.5%	9.3%	9.4%	9.3%	9.4%	9.3%	2Y Moving Average over Operating result.
Dividends	YoY	10.0%	10.0%	10.0%	5.0%	5.0%	5.0%	5.0%	The company aims a dividend increase YoY of 10% until 2021, to which we deem sustainable, however from there on we assumed a 5,0% YoY growth, reaching EUR 1,02 in 2025, which represents a c.50% growth from 2018 values.

## Appendix 7: Statement of Financial Position Assumptions

Assumption	Unit	2019F	2020F	2021F	2022F	2023F	2024F	2025F	Notes
<b>Non-current assets</b>									
Tangibles assets	% of Assets	37.8%	38.0%	37.8%	37.3%	37.0%	36.2%	34.8%	Tangible assets t = Tangible t-1 + CAPEX (for tangible assets) t - D&A (for tangible assets) t. Appendix 10
Rights of use	% of Assets	8.6%	8.1%	7.7%	7.3%	7.0%	6.7%	6.3%	Rights of use t = Tangible t-1 + CAPEX (for op. leases) t - D&A (for op. leases) t. Appendix 10
Goodwill	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Goodwill is subject to Impairment Testing and assumed to remain constant over the period.
Intangible assets	% of Assets	4%	5%	5%	5%	5%	6%	6%	Intangible assets t = Intangible t-1 + CAPEX (for intangible assets) t - D&A (for intangible assets) t. Appendix 10
Investments in associates and joint ventures	%	8.6%	8.2%	8.9%	9.1%	9.4%	9.8%	10.3%	Value from t-1 + Result from financial investments / Most companies related to these joint ventures are related to E&P operations, which means that the value of these companies should increase as the sales increase over time, driven mostly due to increasing operations
Deferred tax assets	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Equal to the 2018 nominal value, offset effect with deferred tax liabilities
Other receivables	% Sales	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	4y average of % over sales. Mainly from related to receivables from E&P partners
Other financial assets	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Hedging; keep same value. Too difficult to predict.
<b>Current assets</b>									
Inventory	Inventory Turnover	13.4	13.2	12.9	12.7	12.4	12.2	11.9	To do based on inventory days and inventory turnover, with the 2019E from a 2y average used. Will slightly decrease over time since there will be an increase in production.
Rights of use	%	0.10	0.10	0.10	0.10	0.10	0.10	0.10	Over Non-Current Rights of Use t-1
Other financial investments	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Hedging; keep same value. Too difficult to predict.
Trade receivables	% Sales	8.0%	8.3%	8.5%	8.8%	9.0%	9.3%	9.5%	Trade receivables have historically increased, thus we increased 0.25% every year.
Other receivables	% Sales	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	3.7%	4y average. Mainly from related to receivables from E&P partners
Loans to Sinopec	% Assets	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Ended in 2019
<b>Non-current liabilities</b>									
Debt	%	33%	33%	33%	33%	33%	33%	33%	Capital structure is expected to be the same, so a 2Y moving average is used to define the debt levels.
Other payables	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Value to be kept constant since there is not much information disclosed by the company.
Post-employment liabilities	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Assets are relatively stable through the years, with the same happening with the expected payments to the pension plan fund.
Deferred tax liabilities	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Equal to the 2018 nominal value and assumed to remain constant, as there is an offset effect with deferred tax assets.
Other financial instruments	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Hedging costs, we assume this value will be constant.
Provisions	mEUR	29.0	37.3	30.4	32.3	33.3	32.0	32.5	Provisions include decommissioning costs and CESE values. These are hard to predict, so a 3y moving average was used to obtain the contribution for CESE.
<b>Current liabilities</b>									
Debt	YoY	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	10.0%	Expected to follow the increase registered in the Non-Current Liabilities. The increase will be higher as there will be non-current debt with maturity during the forecast horizon.
Trade payables & Other payables	% Sales	11%	11%	11%	11%	11%	11%	11%	Percentage obtained with a 4Y average from TP/Sales.
Other financial instruments	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	Hedging costs, we assume this value will be constant.
Current income tax payable	YoY	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	We assume this value will be constant, as estimation of uncertain tax positions might be too uncertain.
Payments relating to leasing	%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%	Related to IFRS 16, based on historical values (only quarterly reports of 2019 are available).

## Appendix 8: Sales & EBITDA breakdown for E&P

E&P key figures	Unit	2019E	2020F	2021F	2022F	2023F	2024F	2025F
Avg WIP	kboe/d	120.2	134.6	149.4	165.8	184.1	202.5	222.7
WI oil #	kboe/d	106	118	131	146	162	178	196
WI gas #	kboe/d	15	16	18	20	22	25	27
Oil Discount on Brent	%	80%	80%	80%	80%	80%	80%	80%
Gas Discount on Brent	%	30%	30%	30%	30%	30%	30%	30%
Brent price	USD/bbl	62	63	65	65	67	67	68
E&P Sales	mEUR	1795	2043	2340	2597	2971	3268	3649
Production costs	mEUR	192	215	239	266	295	325	358
Royalties	mEUR	148	166	184	204	226	249	274
EBITDA	mEUR	1455	1662	1916	2127	2450	2694	3017
EBITDA Margin	%	81%	81%	82%	82%	82%	82%	83%

E&P Assumptions	Unit	2019F	2020F	2021F	2022F	2023F	2024F	2025F	Note
WIP	YoY	12%	12%	11%	11%	11%	10%	10%	GALP presented their expectations for the WIP growth: 12% CAGR from 2018 to 2019, 12-16% CAGR from 2018 to 2020, and a >10% CAGR up to 2030. For our forecast we projected the WIP close to the minimum value given, with a 10,8% CAGR.
Oil price	USD/bbl	62	63	65	65	67	67	68	Brent oil price forecast is extremely hard due to its volatility, so based on our research we decided to keep the price steadily increasing over time.
Oil ASP over Brent	%	80%							Computed based on information given by GALP
Gas ASP over Brent	%	30%							Computed based on information given by GALP.
USD/EUR	x€/ \$	0.89							Foreign exchange forecast is extremely hard due to its volatility, so we decided to use an external source for FX (IMF)
Royalties	USD/bbl	3							Computed based on information given by GALP
E&P prod cost	USD/bbl	3.9	3.9025	3.905	3.9075	3.91	3.9125	3.915	We assume rather constant production costs due to economies of scale and several production units in plateau. Takes into account IFRS 16.

### Sales from E&P

Sales from the E&P segment comes from the production that the company achieves (average WIP times 365 days) and the Brent price. It will also be influenced by the discount at which GALP sells their oil and gas production and that oil and gas will have in the WIP of the company. The production is expected to grow considerably for 2019-2025F, with a 10.8% CAGR. This increase in production will mainly come from the increase in the number of FPSOs in the Lula-Iracema projects, the new projects that will enter production in Brazil and Angola, and finally the start of the Coral FLNG project. This CAGR is way below the historical figure, but we decided to follow GALP's expectations. The Brent price forecast predicts a slow increase of the Brent price, achieving \$67/boe by 2023F. This expected increase in Brent Price will positively affect the company's sales. For the discount over Brent for oil and gas we follow the company lead of attributing 30% of Brent spot price for Gas, and, through comparisons with the historical ASP, 80% of the Brent Spot price for Oil. Finally, the production mix is expected to maintain the same weight for oil and gas since the increase in Gas is only expected to happen when the Coral South FLNG and Rovuma LNG start to operate at plateau. Overall, the sales are expected to significantly increase, yielding a 12% 2019-2025F CAGR.

### EBITDA from E&P

For the E&P segment we will have two main operational costs: production costs and royalties. Productions are set at \$3.9/boe for 2019F, based on historical information. This value is expected to have a small upward trend, but it will still average 3.9\$ for 2019-2025F. This can be explained by the stable weight of production that will come from Brazil, therefore maintaining the small production costs that the company will incur. There could be a variation in the production costs based on the increase in projects that will come from outside the BM-S-11 block, but the increase in production in the BM-S-11 may lead to economies of scale and a slight decrease in costs in those projects. The royalties are also expected to be maintained around the historical value, standing at \$3.3/boe for 2019-2025F. The forecasted evolution of the operational costs will lead to a stable EBITDA Margin for the segment. Therefore, the increase in sales of the segment will lead to stable increase in segment's EBITDA.

### Appendix 9: Sales & EBITDA breakdown for R&M

R&M	Unit	2019F	2020F	2021F	2022F	2023F	2024F	2025F
Used Capacity	%	80%	90%	95%	95%	90%	90%	95%
Raw material processed	kboe	96,360.0	108,405.0	114,427.5	114,427.5	108,405.0	108,405.0	114,427.5
ASP	USD/boe	70.2	71.3	73.6	73.6	75.8	75.8	77.0
Brent	USD/boe	62.0	63.0	65.0	65.0	67.0	67.0	68.0
Refining Cost	USD/boe	3.7	2.8	2.4	2.4	2.8	2.8	2.4
Refining Margin	USD/boe	4.5	5.5	6.2	6.2	6.0	6.0	6.6
Refining ASP (Eur/boe)	EUR/boe	62.5	63.5	65.5	65.5	67.5	67.5	68.5
Refining Sales	mEUR	6,019.2	6,880.8	7,493.7	7,493.7	7,317.7	7,317.7	7,839.5
Refining Cost (Eur/Boe)	EUR/boe	58.5	58.6	60.0	60.0	62.2	62.2	62.7
Refining Cost	mEUR	5,632.7	6,352.3	6,866.1	6,866.1	6,738.2	6,738.2	7,171.6
Refining EBITDA	mEUR	386.5	528.6	627.6	627.6	579.5	579.5	667.9
Total oil products	mton	17.1	17.4	17.7	18.0	18.3	18.6	18.9
Marketing ASP	EUR/mton	336.5	318.3	327.4	322.8	325.1	324.0	324.6
Marketing Cost	EUR/mton	316.7	315.2	320.1	309.9	315.5	315.2	315.2
Marketing Sales	mEUR	5,749.7	5,530.5	5,785.7	5,802.1	5,942.4	6,022.3	6,135.4
Marketing Cost	mEUR	5,411.7	5,476.7	5,657.1	5,568.9	5,766.2	5,858.3	5,957.8
Marketing EBITDA	mEUR	338.0	53.8	128.6	233.2	176.3	163.9	177.6
Sales	mEUR	11,768.9	12,411.4	13,279.4	13,295.8	13,260.1	13,340.0	13,974.9
Total cost	mEUR	11,044.4	11,829.0	12,523.2	12,435.0	12,504.4	12,596.5	13,129.4
EBITDA	mEUR	724.5	582.4	756.2	860.8	755.8	743.4	845.5

R&M Assumptions	Unit	2019F	2020F	2021F	2022F	2023F	2024F	2025F	Note
Used Capacity	%	80%	90%	95%	95%	90%	90%	95%	Percentage of the installed capacity that is used in the refinery. After the maintenance operations, we expected the company to recover to historical maximum, which is above 90%.
Refining Margin	USD/bbl	4.51	5.48	6.16	6.16	6.01	6.01	6.56	Amount of USD/bbl GALP realizes on each barrel of oil that is refined. Similar to usage capacity, after the maintenance operations, we expect the refining margin to recover.
Refining Cost	USD/bbl	3.68	2.84	2.42	2.42	2.84	2.84	2.42	Cost to refine 1 barrel of oil. Expected to decrease due to an increase in efficiency (maintenance operations).
Refining ASP	USD/bbl	70.19	71.32	73.58	73.58	75.85	75.85	76.98	Average selling price of the by-products from the refining of one barrel of oil.
Total Oil Sales (Quantity)	mton	17.09	17.38	17.67	17.97	18.28	18.59	18.90	Amount of oil by-products sold by the Marketing BU. The growth will follow the Portugal GDP YoY.
Marketing ASP	USD/mton	336.52	318.29	327.40	322.84	325.12	323.98	324.55	Average selling price of by-products. 2Y moving average.
Marketing Costs	USD/mton	316.74	315.19	320.13	309.87	315.48	315.17	315.16	Operational costs. 4Y moving average.

### Sales from Refining

The sales from the Refining Business Unit are accessed through the multiplication of the Average Selling Price per kboe and the amount of Raw Material Processed (kboe) from the Refining system of the company. The quantity of Raw Material Processed will come from the multiplication of the Used Capacity with the installed Refining Capacity (a constant 330 kboe/d or 120450 kboe per annum).

The Average Selling Price was obtained as function of the Brent Price, with the value throughout the forecast being the 4Y historical average of the ASP over Brent times the value of the Brent for each period. With an expected increase in the Brent Price in the forecast horizon, the ASP will consequently register. The Used Capacity of the Refining system is expected to register a slight decline in 2019E because of maintenance operations. Afterwards, we predict an increase based on historical values and operational improvements from the maintenance operations.

### EBITDA from Refining

In the Refining BU the main benchmark of the operational efficiency will be the Refining Margin. The Refining Margin will come from the difference between the value obtained through the sales of the refined products and the operational costs (Brent price plus the production costs). The production costs will be dependent of the efficiency of the refineries and the economies of scale that will come from higher degrees of Used Capacity. In our forecast the production costs are expected to decrease when compared with historical values, as a result of the increase in efficiency. As stated previously, the Brent price is expected to increase over the years. The result of the decrease in production costs, the increase in Brent price and ASP will yield an average \$5.8/boe Refining Margin. Consequently, the EBITDA of this BU will increase throughout the years, reaching a maximum value in 2025F where we have a \$67/boe Brent price and a 95% Used Capacity.

### Sales from Marketing

The sales from the Marketing BU will come from the multiplication of the Total Sales of Oil Products (mton) and the Average Selling Price per mton. The historical ASP for the BU was obtained as the division of the sales from the BU (difference between R&M sales and the Refining BU Sales) with the Total Sales oil products. The Average Selling Price was obtained as a 2Y moving average. The Total Sales of Oil Products are predicted to grow along the lines of the growth of the GDP of Portugal (GALP's main market), as a growth in the demand of energy is associated with the growth of the economy. This will lead to an increase in sales throughout the years, reaching the maximum value in 2025F.

### EBITDA from Marketing

The operational costs from the BU were achieved through a 4Y moving average. This can be justified by the fact that the company is the current market leader in Portugal and will therefore be able to maintain their current level of costs. Over the 2019-2025F the EBITDA Margin will have an average value of 3.1%, 1% increase over the 4Y historical average.

### Appendix 10: Sales & EBITDA breakdown for G&P

G&P	Unit	2019F	2020F	2021F	2022F	2023F	2024F	2025F
Sales	M€	2,816.0	2,900.1	2,910.6	3,250.8	3,296.1	3,299.8	3,298.0
Cost of sales & Production costs	M€	2,677.7	2,760.2	2,768.8	3,093.2	3,136.0	3,139.6	3,137.8
RCA Ebitda	M€	138.3	140.0	141.7	157.6	160.1	160.1	160.1
Supply & Trading	M€	92.2	93.0	93.9	108.8	109.8	110.8	111.8
Power	M€	46.2	46.9	47.9	48.8	50.4	52.0	53.6

G&P Assumptions	Unit	2019F	2020F	2021F	2022F	2023F	2024F	2025F	Note
Gas Demand CAGR	%	1.8	1.8	1.8	1.8	1.8	1.8	1.8	European commission
Trading Increase	%	0.0	0.0	0.0	30.0	0.0	0.0	0.0	From GALP's financial statements. Contract that will provide 1 mta of NG from 2022 onward, for trading only.
Electricity Demand CAGR	%	1.4	1.4	1.4	1.4	1.4	1.4	1.4	European commission
Electricity sold to grid	%	2.0	2.0	2.5	2.5	5.0	5.0	5.0	Electricity sold to the grid is expected to rise due to increases in CAPEX, as GALP is focused in increasing low-carbon solutions in its portfolio. This decision is one more step into the energy transition.

### Sales from G&P

The sales from the G&P segment were calculated through as a function of the EBITDA of the segment. They will come from the sum of the EBITDA from the Supply & Trade BU and the Power BU. As the EBITDA Margin of the segment was forecasted as a 2Y Moving Average, it will present a relatively stable value throughout the years. With the expected increase of the EBITDA between 2019-2025F, it's expected that the segment sales will increase over the years.

### EBITDA from Supply & Trade

The Supply and Trade BU EBITDA for each YE is retrieved as a function of the previous year value, the increase in NG demand in Portugal and the expected growth of the trading activity. The increase in the demand of the NG in the Iberian Peninsula can be applied to the company since the company presents a stable market share of 12%. The increase in trading activity is considered to be zero over the years, with the exception of 2022F where the LNG contract will increase significantly the trading activity of GALP.

### EBITDA from Power

For the Power BU EBITDA of each YE, the value is achieved as a function of the value from the previous year, the growth in energy demand in Portugal and the growth in electricity sold to the grid. The growth in energy demand in Portugal is expected to be followed by the company since the company can easily follow it by increasing the amount of electricity bought from the grid and sold to end clients. The growth in electricity sold to the grid is expected to grow over the years at different rates since it will mainly be explained by the increase in CAPEX of the segment, since this CAPEX will be mainly applied to renewable energy generation facilities.



## Appendix 11: GALP's CAPEX & DD&A

CAPEX (with IFRS 16, M€)	2018	2019E	2020F	2021F	2022F	2023F	2024F	2025F	CAGR 19-25F
Exploration and Production	404.4	453.4	558.2	575.7	655.5	682.9	669.3	655.9	6.35%
Exploration and Appraisal	215.7	182.4	140.2	145.8	153.1	160.8	157.5	154.4	-2.74%
Total E&P (includes leasing)	620.0	635.8	698.4	721.5	808.6	843.7	826.8	810.3	4.12%
R&M (includes leasing)	260.6	349.8	311.8	324.3	289.5	304.0	297.9	291.9	-2.97%
G&P	9.0	18.2	18.7	24.3	25.5	32.2	31.5	30.9	9.17%
<b>Total</b>	<b>889.6</b>	<b>1,003.9</b>	<b>1,029.0</b>	<b>1,070.1</b>	<b>1,123.6</b>	<b>1,179.8</b>	<b>1,156.2</b>	<b>1,133.1</b>	<b>2.04%</b>

CAPEX Assumptions	Unit	2019F	2020F	2021F	2022F	2023F	2024F	2025F	Note
CAPEX growth	YoY	2.5%	2.5%	4.0%	5.0%	5.0%	-2.0%	-2.0%	We assume that CAPEX evolves YoY, following the data given by the company.
CAPEX (without Operating Leases)	M€	911.9	934.7	972.1	1,020.7	1,071.7	1,050.3	1,029.3	Value in M€. Previous year CAPEX times (1+growth).
E&P Prod	%	43.0%	53.0%	52.5%	57.5%	57.0%	57.0%	57.0%	% of total CAPEX. Calculated based on historical values and expected investments.
E&P Appraisal	%	20.0%	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	% of total CAPEX. Calculated based on historical values and expected investments.
Exploration & Production	%	63.0%	68.0%	67.5%	72.5%	72.0%	72.0%	72.0%	% of total CAPEX. Calculated based on historical values and expected investments.
Refining & Marketing	%	35.0%	30.0%	30.0%	25.0%	25.0%	25.0%	25.0%	% of total CAPEX. Calculated based on historical values and expected investments.
Gas & Power	%	2.0%	2.0%	2.5%	2.5%	3.0%	3.0%	3.0%	% of total CAPEX. Calculated based on historical values and expected investments.
CAPEX linked to operating leases	%				10.1%				% CAPEX w/o Operating leases.
Total	M€	92.0	94.3	98.1	103.0	108.1	106.0	103.8	Value in M€.
Exploration & Production	%	67%	67%	67%	67%	67%	67%	67%	2/3 of total based on historical weights of the leases of each segment.
Refining & Marketing	%	33%	33%	33%	33%	33%	33%	33%	1/3 of total based on historical weights of the leases of each segment.

Taking into account the historical investment and the company's targets for CAPEX, we see an increase for all segments, all for different reasons, always above € 1bn, even reaching almost 1,2 in 2023F. E&P CAPEX is the most demanding, as it is divided in sub-sectors: Production and Appraisal; this is linked to increases in production (e.g. more production units) and in continuous efforts to make viable production in current non-producing blocks or further increase their portfolio through acquisition of concessions in bidding rounds. R&M segment will have a significant decrease in their CAPEX since most of its historical CAPEX comes from maintenance operations that happened between 2017 and 2019, with no further operations expected to happen throughout the forecast horizon.

D&A (with IFRS 16, M€)	2018	2019E	2020F	2021F	2022F	2023F	2024F	2025F	CAGR 19-25F
Exploration and Production	289.4	402.3	430.6	460.1	493.5	531.3	569.9	612.3	7.25%
Exploration and Appraisal	57.9	63.4	69.5	75.8	82.8	90.6	98.4	107.1	9.13%
Total E&P (includes leasing)	347.3	465.7	500.1	535.9	576.4	621.9	668.3	719.3	7.52%
R&M (includes leasing)	337.2	235.5	258.3	269.4	268.6	256.0	255.7	267.4	2.14%
G&P	5.3	44.0	45.1	58.6	61.6	77.6	76.0	74.5	9.17%
Other	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	0.00%
<b>Total</b>	<b>689.8</b>	<b>749.1</b>	<b>807.6</b>	<b>867.9</b>	<b>910.5</b>	<b>959.5</b>	<b>1,004.0</b>	<b>1,065.2</b>	<b>6.04%</b>

D&A Assumptions	Unit	2019F	2020F	2021F	2022F	2023F	2024F	2025F	Note
D&A	mEUR	620.9	683.0	746.4	791.3	841.9	887.4	949.6	
EP Total	%	61.2%	61.1%	60.9%	62.8%	64.6%	66.6%	67.6%	Based on historical values, and adapted to capture the UoP method that is applied to some of the assets
EP Prod	%	51.0%	50.9%	50.8%	52.3%	53.8%	55.5%	56.4%	84% of total E&P, based on 4Y average
EP Appraisal	%	10.2%	10.2%	10.2%	10.5%	10.8%	11.1%	11.3%	16% of total E&P, based on 4Y average
Refining & Marketing	%	31.0%	31.7%	30.7%	28.9%	25.8%	24.4%	24.1%	Based on historical values, and adapted to capture the UoP method that is applied to some of the assets
Gas & Power	%	7.1%	6.6%	7.9%	7.8%	9.2%	8.6%	7.8%	Based on the 2Y historical average of D&A/CAPEX
Other	%	0.6%	0.6%	0.5%	0.5%	0.5%	0.5%	0.4%	Fixed value, based on historical figures
D&A for Operating Leases	%				10.0%				% D&A w/o Operating leases
Total	mEUR	128.2	124.6	121.6	119.2	117.6	116.6	115.6	Value in €m
E&P	%	67%	67%	67%	67%	67%	67%	67%	2/3 of total based on historical weights of the leases of each segment
R&M	%	33%	33%	33%	33%	33%	33%	33%	1/3 of total based on historical weights of the leases of each segment

D&A rates for each segment are obtained via historical percentages, but differently for all segments, as some also consider production. For the latter one, our calculations focus in capturing the existing straight-line D&A and also the one linked to UoP.

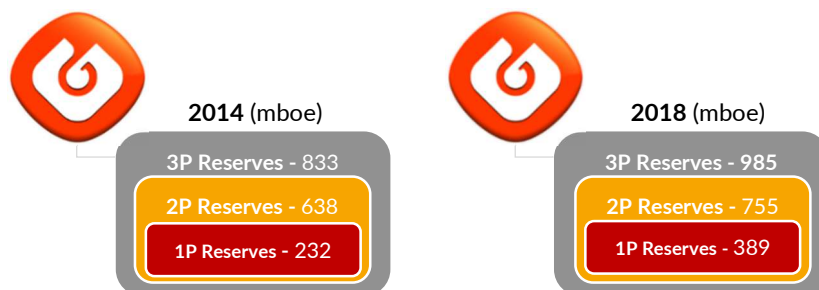
## Appendix 12: GALP's Reserves

Resources and reserves are key for Oil and Gas companies operating in the E&P as they constitute one of the drivers of profitability for the segment. This way, it is important to understand the difference between the two, considering that only the latter are in fact considered assets and incorporated in the companies' balance sheet.

Resources are classified as being contingent or prospective. The latter include quantities of oil and NG that companies estimate to recover from unknown deposits of their future projects. Contingent resources are those quantities estimated from known deposits that are not yet considered as commercially recoverable.

Reserves constitute the quantities of oil and NG expected to be commercially recoverable from known deposits. According to the probability of being recovered, reserves are classified as 1P (Proved Reserves), 2P (Proved and Probable) and 3P (Proved, Probable and Possible). Oil and Gas companies' total amount of reserves will correspond to the volume of their 3P reserves, which are the quantities with an associated probability of at least 10%. Then, 2P reserves will include those with an above 50% probability of being recovered. Finally, 1P reserves will correspond to 90% probability.

GALP's level of reserves has been increasing, mostly explained by the company's presence in projects with high levels of production, such as the ones in Block BM-S-11, in Brazil.



### Appendix 13: WACC Assumptions

Four WACC rates were computed. One for each of the company's sectors – E&P, R&M and G&P – and one for the company as a whole. These rates differ as risk free rate, leveraged beta and the Market Risk Premium change to account for country and industry specific realities. WACC rates will change YOY reflecting small changes in GALP's capital structure. We considered the company's target capital structure to be composed of 80% equity and 20% debt.

#### Cost of Equity

In order to compute the cost of equity we used the CAPM model ( $CAPM = R_e = RFR + \beta * MRP$ ).

GALP		
Risk Free Rate (RFR)	1.10%	10Y Government Bond yields for Germany as of 7th of January 2020. See point 1.
Country Risk Premium	1.50%	CRP (over German risk-free rate) for Portugal. See point 2.
Beta ( $\beta$ )	0.92	Monthly adjusted levered Betas for GALP's (as a whole) peers, which were unlevered considering each peers capital structure and effective tax rate. An average of those unlevered betas was, then, leveraged using GALP's 2019 capital structure. See point 4.
Market Risk Premium (MRP)	6.30%	Excess Market Premium for Portugal. See point 3.
Terminal Growth Rate (g)	2.00%	Appendix 14

Exploration and Production		
Risk Free Rate (RFR)	1.10%	10Y Government Bond yields for Germany as of 7th of January 2020. See point 1.
Country Risk Premium	6.10%	CRP (over German risk-free rate) for Brazil. See point 2.
Beta ( $\beta$ )	0.73	Monthly adjusted levered Betas for GALP's E&P peers, which were unlevered considering each peers capital structure and effective tax rate. An average of those unlevered betas was, then, leveraged using GALP's 2019 capital structure. See point 4.
Market Risk Premium (MRP)	4.50%	Excess Market Premium for Brazil. See point 3.
Terminal Growth Rate (g)	2.50%	Appendix 14

Refining and Marketing		
Risk Free Rate (RFR)	1.10%	10Y Government Bond yields for Germany as of 7th of January 2020. See point 1.
Country Risk Premium	1.50%	CRP (over German risk-free rate) for Portugal. See point 2.
Beta ( $\beta$ )	0.66	Monthly adjusted levered Betas for GALP's R&M peers, which were unlevered considering each peers capital structure and effective tax rate. An average of those unlevered betas was, then, leveraged using GALP's 2019 capital structure. See point 4.
Market Risk Premium (MRP)	6.30%	Excess Market Premium for Portugal (Fernandez). See point 3.
Terminal Growth Rate (g)	2.00%	Appendix 14

Gas and Power		
Risk Free Rate (RFR)	1.10%	10Y Government Bond yields for Germany as of 7th of January 2020. See point 1.
Country Risk Premium	1.50%	CRP (over German risk-free rate) for Portugal. See point 2.
Beta ( $\beta$ )	0.42	Monthly adjusted levered Betas for GALP's G&P peers, which were unlevered considering each peers capital structure and effective tax rate. An average of those unlevered betas was, then, leveraged using GALP's 2019 capital structure. See point 4.
Market Risk Premium (MRP)	6.30%	Excess Market Premium for Portugal. See point 3.
Terminal Growth Rate (g)	2.00%	Appendix 14

1. As the benchmark for the **risk-free rate (RFR)** we used the normalized 10Y German Bond Yield, as of 7<sup>th</sup> January 2020.
2. A **country risk premium (CRP)** was added to the risk-free rate in order to account for each country's specific risks. CRP was computed as the difference from Portugal's (or Brazil's) RFR and the German RFR. These rates were retrieved from "Market Risk Premium and Risk-Free Rate used for 69 countries in 2019: a survey" (Fernandez)
3. **Market risk premium (MRP)** is lower for Brazil than for Portugal, reflecting the higher RFR in this country.
4. We decided to compute **Betas** for the company as a whole, as well as for each of the company segments. This way, and using the pure-play method, we were able to better estimate the risk associated to each segment and region. The levered betas of GALP peers presented are the average of 2015-2019 adjusted betas, with monthly data.

	D/E (market values)	Tax Rate
Galp Energia SGPS SA	0.25	31.5%

GALP (as a whole)	Levered Beta	D/E	Unlevered Beta
Repsol SA	1.01	0.38	0.83
OMV AG	1.05	0.51	0.81
Eni SpA	0.73	0.51	0.61
Equinor ASA	1.36	0.60	1.10
MOL Magyar Olajes Gazipari Nyrt	1.16	0.35	0.88
Gazprom Neft' PAO	0.64	0.44	0.47
Total SA	0.94	0.45	0.73
	Weighted Average		0.77
GALP	0.90		

E&P	Levered Beta	D/E	Unlevered Beta
GeoPark Ltd	0.55	3.13	0.22
Enauta Participações SA	0.92	0.09	0.86
Petroleo Brasileiro SA Petrobras	1.36	1.18	0.79
Petro Rio SA	1.86	0.28	1.51
	Weighted Average		0.84
GALP	0.99		

R&M	Levered Beta	D/E	Unlevered Beta
Neste Oyj	0.84	0.66	0.54
Rubis SCA	0.57	0.25	0.48
DCC PLC	0.86	0.74	0.53
Polski Koncern Naftowy Orlen SA	1.35	0.28	1.10
	Weighted Average		0.66
GALP	0.77		

G&P	Levered Beta	D/E	Unlevered Beta
Ren Redes Energeticas Nacionais SGPS SA	0.74	1.83	0.32
EDP Energias de Portugal SA	0.94	1.84	0.35
Endesa SA	0.58	0.67	0.38
Iberdrola SA	0.58	1.03	0.32
Naturgy Energy Group SA	0.72	1.52	0.33
	Weighted Average		0.34
GALP	0.40		

### Cost of Debt

Cost of Debt will be the same for all three segments of GALP as the company finances itself in Portugal.

$$\text{Cost of Debt} = \text{RFR} + \text{CRP} + \text{Spread (AAA)}$$

We used the 10-year normalized 10Y German Bond Yield (1.1%) as a proxy for the RFR and added a CRP (1.5%) to account for Portugal specific realities and risks. Finally, we added a spread of 75b.p., reaching a pre-tax cost of debt of 3.35%. Adjusting for taxes, GALP's cost of debt is 2.30%.

GALP is not rated by rating agencies. So, in order to reach the spread over the RFR we estimated a synthetic rating for the company. With a market capitalization over 12 billion euros and an interest coverage ratio of 9.45x, GALP has a synthetic rating AAA correspondent to a spread of 75b.p.

### Appendix 14: Terminal Growth Rate

E&P Stable Growth Model	
CAPEX	4,709.40
D&A	3,621.96
Changes NWC	109.50
EBIT	10,244.35
Tax Rate	31.5%
Reinvestment Rate	17.1%
ROE	14.1%
<b>g</b>	<b>2.4%</b>

R&M Stable Growth Model	
CAPEX	1,614.98
D&A	1,575.37
Changes NWC	526.21
EBIT	2,968.69
Tax Rate	31.5%
Reinvestment Rate	27.8%
ROE	14.1%
<b>g</b>	<b>3.9%</b>

G&P Stable Growth Model	
CAPEX	163.05
D&A	393.31
Changes NWC	124.34
EBIT	526.42
Tax Rate	31.5%
Reinvestment Rate	-
ROE	14.1%
<b>g</b>	<b>-4.1%</b>

GALP Stable Growth Model	
CAPEX	6,487.43
D&A	5,590.64
Changes NWC	760.05
EBIT	13,739.46
Tax Rate	31.5%
Reinvestment Rate	17.6%
ROE	14.1%
<b>g</b>	<b>2.5%</b>

In the terminal period we assumed a going concern approach with cash flows growing perpetually at a continuous rate. We followed two approaches to reach the Terminal Growth Rate – Stable Growth Model and Dividend Sustainable Growth. The first one may be applied for each segment individually, while the latter can only be applied to the company as a whole. For the Stable Growth Model, we used the sum of values of 2019-2025F, except for the value for the ROE which was computed as the average between 2015-2025F. In the Dividend Sustainable Growth Model, the values used came from 2015-2025F. In the case of the Stable Growth Model the only value that was immediately rejected came from the G&P. The E&P value was considered too low if we consider the potential growth of the segment, the R&M we considered that it was overly estimated. The value of the GALP as whole was deemed unfit, as it was too high. Thus, we applied the forecasted GDP growth on the R&M and G&P segments based on the strong relationship between the demand of the segments and the GDP growth. For the E&P we applied a premium based on the potential for growth of the segment. In the company as a whole, we based our choice in the values that the segments presented individually.

Dividend Sustainable Growth		Terminal Growth Rate	
Net Income	9,262.98	E&P	2.8%
Dividends	6,777.10	R&M	1.7%
Sales	191,479.89	G&P	1.7%
Total Assets	163,380.75	GALP	2.0%
Shareholder's Equity	52,421.24		
(NI-D)/NI	26.8%	E&P	2.8%
ROE	17.7%	R&M	1.7%
NI/S	4.8%	G&P	1.7%
S/A	117.2%	GALP	2.0%
A/E	311.7%		
g	4.7%		

#### Appendix 15: FCFF Valuation

Regarding the FCFF model, several adjustments were carried out for the transition from Enterprise Value to Equity Value. The adjustments were carried out in order to consider non-operational assets and financial liabilities. Other financial assets were added and Other Financial Instruments were subtracted. The Post-Employment Fund of the company is presented as a liability and will therefore be subtracted. The Provisions (mostly connected to Decommissioning costs and CESE) were subtracted, as they will negatively affect the company's value if they were effectively incurred. Lastly, Non-controlling interests were subtracted.

FCFF Valuation SOTP	
E&P	10 506
R&M	3 022
G&P	1 924
<b>Enterprise Value</b>	<b>15 451</b>
Mozambique	867
Net Debt	-3 695
Other financial assets	200
Other financial instruments	-102
Post-employment liabilities	-304
Provisions (including CESE)	-724
Non-controlling interests	-1 688
<b>Adjustments</b>	<b>-5 447</b>
<b>Equity Value</b>	<b>10 004</b>
Shares Outstanding	829
<b>Price Target</b>	<b>12,06 €</b>

	WACC	GALP (whole)	E&P	R&M	G&P
Risk Free Rate (RFR)	1.10%	1.10%	1.10%	1.10%	1.10%
Country Risk Premium (CRP)	1.50%	1.50%	1.50%	1.50%	1.50%
Beta (β)	0.90	0.99	0.77	0.40	0.40
Market Risk Premium (MRP)	6.50%	4.50%	6.50%	6.50%	6.50%
<b>Cost of Equity</b>	<b>8.47%</b>	<b>11.66%</b>	<b>7.64%</b>	<b>5.23%</b>	
Cost of Debt	3.35%	3.35%	3.35%	3.35%	3.35%
Effective Tax Rate	31.50%	31.50%	31.50%	31.50%	31.50%
<b>After-tax Cost of Debt</b>	<b>2.30%</b>	<b>2.30%</b>	<b>2.30%</b>	<b>2.30%</b>	<b>2.30%</b>

#### GALP (whole)

	2020E	2021F	2022F	2023F	2024F	2025F	Terminal Value
Weight of equity (Market Values)	79.93%	79.15%	79.20%	79.27%	79.17%	78.99%	80.00%
Weight of debt (Market Values)	20.07%	20.85%	20.80%	20.73%	20.83%	21.01%	20.00%
<b>WACC</b>	<b>7.23%</b>	<b>7.21%</b>	<b>7.22%</b>	<b>7.22%</b>	<b>7.22%</b>	<b>7.21%</b>	<b>7.23%</b>

#### Exploration & Production

	2020E	2021F	2022F	2023F	2024F	2025F	Terminal Value
Weight of equity (Market Values)	79.93%	79.15%	79.20%	79.27%	79.17%	78.99%	80.00%
Weight of debt (Market Values)	20.07%	20.85%	20.80%	20.73%	20.83%	21.01%	20.00%
<b>WACC</b>	<b>9.78%</b>	<b>9.73%</b>	<b>9.73%</b>	<b>9.74%</b>	<b>9.73%</b>	<b>9.72%</b>	<b>9.82%</b>

#### Refining & Marketing

	2020E	2021F	2022F	2023F	2024F	2025F	Terminal Value
Weight of equity (Market Values)	79.93%	79.15%	79.20%	79.27%	79.17%	78.99%	80.00%
Weight of debt (Market Values)	20.07%	20.85%	20.80%	20.73%	20.83%	21.01%	20.00%
<b>WACC</b>	<b>6.56%</b>	<b>6.55%</b>	<b>6.55%</b>	<b>6.55%</b>	<b>6.55%</b>	<b>6.55%</b>	<b>6.51%</b>

#### Gas & Power

	2020E	2021F	2022F	2023F	2024F	2025F	Terminal Value
Weight of equity (Market Values)	79.93%	79.15%	79.20%	79.27%	79.17%	78.99%	80.00%
Weight of debt (Market Values)	20.07%	20.85%	20.80%	20.73%	20.83%	21.01%	20.00%
<b>WACC</b>	<b>4.63%</b>	<b>4.64%</b>	<b>4.63%</b>	<b>4.63%</b>	<b>4.63%</b>	<b>4.63%</b>	<b>4.63%</b>

Exploration & Production	2020F	2021F	2022F	2023F	2024F	2025F	Terminal Value
EBIT	1 162	1 380	1 551	1 828	2 026	2 298	2 606
Tax Rate	31,50%	31,50%	31,50%	31,50%	31,50%	31,50%	31,50%
SPT&IRP	30,00%	30,00%	30,00%	30,00%	30,00%	30,00%	30,00%
ESEC	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Unlevered Net Income	557,0	661,9	743,6	876,4	971,5	1 101,8	1 249,6
Non Cash Charges and Other Adjustments	500,1	535,9	576,4	621,9	668,3	719,3	774,2
D&A, Provisions & Impairments	500,1	535,9	576,4	621,9	668,3	719,3	774,2
Changes in Net Working Capital	-18,0	-18,7	-14,5	-14,6	-16,1	-27,6	-17,6
Capital Expenditures	-698,4	-721,5	-808,6	-843,7	-826,8	-810,3	-774,2
Free Cash Flow to the Firm (FCFF)	340,7	457,7	496,8	640,0	796,8	983,2	1 232,0
PV of FCFF	2 481,5	2 723,0	2 485,8	2 182,7	1 692,9	983,2	
PV of Terminal Value	10 959,1	12 025,5	13 196,1	14 481,2	15 890,5	17 435,3	
Enterprise Value	13 440,7	<b>g = 2.75%</b>					

Refining & Marketing	2020F	2021F	2022F	2023F	2024F	2025F	Terminal Value
EBIT	324,0	486,8	592,2	499,8	487,7	578,1	
Tax Rate	31,5%	31,5%	31,5%	31,5%	31,5%	31,5%	
ESEC	-52,5	-53,1	-52,0	-51,9	-51,9	-52,4	
Unlevered Net Income	169,5	280,3	353,7	290,5	282,2	343,6	
Non Cash Charges and Other Adjustments	258,3	269,4	268,6	256,0	255,7	267,4	
D&A, Provisions & Impairments	258,3	269,4	268,6	256,0	255,7	267,4	
Negative Changes in Net Working Capital	-109,2	-106,0	-74,2	-65,2	-65,7	-105,9	
Capital Expenditures	-280,4	-291,6	-255,2	-267,9	-262,6	-257,3	
Free Cash Flow to the Firm (FCFF)	38,2	152,1	292,8	213,4	209,6	247,8	252,0
PV of FCFF	920,1	980,4	882,6	628,4	442,2	247,8	
PV of Terminal Value	3 811,5	4 061,2	4 327,2	4 610,8	4 912,9	5 234,6	
Enterprise Value	4 731,6	<b>g = 1.70%</b>					

Gas & Power	2020F	2021F	2022F	2023F	2024F	2025F	Terminal Value
EBIT	94,9	83,1	96,0	82,6	84,1	85,7	
Tax Rate	31,5%	31,5%	31,5%	31,5%	31,5%	31,5%	
ESEC	-12,2	-11,4	-12,4	-12,7	-12,6	-12,1	
Unlevered Net Income	52,8	45,6	53,4	43,9	45,0	46,6	
Non Cash Charges and Other Adjustments	45,1	58,6	61,6	77,6	76,0	74,5	
D&A, Provisions & Impairments	45,1	58,6	61,6	77,6	76,0	74,5	
Changes in Net Working Capital	-25,5	-23,2	-18,2	-16,2	-16,3	-25,0	
Capital Expenditures	-18,7	-24,3	-25,5	-32,2	-31,5	-30,9	
Free Cash Flow to the Firm (FCFF)	53,7	56,6	71,3	73,1	73,3	65,2	66,3
PV of FCFF	296,2	309,9	265,0	202,7	135,6	65,2	
PV of Terminal Value	1 797,8	1 881,0	1 968,2	2 059,4	2 154,8	2 254,5	
Enterprise Value	2 093,9	g =1.70%					

#### Appendix 16: FCFE Valuation

The Equity Value in the FCFE was adjusted to discount the non-controlling interests. The net borrowings were equal to the changes in debt in the forecasted year, with adjustments being made in the terminal period. In that period, net borrowings correspond to the amount invested in net CAPEX and NWC that will be financed through debt to maintain the capital structure as 20% D/EV:

$$Net\ Borrowings_{terminal} = \frac{D}{EV} \times (CAPEX - D\&A + \Delta NWC)$$

FCFE	2020F	2021F	2022F	2023F	2024F	2025F	Terminal Value
Net income to common shareholders	564.1	738.1	857.9	877.2	929.0	1,069.8	1,091.2
Tax Rate	31.5%	31.5%	31.5%	31.5%	31.5%	31.5%	
Non Cash Charges and Other Adjustments	803.6	863.9	906.5	955.5	1,000.0	1,061.2	1,082.4
Target D/EV	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	0.2
Capital Expenditures	-997.5	-1,037.4	-1,089.3	-1,143.8	-1,120.9	-1,098.5	-1,120.5
Negative Changes in Net Working Capital	-152.7	-147.9	-106.9	-96.0	-98.1	-158.5	-183.5
Net Borrowing (target D/EV approach)	69.3	64.3	57.9	56.9	43.8	39.2	44.3
Free Cash Flow to Equity (FCFE)	286.8	480.9	626.2	649.8	753.9	913.2	914.0
PV of FCFE	2,634.5	2,858.7	2,580.1	2,120.1	1,595.4	913.2	
PV of Terminal Value	11,118.9	12,065.2	13,091.7	14,205.0	15,413.7	16,726.8	
Equity Value	13,753.5	g = 3.0%					

Price per share	
Equity Value	13,940.9
Shares Outstanding	829.3
Price per share	16.8

#### Appendix 17: Dividend Discount Model (DDM)

Regarding the DDM, we applied a two-stage model together with a H-model for the terminal period. In the H-model we considered a short-term growth rate of 8% that reflects the converging dividend growth YoY from 2020F to 2025F. This rate will gradually decrease until it reaches a constant value of 3% in the terminal period from 2029 onwards, which corresponds to the perpetual growth rate for the FCFE. Despite the growing dividends, payout ratio will average 71.4% in the period 2020-2025.

	2020F	2021F	2022F	2023F	2024F	2025F
EPS	0.68	0.89	1.03	1.06	1.12	1.29
YoY	-14.4%	30.8%	16.2%	2.2%	5.9%	15.2%
DPS	0.77	0.84	0.88	0.93	0.97	1.02
YoY	10.0%	10.0%	5.0%	5.0%	5.0%	5.0%

DDM Price Target	
Dividend 2025	848.6
H	4
Long-term Growth	3.0%
Short-term Growth	8.0%
Terminal Cost of Equity	8.5%
PV Dividends	3,015.4
PV Terminal Value	11,664.9
Equity Value	14,680.3
Shares outstanding	829.3
Equity Value per share	17.70

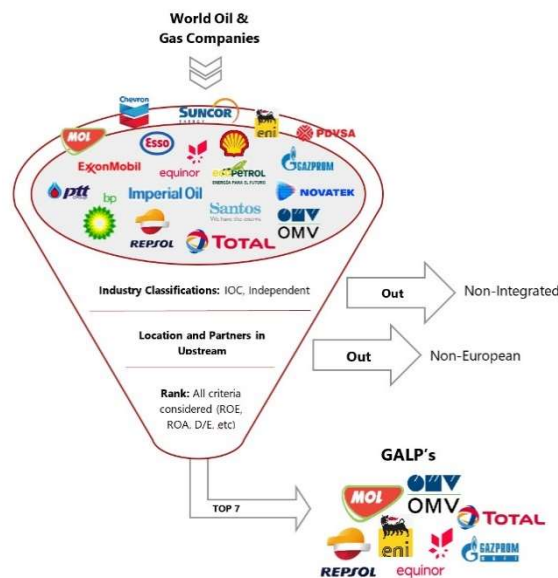
## Appendix 18: Mozambique LNG

Rovuma is currently seen as one of the most promising gas discoveries in the world. Gas has a 10% stake in the project, working together with their partners in the development it. This benchmark project will play a decisive role into GALP's goal of moving into a low carbon strategy.

To properly capture the potential of Rovuma project, we decided to value GALP's stake separately based on recent transactions. There are two transactions we deemed considerable: one from Exxon and one from TOTAL. Exxon acquired a 25% stake in Mozambique's Area 4 (Rovuma LNG and South Coral FLNG) for \$2.8bn. When adjusting for the exchange rate of the period, the acquisition will be valued in €0.6bn per mta. The Total transaction occurred in 2019, with the acquisition of a 26.5% stake in Area 1 (Mozambique LNG) being valued in \$3.9bn. When doing the same adjustment that was previously done to the Exxon transaction, we will achieve a €1.0bn per mta. We then applied an average of the valuation and multiplied it by the GALP's stake in the Rovuma LNG project (1.5 mta). This will return us a value of €1.5/share. We applied an uncertainty factor of 30% over this valuation, since E&P projects always have a certain degree of uncertainty over their economic value. This valuation yielded an additional € 0.90 to the price target.

## Appendix 19: Peers

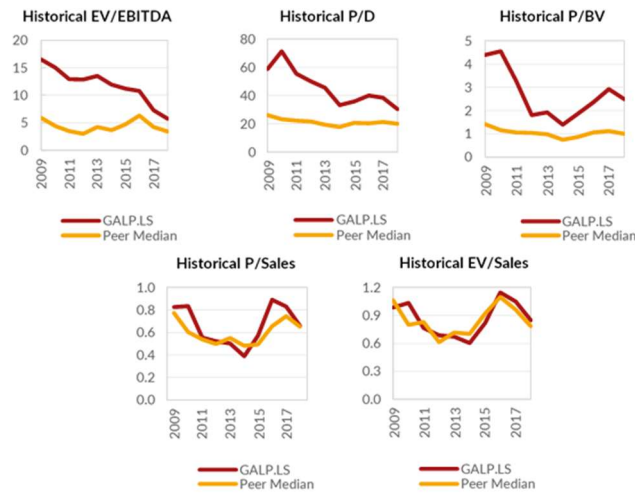
To perform a valuation with multiples, the definition of a peer group is required to more accurately benchmark the relative measures selected. The information related to the peers was taken from Thomson Reuters. The first approach considered was to find peers for each GALP's segment, Upstream and Downstream. For the Upstream, the most appropriate players would be E&P firms from Africa and LATAM, and for the Downstream, European R&M companies. However, due to the lack of comparable companies for the E&P, this approach proved to be ineffective. Since GALP is an IOC with a global presence, we decided to follow another approach where only IOCs were the possible choice for the peer group. Additionally, we narrowed the possible companies by region, only considering European companies or companies operating with GALP in its Upstream projects, either in LATAM or Africa. From the companies we reached with this selection, we eliminated those with extremely higher or lower market capitalization, sales, and assets. As the number of possible companies was still considerably high and in order to reach the peer group as close as possible to GALP's values, a ranking was constructed for a number of financial drivers chosen by our team, including Return on Equity, Return on Assets, EBITDA Margin, Net Debt to EBITDA, etc. The final peer group is represented in the figure below.



Source: Team Analysis

## Appendix 20: Valuation through Multiples

The multiples applied were computed for 2020F. GALP's values were based on team estimates whereas peer multiples were extracted from Reuters' Forecast Multiples. Our team chose to first analyze several GALP's historical multiples to compare with the peers and this way understand GALP's position. GALP is trading at a premium when comparing to its peers mainly because it still has capacity to grow. What we can gather from the evolution of the ratios is that the market seems to be reviewing GALP's growth potential since its ratios are getting closer to the values of the other companies. This may be because the potential of growth of the company is getting smaller, as the company as considerably increased their WIP levels. Nonetheless, the market still seems to be evaluating GALP with a premium over their peers.



Appendix 21: Other information regarding Oil and Gas industry

We should begin by differentiating between an Operationally IOC and a Financially IOC. The first is a company operating in all segments of the Oil & Gas industry and supplying its Downstream with its Upstream production whereas the second, even operating in all segments, the Upstream and Downstream function independently, with oil from the E&P being sold to the open market and the oil for refining also bought from the open market.

**Upstream segment** | Upstream investments occur several years prior to the beginning of production. Consequently, projects undergo several steps until reaching the production phase. The exploration stage initiates when companies acquire the right to explore the areas through a concession deal granted by the country's government. Exploration is focused on studying the structure of the earth in depth, the geological history of the area and to measure the probability of hydrocarbon occurrence. If the studies confirm economic viability of an oil field, then the first well is drilled, known as "wildcat" well. The Development stage precedes the Production and it is relevant as resources start being accounted as reserves. Finally, Production phase starts as the first marketable hydrocarbons come to the surface. First, the projects go through a ramp-up period. After a given interval of time, which will differ depending on the projects, they reach plateau, meaning they will be producing at full capacity, and then they enter in decline.



Specifically, GALP's Upstream portfolio comprises around 50 projects, in 6 different locations (Brazil, Angola, Mozambique, Namibia, S. Tomé and Príncipe and East Timor) and in distinct stages of exploration, development, and production.

GALP's Locations	Nb Blocks	In Exploration	In Development	In Production
Brazil	16	11	2	3
Angola	3	-	-	3
Mozambique	1	-	1	-
Namibia	2	2	-	-
S. Tomé and Príncipe	4	4	-	-
East Timor	1	1	-	-
<b>Total</b>	<b>27</b>	<b>18</b>	<b>3</b>	<b>6</b>

In E&P Brazil, and due to the finding of high potential exploration areas, a new regime was established, meaning that currently 3 types of contracts apply to the pre-salt area. 2 examples are the Concession Contract (CC) and the Production Sharing Contract (PSA). The latter, also the most recently established and only applicable to the pre-salt polygon, occurs when exploration of oil and NG is made through a sharing contract between Petrobras (NOC) and a company or group of companies. The consortium must pay royalties to the government. The obligation of Petrobras acting as the operator and hold a minimum stake of 30% is no longer mandatory, though the company is still given preference. In the concession model, the company or companies within the consortium operate in an area granted by the State. Royalties along with Special Participation taxes must be paid. Special Participation only apply to the projects with high levels of production.

It is relevant to mention that the concession model applies to the projects within the areas contracted prior the establishment of the PSA defined to the pre-salt. In both regimes CNPE decides whether Petrobras is directly hired or if bidding rounds will take place. The participation of external companies is only recently permitted in Brazil. Companies authorized to participate in the auctions will try to get a stake in bidding rounds, where Petrobras continues to be given preference as operator. Companies offering the largest profit to the Brazilian State are the ones winning.

**Midstream segment** | Refers to the processing, transportation and storage of crude oil and NG. Reserves usually are not in the same geographical location as refineries and final consumers. As so, transportation is the main activity and includes using pipelines, rail cars, tanker ships and trucking fleets. Galp does not operate in this segment, since it is a financially IOC.

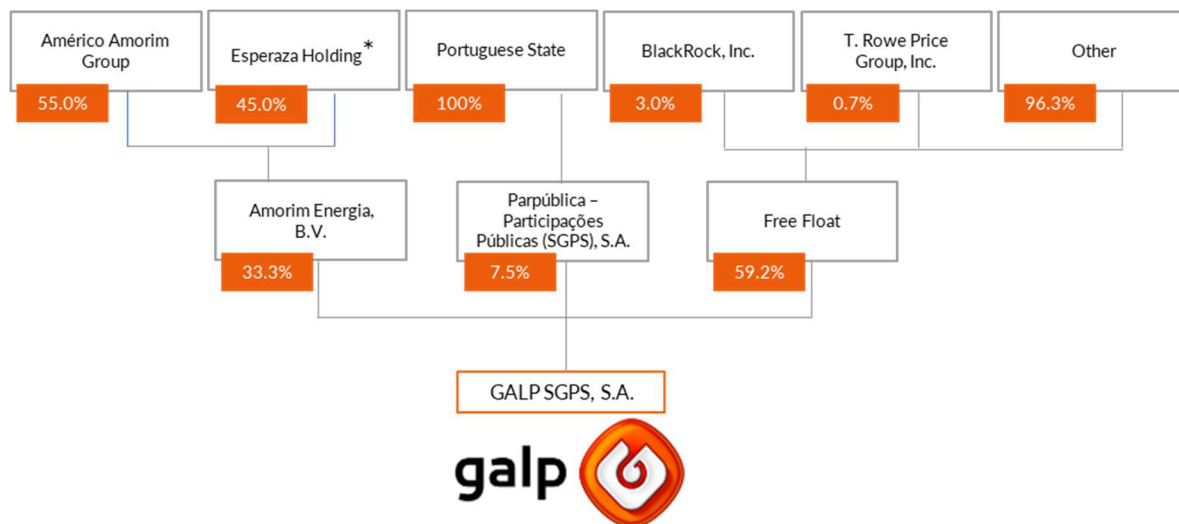
**Downstream segment** | R&M: A variety of products reach consumers in the marketing phase of this segment. Gasoline, gasoil, heating oil, asphalt, jet fuel, kerosene, NG, LPG, as well as many petrochemicals, are some examples. The major consumers of downstream products are airlines, trucking fleets, utilities and petrochemicals, municipalities, and industrial manufacturers. The companies involved in this segment consist mostly of refineries, natural gas and petroleum distributors, and retail outlets. A key factor that determine the success or failure in this industry is related to how companies can reduce the costs associated with the resource's purchase and refining process, in order to increase their refining margins.



The refining process is a global, extremely cyclical and margin business, where profitability is very sensitive to marginal changes in oil products supply and demand. The main measure of profitability is the margin, defined as the difference between the price realized for the products to be sold and the cost of the crude delivered to the refinery. Margins tend to diminish when crude prices increase and tend to hold or grow when crude prices drop, because the marketplace adjusts more slowly to lower crude prices than to higher ones. Margins tend to be similar for refineries that operate in the same region and market.

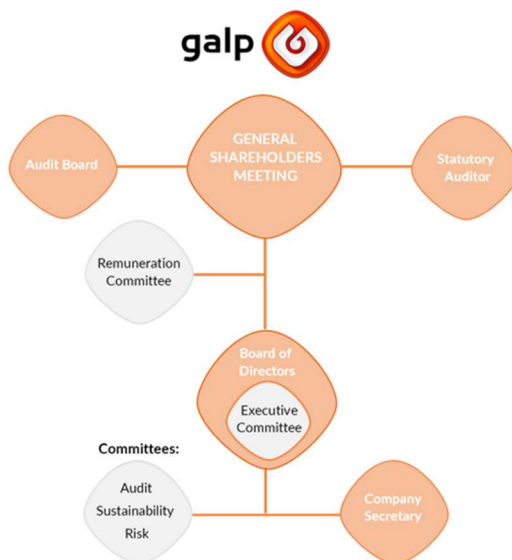
Even though Galp does not possess any refinery in Spain, it still has an extensive distribution network of oil products there. The company currently has a total of 1,460 service stations, maintaining its leadership position in the retail market in Portugal, where it has 710 service stations and 340 convenience stores, out of a total of about 3,000. It is also a relevant player in Spain, since it has over 570 service stations and 380 convenience stores, of a total of around 8,856.

## Appendix 22: Shareholder Structure



\* Held by Sonangol and Isabel dos Santos

## Appendix 23: Governance Model



## Appendix 24: Remuneration Policy

As of 31/12/2018

Director	Age	Independent	Position	Compensation (2018)	Term
Paula Amorim	48	No	Chairman	- €	2018
Miguel Athayde Marques	64	Yes	Vice-Chairman and LID	84 000,00 €	2018
Carlos Gomes da Silva	52	No	Vice-Chairman	1 755 769,00 €	2018
Filipe Crisóstomo Silva	55	No	Member	705 000,00 €	2018
Thore E. Kristiansen	58	No	Member	920 387,00 €	2018
Sérgio Gabrielli de Azevedo	70	No	Member	84 000,00 €	2018
Abdul Magid Osman	75	Yes	Member	84 000,00 €	2018
Marta Amorim	47	No	Member	42 000,00 €	2018
Raquel Vunge	53	No	Member	42 000,00 €	2018

Carlos Costa Pina	49	No	Member	705 000,00 €	2018
Francisco Teixeira Rêgo	47	No	Member	42 000,00 €	2018
Jorge Seabra de Freitas	59	No	Member	42 000,00 €	2018
José Carlos Silva	57	No	Member	887 082,00 €	2018
Pedro Ricardo	55	No	Member	693 083,00 €	2018
Tiago Câmara Pestana	55	No	Member	693 083,00 €	2018
Rui Paulo Gonçalves	52	No	Member	42 000,00 €	2018
Luís Todo Bom	71	Yes	Member	42 000,00 €	2018
Diogo Tavares	74	No	Member	42 000,00 €	2018
Joaquim Borges Gouveia	70	Yes	Member	42 000,00 €	2018
<b>Total</b>				<b>6 947 404,00 €</b>	

The BoD presented above is the one effective until December 31<sup>st</sup>, 2018. Since it has changed in 2019 and no information has yet been released regarding the remuneration of the new BoD, we decided to present the remunerations of 2018. Below, we present the current constitution of the BoD.

#### As of 31/12/2018

Director	Age	Independent	Position	Term
Paula Amorim	48	No	Chairman	2022
Miguel Athayde Marques	64	Yes	Vice-Chairman and LID	2022
Carlos Gomes da Silva	52	No	Vice-Chairman	2022
Filipe Crisóstomo Silva	55	No	Member	2022
Thore E. Kristiansen	58	No	Member	2022
Carlos Costa Pina	49	No	Member	2022
José Carlos Silva	57	No	Member	2022
Sofia Tenreiro	44	No	Member	2022
Susana Quintana	45	No	Member	2022
Marta Amorim	47	No	Member	2022
Francisco Teixeira Rêgo	47	No	Member	2022
Carlos Pinto	41	No	Member	2022
Luís Todo Bom	71	Yes	Member	2022
Jorge Seabra de Freitas	59	No	Member	2022
Diogo Tavares	74	No	Member	2022
Rui Paulo Gonçalves	52	No	Member	2022
Edmar de Almeida	50	Yes	Member	2022
Cristina Neves Fonseca	31	Yes	Member	2022
Adolfo Mesquita Nunes	42	Yes	Member	2022

		Fixed		
Remuneration	Variable (potential maximum of 60% based on the total annual fixed remuneration)	Annual (50%)	Quantitative Performance (65%)	GALP Value Added (33.3%)
				Total Shareholder Return (TSR) (33.3%)
				EBITDA RC (33.3%)
		3-years (50%)	Qualitative Performance (35%)	Collective performance assessment, including environmental, sustainability and energy efficiency
			Quantitative Performance (65%)	Total Shareholder Return (TSR) (50%)
				EBITDA RC (50%)
	Qualitative Performance (35%)	Collective performance assessment, including environmental, sustainability and energy efficiency		

#### Appendix 25: Awards

Throughout the years, GALP has been recognized for its good practices. Below, we present GALP's acknowledgments and awards for 2019 with a brief explanation for each.

Ethibel EXCELLENCE / AAA Rating, by MSCI ESG Ratings / "Prime" Company, by ISS ESG / Top 3 of World's Most Sustainable Companies / "Gold" Company, by EcoVadis / Bloomberg's 2019 Gender-Equality Index / Silver Class Sustainability Yearbook Award 2019

#### Appendix 26: Risk Matrix

##### Interest Rates (MR4)

Debt is entirely in EUR, making the company exposed to ECB's monetary policies. Low-interest rates have been beneficial to the company; however, these are expected to eventually increase after 2019. Additionally, most of the debt is raised in Portugal, leaving the company financials also exposed to the Portuguese economy. Historically, the company's average interest rate spread over the long-term government bond yield has been 65 b.p.

##### Political Stability (PRL2)

Most of the company's Upstream projects are in countries with relevant political and economic risk. Civil disruption, expropriation and nationalization of goods or significant increases in taxes and royalties could all arise from this risk, mostly in Brazil, Angola and, eventually, in Mozambique.

### **Fuel Taxation (PRL3)**

In Portugal, taxes account for c.52% and 43% of the price of gasoline and diesel, respectively. GALP's ability of adaptation to oil price changes is heavily affected by governmental decisions. If these taxes become even more burdensome to the company, it can become an issue for the R&M segment.

### **CESE – Extraordinary Contribution for the Energy Sector (PRL4)**

Following the law and tax regulations, GALP is properly accounted for the legal obligation from CESE, although this obligation is currently subject to legal dispute. The company is accurately provisioned for this and, in a scenario where a payment will be necessary, it should not be a problem in the short run. The decision is in the hands of the Constitutional Court.

### **Amorim Energia (GR1)**

Amorim Energia B.V. position in the shareholder structure (c.33%) gives it a high influence on all shareholders matters (e.g. the ability to block major changes in the company). Although this shareholder has other positive examples where they are the largest holder (like Corticeira Amorim), it is important to understand that their influence is high within GALP, and should they wish to exert that, they are able to. For example, one of the changes that need a qualified majority is the acquisition of the company, and GALP's current structure greatly decreases its desirability as a target, working as a pre-takeover defense mechanism.

### **Dividend Policy Maintenance (FR1)**

The maintenance of a stable dividend policy is part of GALP's strategy. Despite the stability on its core business, in an unexpected event that might lower the cash-flow generation, sustaining the dividends can be difficult. This might be a sensitive topic due to the clientele effect, since some shareholders would not happily accept a dividend decrease or stoppage. Yet, the DPS is expected to remain stable in the period 2019F-2023F.

### **Natural Disasters (ER1)**

Upstream operations are developed in extremely fragile environments (ultra-deep waters), where there is an exposure to the risk of natural disasters. A natural disaster in the Lula-Iracema FPSOs would be disruptive to the operations of GALP, heavily affecting its value creation capacity. It is also important to account for the possibility of environmental damage due to operational failures (e.g. oil spill), that can heavily damage the company's reputation and generate costs associated with damage control.

## **Appendix 27: Porter's Five Forces**

### **-Rivalry Among Existing Competitors**

#### **Upstream | Low (2)**

In this segment, competitors are also partners. This is because most exploration activities operate through production share agreement (PSA) deals. In these, different companies share blocks with different percentages of control, depending on the results of the auction for that specific project. Usually, National Oil Companies (NOC) are the ones awarded with the right of preference to control the blocks. All other players have to go through bidding rounds to gain the interest still available. Brazil's NOC, Petrobras, is the main player of E&P in the country, with c.74% 2018YE of the total oil production. GALP is the 3rd biggest producer in Brazil with c.3% of production, right after Shell with c.13%. As so, companies are both competitors in the auctions, as they are partners in the blocks where they have shares. For these reasons, rivalry among competitors is considered to be low in the Upstream.

#### **Downstream | Significant (4)**

There are 11,860 stations (including service stations and convenience stores) in Portugal and Spain operating in the Marketing segment. GALP has 17% of these. As so, the high number of Downstream competitors turn the rivalry quite significant. Moreover, the homogeneity of the products leads to an increase in competition since companies have the need to differentiate themselves from similar ones.

### **-Threat of Substitute Products**

#### **Upstream | Insignificant (1)**

With the energy transition, renewable energies and NG will increase its share in the energy mix, with NG becoming the 2<sup>nd</sup> most used source of energy. These can become substitute products for oil. Nonetheless, oil demand will keep increasing in the following years and so is its E&P. For this reason, and as GALP is already producing electricity and NG in the Upstream, intending to increase production in the following years, accompanying the market trends, this force does not represent a threat for GALP.

#### **Downstream | Low (2)**

The same logic is also applied to the Downstream segment, because of the demand of by-products. However, as GALP is already present in the refining and marketing of NG and electricity, the threat of substitute products is low.

### **-Bargaining Power of Customers**

### **Upstream | Insignificant (1)**

Consumers are also suppliers. The customers of the Upstream are the downstream players. As so, these do not have almost any bargaining power over the price at which they will buy it.

### **Downstream | Insignificant (1)**

In the downstream, consumers have small influence on the price since they are highly dependent on the products.

### **-Bargaining Power of Suppliers**

#### **Upstream | Moderate (3)**

Governments own reserves inside borders, so they have power over exploration rights of their reserves. Frequently, these countries will treat favorably their NOCs, giving them preferred rights and more advantageous conditions in the bidding rounds. Otherwise, political issues may well arise. For this reason, suppliers have some control over which upstream companies get stakes in the blocks.

#### **Downstream | Significant (4)**

GALP buys oil in the market for its refining process. As so, it is exposed to the supplier's influence on the prices. However, as GALP also operates in the Upstream segment and it sells the oil produced in the open market, so it has an influence over prices as a supplier. This creates a natural hedge since the company sells and buys oil in the market, allowing it to adjust the prices in the Upstream segment.

### **-Threat of New Entrants**

#### **Upstream | Moderate (1)**

New entrants are highly unlikely in the Upstream segment. This is mostly due to the high capital investments required to acquire the basic assets for the E&P. Recently, GALP paid over 106 million euros for a 20% stake for the C-M-791 block located in the Campos Basin in an auction realized in 2018. They already operate in the industry and can afford uncertainty around E&P projects because the current portfolio is sustainable and profitable. However, new players don't have the knowledge to invest in projects that have high uncertainty associated.

#### **Downstream | Significant (3)**

The low costs associated with opening and operating a service station or convenience store make the threat of new entrants much higher than in the Upstream segment. On the other hand, costs needed to build and run a refinery are substantially higher, what lowers the probability of new entrants. Overall, this force represents a significant threat for GALP.

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