CATÓLICA LISBON
BUSINESS & ECONOMICS

EDP and Naturgy: Merger in Utilities

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Dissertation written under the supervision of António Borges de Assunção

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Abstract

When I chose the Mergers and Acquisitions (M&A) seminar for my thesis, I did so due to the internship I was attending at the time in a M&A department. There, I was allocated to the Technology, Media and Telecoms (TMT) and the Energy sectors, hence my choice. At the time, rumors started on a possible merger between *Naturgy* (ex-GNF) and *EDP – Energias de Portugal*, which didn't amount to anything. My internship reached its end, but not my interest in the merger possibility and the sector.
Throughout this thesis, I intend to learn if the merger would make sense for both sides, and which obstacles would Naturgy face if it had continued with their merger proposition.
However, in May, *China Three Gorges*, a shareholder of EDP, decided to make an acquisition offer for the rest of the shares. This event added questions to my thesis: How did it affect EDP, and how would it influence a merger proposition from Naturgy?
After a literature review on valuation and M&A, and an industry and company overview, I reached a valuation for both and a merger proposal, along with the respective analysis. I also give an insight on *China Three Gorges'* offer.

Keywords: **M&A Energy Naturgy GNF EDP China Three Gorges**

Abstracto

Quando escolhi o seminário de *Mergers and Aquisitions* (M&A) para fazer a minha tese, fi-lo porque me encontrava na altura a estagiar num departamento de M&A. Aqui estava alocado aos sectores de Tecnologia, Média e Telecomunicações (TMT) e de Energia, daí a minha escolha do sector energético. Durante o estágio, surgiram rumores de uma possível fusão entre a *Naturgy* (ex-GNF) e a *EDP – Energias de Portugal*, que acabou por não se concretizar. O estágio terminou mas o meu interesse na possibilidade da fusão e no sector não.
Com esta tese, tenciono averiguar se esta fusão faria sentido para ambas as partes, e quais os obstáculos que a Naturgy iria encontrar se tivesse prosseguido com a proposta de fusão.
Em Maio, no entanto, a *China Three Gorges*, accionista da EDP, decidiu fazer uma Oferta Pública de Aquisição (OPA) ao resto das acções que não possuía. Este evento acrescentou perguntas à minha tese: Como é que este evento afectou a EDP, e como influenciaria uma proposta de fusão por parte da Naturgy.
Através de uma revisão da literatura existente sobre avaliação e M&A, análises do sector energético e das empresas mencionadas, chego a uma avaliação para cada uma e a propostas de fusões com as análises respectivas. Acabo também por dar um "insight" sobre a oferta da *China Three Gorges.*

Palavras-Chave: **M&A Energia Naturgy GNF EDP China Three Gorges**

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List of Abbreviations

APV - Adjusted Present Value

CCGT - Combined-Cycle Gas Turbine

CLSBE - Catolica Lisbon School of Business and Economics

CMVM - Comissão do Mercado de Valores Mobiliários

CNIC - CNIC Corporation

CNMC - Comisión Nacional de los Mercados y la Competencia

COD - Commercial Operations Date

CRP - Country Risk Premium

CTG - The China Three Gorges Corporation

CVC - CVC Capital Partners

DCF - Discounted Cas-Flows

EBIT - Earnings before Interest and Taxes

EBITDA - Earnings before Interests, Taxes, Depreciations and Amortizations

EDP - Energias de Portugal

EDPR - EDP Renováveis

EIA – Energy Information Administration

ERSE - Entidade Reguladora dos Serviços Energéticos

EV - Enterprise Value

EY - Ernst and Young

FCFF - Free Cash-Flow to the Firm

GNF - Gas Natural Fenosa

GW - Gigawatts

GWh - Gigawatts per hour

IEA - International Energy Agency

IU - Integrated Utilities

kWh - Kylowatts per hour

LNG - Liquified Natural Gas

M&A - Mergers and Acquisitions

MINETAD - Ministério de la Energía, Turismo y Agenda Digital

MRP - Market Risk Premium

MW - Megawatts

OECD - Organization for Economic Co-operation and Development

OPA - Oferta Pública de Acquisição

P&U - Power and Utilities

PVPV - Precio Voluntário al Pequeño Consumidor

R&D - Research and Development

REE - Red Eléctrica de España

Rf - Risk-Free

Tc - Corporate Tax

TMT - Technology, Media and Telecoms

TV - Terminal Value

TWh - Terawatts per hour

WACC - Weghted-average Cost of Capital

Introduction

My objective with this thesis is to understand and value the benefits of a possible merger between two leading firms in the competitive energy sector, while also taking into account the specificities and current developments in each one.

To do so, I will review the literature in Mergers and Acquisitions (M&A) deals and valuation and thoroughly analyze the energy sector, as well as each firm. After their standalone valuation, I will value the merged entity and its possible sinergies.

Lastly, I will present different offer possibilities from *Naturgy* and CTG, as well as the nuances that affect each one's feasibility.

Literature Review

"If I have seen further it is by standing on the shoulders of giants." – **Sir Isaac Newton, February 15, 1676 in a letter to Robert Hooke**

Even though Sir Isaac Newton never dwelled in the financial sector, to my knowledge, I believe there's no better quote to summarize the motive for a literature review. By supporting myself on top of the findings of researchers, I will be able to deliver a more complete work.

The following review will be a starting point for my thesis, standing as a collection of information from past researchers on the Valuation and M&A fields from relevant financial journals.

Firm Valuation

"Understanding what determines the value of a firm and how to estimate that value seems to be a prerequisite for making sensible decisions" - **Damodaran, 2006**

In this section, I will be introducing the possible valuation models to be used in firm valuation, as well as tackling the various inputs required for the computation of the model I will choose.

Valuation Models

According to Damodaran, there are four types of methods to make a valuation: discounted cash-flows (DCF) valuation, relative valuation, accounting and liquidation valuation and option pricing valuation.

DCF Valuation

Two models standout in this type of valuation: the weighted average cost of capital based (WACC-based) and the adjusted present value (APV).

In both cases, we will be discounting all future expected cash flows of the firm to a present value with a rate that is defined by the risk adjacent to that firm, thus reaching the enterprise value (Damodaran, 2006).

The difference here is the way we discount said cash flows.

In the first model, we discount the cash flows through a "risk-adjusted discount rate" (Damodaran 2006) that has as inputs the firm's cost of debt (interest rate at which the firm can finance itself through debt), cost of equity (rate at which the firm can finance itself through equity, it's shareholders), leverage and rate of taxes to be paid.

$$EV = \sum_{i=1}^{n} \frac{FCFF_i}{(1+WACC)^i} + \frac{TV}{(1+WACC)^n}$$

Equation 1 - WACC Model Formulas - Enterprise Value

$$TV = \frac{FCFF_{n+1}}{(WACC - g)} = \frac{FCFF_n x(1+g)}{(WACC - g)}$$

Equation 2 - WACC Model Formulas - Terminal Value

Where:

EV – Enterprise Value

TV – Terminal Value

FCFF – Annual Free Cash-Flows

WACC – Weighted Average Cost of Capital (or Discount Rate)

g – Long Term Growth Rate

n – Number of Periods

In APV, we value the firm's operations as it is, and then we subtract all financing effects related to the firm (Luehrman, 1997). According to another article from Luehrman, he sees APV as a better valuation tool than WACC, if we intend to value the company by parts instead of as a whole, and if the financial structure of the firm tends to change from period to period (this would imply a correction of the WACC in every period).

In a more formal approach to the DCF valuation (Luehrman, 1997), one can employ a Monte Carlo simulation to compute the expected cash flows of a firm, thus reaching the expected values with a smaller error margin (Samis and Davis, 2014).

Relative Valuation

"In relative valuation, we value an asset based upon how similar assets are priced in the market" (Damodaran, 2006). We can use market multiples from similar firms to value ours, or use the value of comparable transactions to assign a price to our firm. Due to the complexity of these deals and the significant variants of each one, one can understand that this model is very limited.

Nevertheless, a study by Dittmann and Weiner concluded that the error could be minimized, in the Portuguese case, by selecting comparable firms from the top 15 European countries or from the OECD.

Based on a study of 51 transactions, Kaplan and Ruback found that the estimates of DCF valuation perform better than a relative valuation, be it through multiples or comparable transactions. However, it was also found that the best estimates came from the employment of both DCF and relative valuation combined, which I'll be using in my thesis.

Other Methods

Accounting and liquidation valuation are possible ways to value a company, but they're faulty by nature. Since they are made by valuing only the present assets or by valuing the assets if sold at the present time, respectively (Damodaran, 2006), the value of the firm will be smaller compared to a DCF valuation, as it will imply either disregarding future investments or selling at a discount.

Options-based models are also possible, being mostly used for future investments or individual projects (Luehrman 1997).

Mergers and Acquisitions

Does It Create Value?

According to Bruner, "the fashionable view seems to be that M&A is a loser's game". However, the searches he made revealed very few indications of this assumption.

There are, of course, reasons for this way of thinking. Often there are misevaluations of synergies (Sirower and Sahni, 2006), or managing teams that suffer from the "fever" of the deal and end up paying too high of a premium for a particular deal.

In his research, however, Bruner finds that M&A does pay. After screening numerous studies, he finds positive returns for the target firm (as expected), for the acquirer firm (77% of studies analyzed showed "value preservation and value creation") (Bruner, 2004) and for the combined firm (all 24 studies screened showed positive returns).

The next step is to find the drivers of this positive return and how they manifest in the new merged entity.

Strategy

If there is an M&A deal taking place, there is a strategy behind it. Managers often use the strategic rationale argument to back the deals they intend to make (Eccles et al., 1999), but doing so should need an appropriate structure of tought (Sirower and Sahni, 2006).

Sirower and Sahni provide a "Capabilities/Market Access Matrix" and a "Synergy Mix" graph.

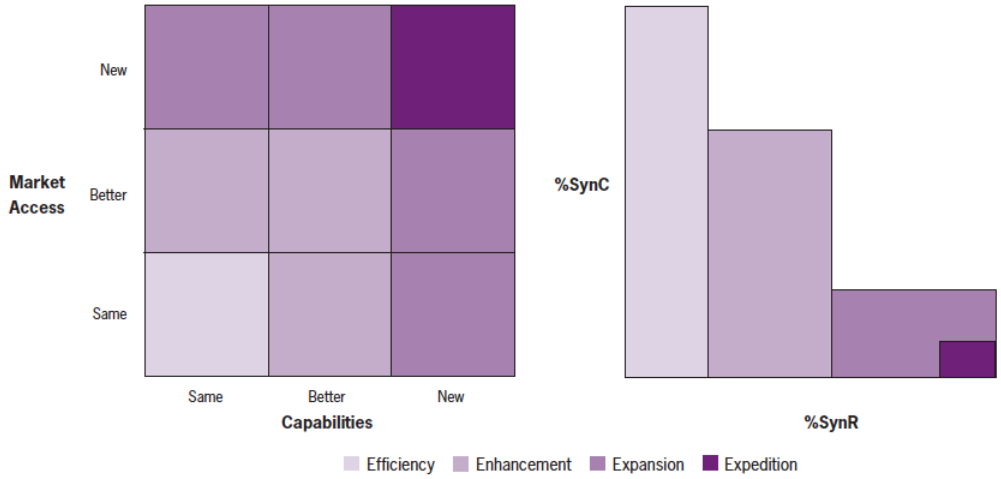

Figure 1 - Capabilities / Market Access Matrix and Synergy Mix

Within this framework, a manager can support and explain the rationale for each deal, and where synergies come from.

Synergies

> "*Synergy is the additional value that is generated by combining two firms, creating opportunities that would not be available to these firms operating independently.*" -
> **(Damodaran, 2005)**

However, they often aren't achieved through M&A due to misevaluations (Sirower and Sahni, 2006), over optimism, poor planning (Damodaran, 2005) or an "irrational exuberance about the strategic importance of the deal" (Eccles et al., 1999).

Hence, knowing when it appears and in what form, is critical for a proper valuation of the target firm. In his research, Damodaran highlighted three types of value created: Operating synergies, financial synergies and the value of control. I will now analyze each in greater detail.

Operating Synergies

The easiest to compute but most difficult to create, operating synergies can be achieved both through cost savings or revenue enhancements (Eccles et al., 1999), taking several forms: costs

such as facility optimization and elimination of duplicate functions and revenues, that could come from using the new channel provided by the target firm to distribute current or future products. (Cullinan et al., 2004)

Mergers can also promote a growth in economies of scale, promote pricing strength due to a competition decrease or increase the growth potential of the firm, both in volume and time period (Damodaran, 2005).

Financial Synergies

> "*When considering financial synergies, one should be careful and skeptical*" - **António Borges de Assunção, February 15, 2018 during the M&A thesis seminar at CLSBE**

Besides possible tax benefits, other synergies mentioned in the literature such as financial engineering (Eccles et al., 1999), diversification benefits or a higher debt capacity (Damodaran, 2005) are difficult to be computed with significant accuracy and might affect the final valuation with biased assumptions. Hence, in my work, I will refrain from considering them.

Control

In a paper by Dyck and Zingales, a study was made to infer the value of private benefits of control. Based on 393 transactions across 39 countries between 1990 and 2000, they found that "on average, corporate control is worth 14 percent of the equity value of a firm". Even though the transactions occurred quite in the past, an argument is made regarding the importance of computing the value of control.

This value comes from the power of influencing the investment policy (having the choice of investing in projects that will be rewarding and cutting off the ones which failed), the financing policy (being able to change the capital structure to its optimal setting) and the dividend policy (the power of returning extra cash to the investors that wasn't used due to lack of profitable projects) (Damodaran, 2005).

Payment Method

When defining the payment method, one can use cash, stock, a mix of both (Faccio and Masulis, 2005) or earnout contracts (Zenner et al., 2008).

In a study by Faccio and Masulis, it was found that the caracteristics of both firms do influence this decision. For example, a firm is more likely to finance an acquisition with cash if it has a high amount of tangible assets (collateral increases debt financing capacity) and the stock use

is chosen if there are risks of bankruptcy due to high leverage. Also, in Cross-border cases, stock is less likely to be chosen due to "equity flowback", which can be defined as limitations by regulation or by the target's shareholders acceptance of the acquirer's stock (Zenner et al., 2008).

Cross-Border Mergers and Acquisitions

Cross-Border M&A has been on the rise since the beginning of the century (Zenner et al., 2008) and it's easy to grasp why: the power of globalization, the need of well-established firms for geographic diversification and the decreasing trend of protective regulation towards international trade (Zenner et al., 2008) act as long-term catalysts for such a rise.

This type of deals are also powered by the very characteristics of the firms involved: cultural and geographic distance, the increase in the quality of accounting disclosure, the difference in tax rates and the economy performance all play a part (Erel et al., 2012).

Implications

When performing cross-border deals, several parameters must be analyzed in order to fully grasp the implications of this type of deal.

Firstly, the financing will be affected, as new options appear. With a cross-border deal, the acquiring firm will now have better access to foreign financing (both equity and debt) and will be able to profit from a wider selection of financing possibilities (Zenner et al. 2008).

Secondly, we should also look into corporate governance. "Corporate governance concerns the enhancement of corporate performance via the supervision, or monitoring, of management performance and ensures the accountability of management to investors" (Kasey and Wright, 1997) and, in these cases, the merged company "will share features of the corporate governance systems" (Bris and Cabolis, 2004). Thus, the value of the firm may be affected due to these changes.

> *"When global investors look at deals, particularly cross-border deals, they will often factor corporate governance issues into the equation, and these may have a practical effect on price and value."* **– Peter Clapman, Senior Vice-president and Chief Counsel Investments, TIAA-CREF (from Alexander, 2000)**

Lastly, the valuation of the firm will also be affected by tax changes, accounting differences and different risks inherent to each country of origin (Zenner et al., 2008), such as political, economic and currency risk.

Industry Overview

In this chapter, I'll be giving a broad analysis on the energy sector, where both companies that are being studied have their operations, and then focusing on their home countries and the types of energy sources they possess. I will then give a projection of the expected future for each type of energy source and, lastly, an analysis of the M&A activity in this sector will take place, complemented with an analysis of the recent RWE/E.ON deal in Germany, this latter one present in Annexes 1, 2, 3 and 4.

I will be focusing on the electricity and gas sectors, both distribution and network access, as well as renewable energy sources such as wind and solar power.

Energy

According to the World Bank, the energy sector has been growing throughout the years at a steady pace, with consumption levels and global energy access rates maintaining their upward trend. Being a crucial sector, and with urbanization levels rising, this steady increase in consumption is to be expected.

What makes this sector so interesting is the constant change it faces regarding the energy source used for the production of electricity, now looking towards natural gas and renewables, powered by technological advances and governmental policies. Based on the World Energy Outlook made by the International Energy Agency (IEA), the main energy source until 2040 will be natural gas, and renewables will experience a 40% increase in demand. Coal demand shall decrease and oil demand will keep growing, but at a decreasing rate. (IEA, 2017)

The price of renewables is set to become more competitive, as economies of scale decrease the production cost and technological breakthroughs promote efficiency.

The objective for governments and international associations is for a decarbonization of the energy sector, replacing coal-powered plants with other sources (Figure 1), such as natural gas, renewables and nuclear energy, the latter also starting to be frowned upon due to waste management issues, with only China still betting on it. In fact, "Europe is seeking to increase the share of renewables to 27% of the final energy demand by 2030. Lawmakers want to go

further and are currently discussing a potential increase to 35%" (Wilson and Evans, 2018) proving the importance of energy firms to step up and invest heavily in the sector.

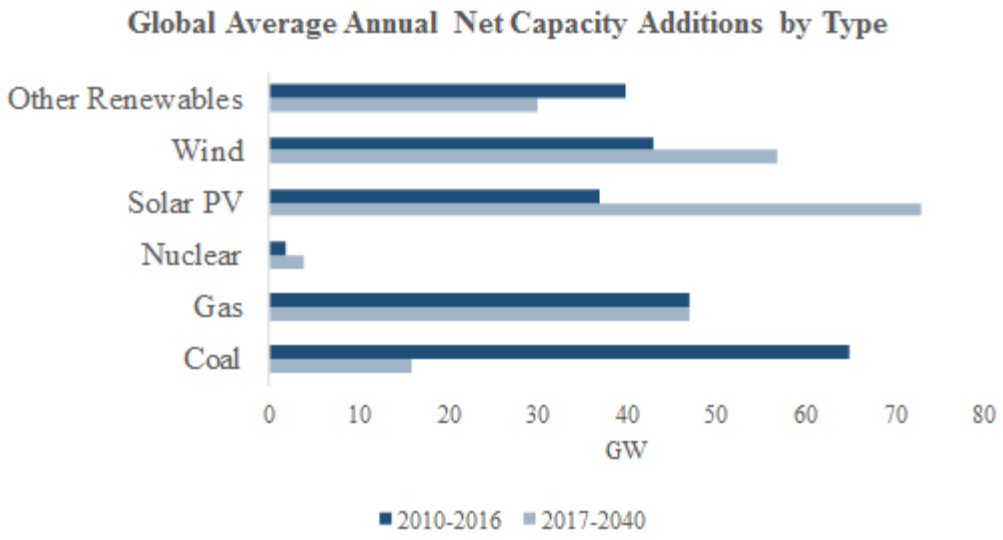

Figure 2 - Net Capacity Additions. Source: World Energy Outlook 2017

Electricity

An essential commodity, the electricity industry is expected to experience a rise in consumption, reaching 40% of the final energy consumption in 2040, as world development continues and urbanization levels rise. (IEA, 2017) The countries promoting this increase in demand are mainly China and India, with Europe maintaining a slow increasing pace. (Figure 3)

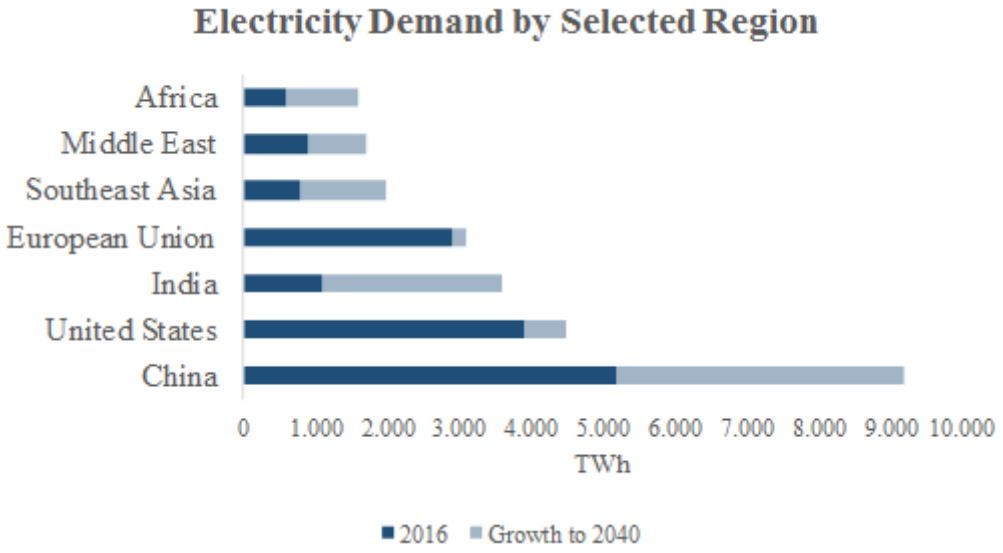

Figure 3 - Global Electricity Demand Forecast. Source: World Energy Outlook 2017

Another important factor for this increase in consumption is the development and growing adoption of hybrid and electric cars. In fact, by 2040, the world car fleet is expected to reach 280 million, from only 2 million today. The main driver of this exponential increase will be China, followed by the European Union, as we can see in the following graph by the World Energy Outlook 2017.

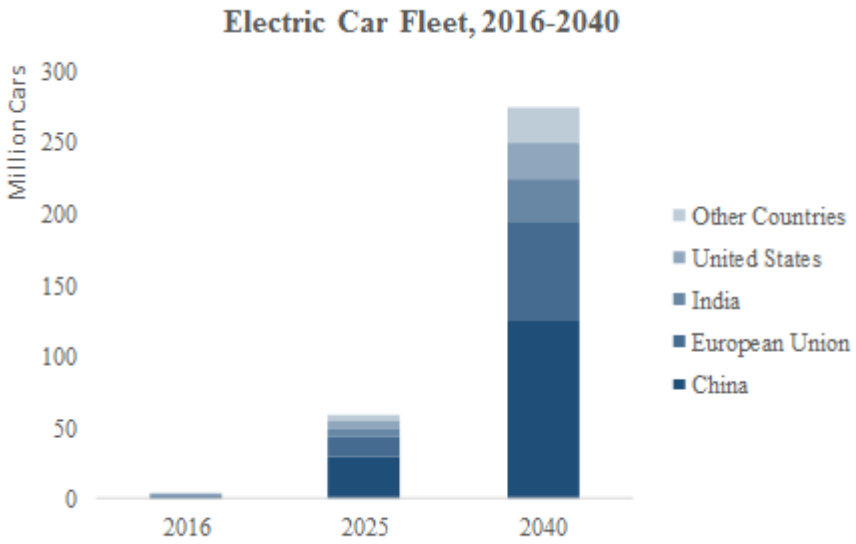

Figure 4 - World Electric Car Fleet Forecast. Source: World Energy Outlook 2017

The electricity industry proves to be an appealing one, with worldwide investment surpassing oil and gas in 2016. (IEA, 2017) Also, this investment promotes development in efficiency and cost reductions, increasing the possible profitability of the players in the market.

Natural Gas

As mentioned before, natural gas will play a pivotal role in the energy sector for the coming years, representing 25% of world energy demand by 2040 and becoming the main fuel consumed in the world after oil, according to the 2017 World Energy Outlook's predictions.

"This reflects the fact that gas looks a good fit for policy priorities (…) generating heat, power and mobility with fewer CO2 and pollutant emissions than other fossil fuels, helping to address widespread concerns over air quality" – **International Energy Agency in the 2017 World Energy Outlook**

Regarding the LNG (liquid natural gas) market, it is expected to grow through 2030 with China, India and Pakistan as the main importers, representing 80% of projected growth in the sector. Europe should maintain a "steady upward trend". (Rossano and Filatov, 2018)

The key words one should take into account for this sector in the short and medium-term are Asia and LNG. Asian countries mentioned before, alongside a few others, will keep investing heavily in this sector to combat antipollution directives, standing as the drivers of the natural gas industry in the following years. This fact will also proppel the LNG market, to account for the increase in demand, thus discarding previous market reports that expected the LNG market to be in oversupply until 2025.

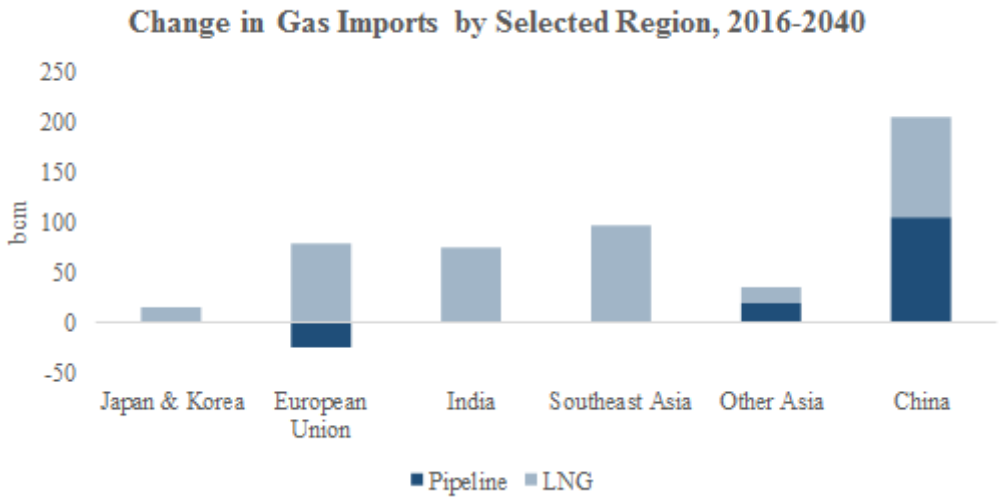

Figure 5 - Gas Imports' Change. Source: World Energy Outlook 2017

Renewables

> *"Solar and wind energy offer the greatest growth potential of any power technology in the longer-term, as costs continue to fall."* – **Bloomberg Intelligence**

The renewable energy sector is undoubtedly the most exciting one from the sectors mentioned, due to the need of sustainable energy sources and the increasing profitability of these types of energy.

It is expected that, by 2030, 80% of new capacity created will be of renewable energy sources, with wind power as the main one and, by 2040, 2/3 of the world investment in energy will be towards renewables, according to the World Energy Outlook 2017.

The two renewable energy sources I will be focusing on will be wind and solar power, due to the firms' operations.

According to Bloomberg Intelligence, "price declines per watt for solar and wind energy will continue, as scale lowers costs and technology drives efficiency gains". (Wilson and Evans, 2018)

Regarding wind power, both onshore and offshore wind costs are expected to fall by 47% and 71% respectively, thanks to more efficient turbines and economies of scale, among other factors, says Bloomberg Intelligence.

All in all, with a consistent expected growth in profitability and a more low-carbon concern of governments and communities, having a strong presence in renewable energy sources proves to be crucial for any energy firm.

Portugal

Like the majority of the European countries, the Portuguese electricity market was progressively turned into a liberalized market, between 1995 to 2006, accounting for 93% of the total electricity market, as of January 2018. (ERSE, 2018)

With a liberalized market, consumers get to choose their electricity supplier, instead of having to settle for the supplier who was present in the area. Now, suppliers enlist on the liberalized market and compete for the consumers' choice. With this setup, the Portuguese government aimed to achieve a more competitive market, with a bigger focus of the suppliers on price and quality competitivity, hence providing a better service to the client.

ERSE, the Portuguese energetic services regulator, divides the liberalized market into four different segments: Big Consumers, Domestics, Industrials and Small Businesses. According to the following figure, Domestic and Industrial clients account for 70% of the market (35% each), followed by Big Consumers (22%) and Small Businesses (8%).

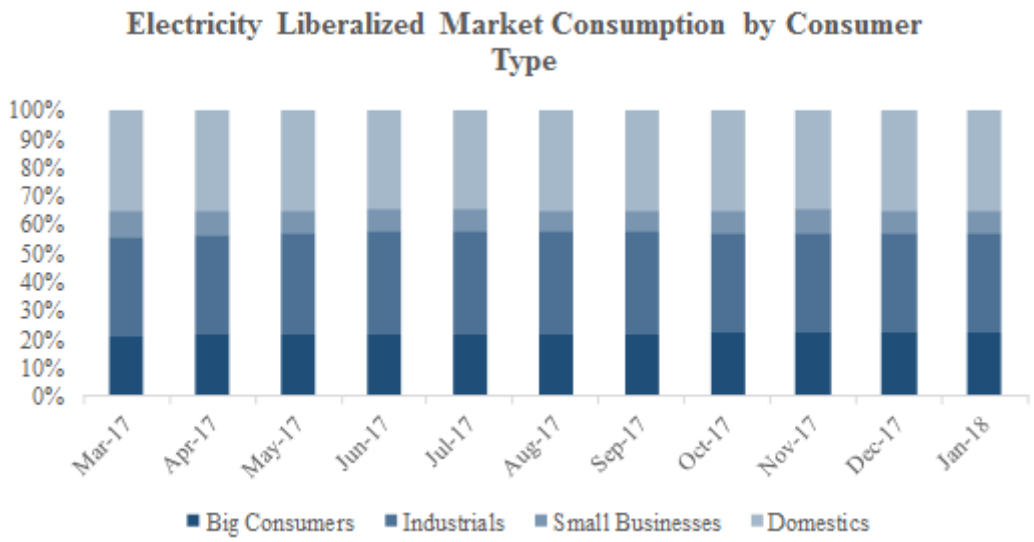

Figure 6 - Portuguese Monthly Electricity Consumption. Source: ERSE

With 4,97 million clients and 42.907 GWh consumed, as of January 2018, according to ERSE, the liberalized market experienced a growth in 2017 of 4,4% in number of clients and 3% in annualized consumption. The entity expects the market to maintain its pace both through increased consumption and by gaining market share from regulated markets, which only account for 7% of the total market.

Just like the electricity sector, the natural gas market has also been gradually liberalized, standing at 1,14 million clients in January 2018, accounting for 97% of the entire Portuguese market. (Dinheiro Vivo)

The same four segments apply for the natural gas market, with Big Consumers accounting for the majority of the consumption (about 84%), followed by Industrials (9%), Domestics (4,9%) and Small Businesses with 1,8%.

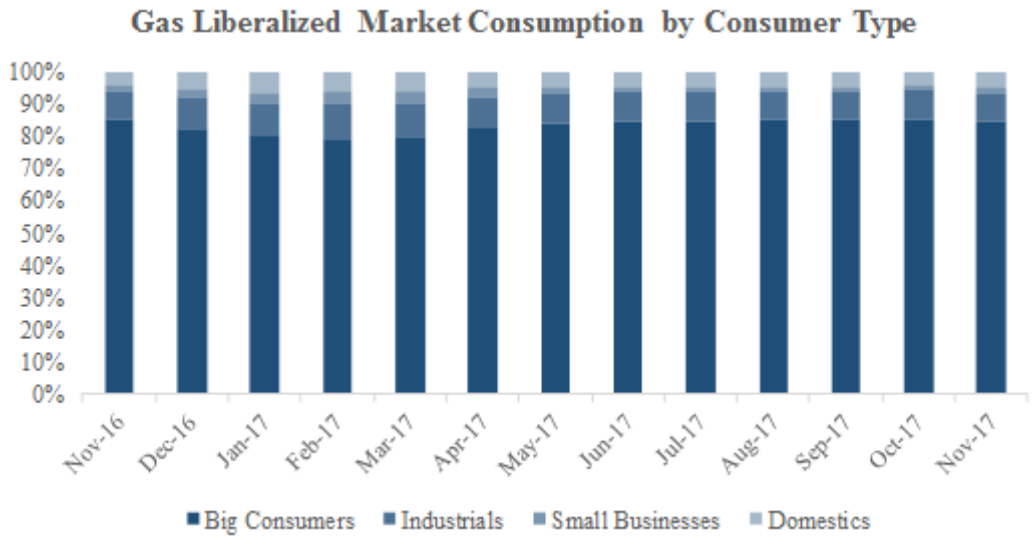

Figure 7 - Portuguese Monthly Gas Consumption. Source: ERSE

With a total consumption of 40.804 GWh, the liberalized market has grown 9,5% in 2017 in terms of consumption and 6,3% in term of number of clients. (ERSE, 2017)

The major players in each market shall be addressed later on, when analyzing the competitors of each company.

Spain

Just like Portugal, the Spanish energy market has also been gradually liberalized, since 1997, and reaching its final setup in 2013. According to the MINETAD (*Ministério de la Energía, Turismo y Agenda Digital*), this new structure, where consumers can opt between the liberalized market and the PVPC (*Precio Voluntário al Pequeño Consumidor*). In the PVPC, the price paid by the consumer varies every hour of every day depending on the offer and demand of energy, and one can only join if the contracted power does not surpass 10kW.

The most recent data provided by the Spanish government indicates that, in 2016, the liberalized market accounted for 87,5% of the electricity market, totaling 205 GWh of electricity consumed shared amongst around 17 million consumers. This consumption suffered an annual increase of 0,8%, with a slight decrease in the production through renewable sources and an increase through nuclear energy.

From a total of around 260 GWh produced, the main sources are Nuclear, Wind, Hidro and Carbon.

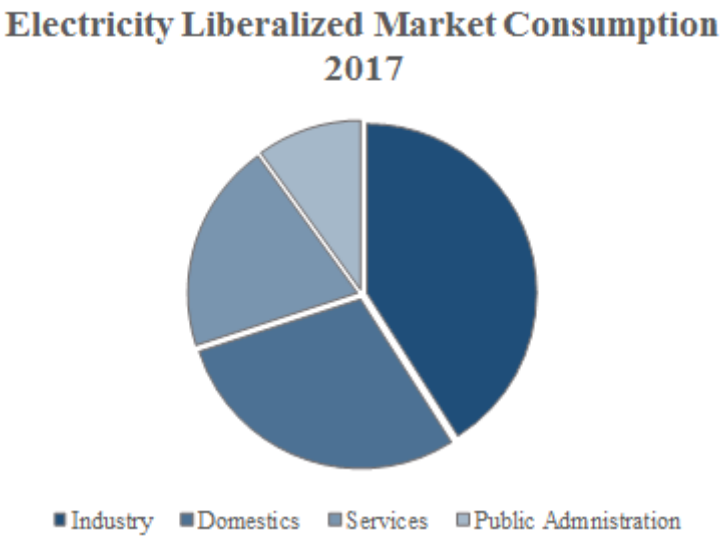

Figure 8 - Spanish Electricity Consumption Weight by Segment. Source: MINETAD

Regarding consumer segments, MINETAD has 34 different ones, which I was able to agglomerate into four: Industry (41%), Domestics (29%), Services (20%) and Public Administration (10%).

In the natural gas sector, the liberalized market accounted for 98% of total consumption, at the end of 2016, according to the CNMC (*Comisión Nacional de los Mercados y la Competencia*).

Experiencing an increasing trend since 2014, the total market situates at 7,62 million consumers, reaching a total consumption of 321.009 GWh in 2016, a growth of 2,1% in regard to 2015.

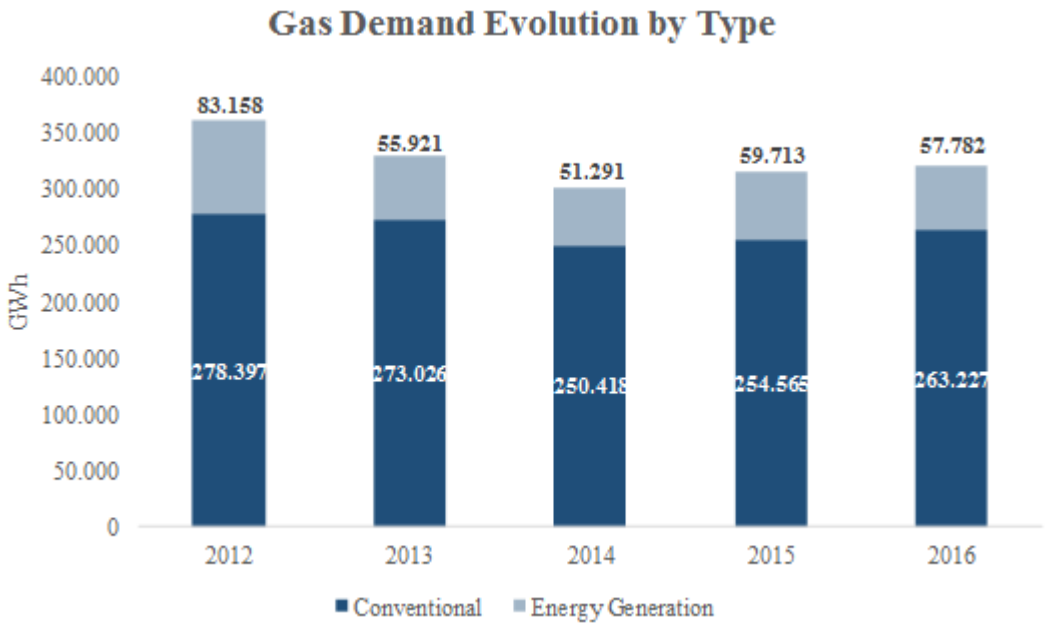

Figure 9 - Historical Spanish Gas Demand. Source: CNMC

CNMC divides the gas sector in three different segments: Industry (61%), Domestic-Comercial (21%) and Energy Generation (18%).

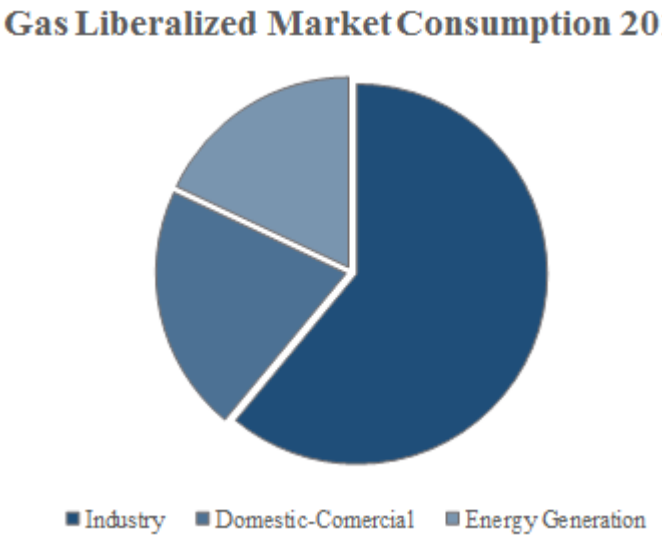

Figure 10 - Spanish Gas Consumption Weights by Segment. Source: CNMC

The first two have experienced a growth from 2015, 2,7% and 6,5%, respectively, while the latter decreased in the same period about 3,9%.

Future Growth Projections

The *International Energy Outlook 2017,* a study made by the *Energy Information Administration* with conclusions very in line with the *World Energy Outlook 2017* previously mentioned, also provides expected annual growth rates for various energy sources and sectors until 2040.

I decided to collect the most relevant ones, which I used, alongside the firms' analysis in the next chapter, to reach appropriate future growth rates in the valuation chapter. (EIA, 2017)

Electricity

- Domestic consumption in OECD countries to increase 0,3% per year
- Domestic consumption in non-OECD countries to increase 1% per year
- Industrial consumption in OECD countries to increase 0,5% per year
- Industrial consumption in non-OECD countries to increase 1% per year
- World gas-based generation to increase 2,1% per year
- World coal-based generation to decrease 1% per year
- World renewable-based generation to increase 2,8% per year

Gas

- Natural gas world consumption to increase 1,4% per year
- Natural gas consumption in OECD countries to increase 0,9% per year
- Natural gas consumption in non-OECD countries to increase 1,9% per year
- LNG demand is also expected to triple by 2040

Energy Sector M&A Activity

"2017 was a formative year in power and utilities transactional activity, (…) investments in the conventional energy sector were dominated by the changing generation mix, as renewable energy continued to account for an increasing proportion of the system, and low interest rates again drove yield capital toward regulated networks." – **Matt Rennie, EY Global P&U Transactions Leader on EY's *Power Transaction and Trends Q4 2017 Report***

According to EY's report, during 2017, M&A deals at a global level reached an "8-year high in terms of both value (…) and volume", €166 billion and 516, respectively.

These values represent a 10% increase from 2016 in terms of volume, mainly supported by a 28% increase in the volume of deals in renewables, which account for 21,4% of the total deal volume.

On a European setting, deal volume increased 11% but total value decreased 1% from 2017 to €42 billion. EY connected these results to an overall flat energy demand and low pool prices. Looking into the steps in the value chain where the investment took place (Figure 10), we can see a clear focus in the renewables, with 120 deals made in 2017 (56% of total deal volume). However, in deal value, it stays on the same level of investments in networks and generation. This fact takes place since renewable investments are more usually done in stand-alone projects, and not in complete firm fusions and acquisitions.

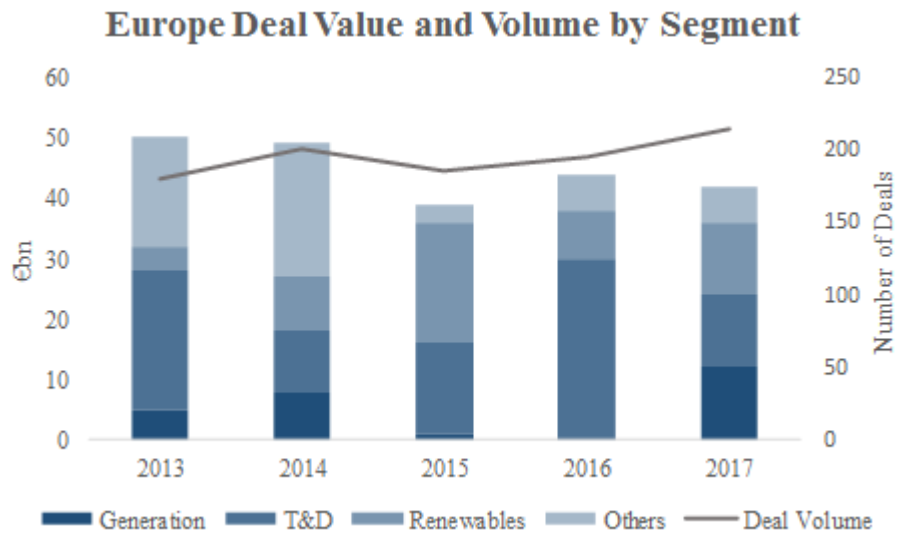

Figure 11 - Historical European Deal Values and Volumes. Source: EY

The strategies for these investments vary from company to company, but there are trends that can be perceived. A.T. Kearney in its *M&A Utilities 2017 Report* and EY in its *Power Transactions & Trends Q4 2017 Report* highlight various rationales for these deals, which I divided into five main ones.

<u>De-carbonization/Nuclear phaseout promote Renewables & Gas</u>

Due to European regulations to decrease carbon emissions and the German government's decision to abandon nuclear energy, European utilities need to turn to alternative sources of energy to remain competitive in the market. Investment in renewables is, therefore, the answer, as many firms understood in 2017 as seen before. Offering clean energy and presenting an

increasing rate in profitability, promoting it on both sides of the equation (increasing revenues and continuously decreasing costs), this type of energy will not be overlooked, being the main target of future expected investments alongside natural gas.

According to EY, gas will "support system flexibility and reliability", as it is easily stored and transported, either through existing pipelines or in LNG (Liquefied Natural Gas) form.

Retail Consolidation and Sector Convergence

Threats of tariff ceilings and cuts in the U.K. have hit the margins of the operators in the market, which now look into European utilities with presence in the U.K. for market consolidation. Another alternative expected to happen will be the bet on diversifying the portfolio of the company, by either entering or gaining exposure to energy sectors where it was not present. For example, in September 2017, Total, originally an oil and gas firm, bought 23% of Eren, a renewables firm.

Financial Investors' Appetite Matches Firms' Financial Needs

In a scenario of low interest rates and the expectancy of financial institutions' clients to receive returns, financial investors look into "utility infrastructure for its higher return". Promoting this investment, governments, who usually have high participations in national utility infrastructures, can use the sale of these assets to reduce public debt without compromising the "status quo" of the country.

Focus on the Known and the on the Profitable

Decreasing margins and political insecurities often force companies to focus on what they do best and where they do it. This trend was visible in 2017 and promises to continue in the following years, as we can see in the recent E.ON/RWE deal, where, in a complex transaction, the firms swapped various assets between themselves in order to focus on a determinate business.

According to A.T. Kearney, the energy industries that show higher returns are retail and renewables, which explains the exponential increase in renewables investment, as seen before. Examples of this choice are "Italian firm Enel (…) integrated recently with Enel Green Power, while London-based EDF has acquired a wind farm from E.ON in the United Kingdom."

New Energy Business Models

In an increasingly competitive market where, more often that not, margins get hit by governments policies and market liberalization, utilities need to improve their value offer if they intend to increase, or even maintain, their market share.

Investments in new energy models such as EV charging stations or battery storages present themselves as reliable value adding options to provide that extra hedge to a competitive utility. This fact also benefits new up-and-coming companies developing these exact services. In a win-win situation, leading energy firms acquire know how and the technology without going through costly and uncertain R&D projects, while these startups get the funding and the customer base they need.

Company Overview

EDP – Energias de Portugal

Background

EDP – Energias de Portugal, the acquiree in this scenario, has been present in the Portuguese energy industry scene since 1976, when it started as a government-owned company. In time, it grew into a multinational firm present in 14 countries across 4 continents, having operations in every step of the electricity value chain. (Generation, distribution and supply)

It is known for its clean energy focus, being proud to confirm in their corporate website that 74% of the electricity generation of EDP comes from a renewable source. The wind and solar generation operations are present in EDP's main subsidiary, EDP Renováveis (It will be mentioned as EDPR hereafter), headquartered in Spain. The hydro and non-renewable sources are present in the main group.

In 2011, the Portuguese government decided to sell it's remaining stake in the electrical to the Chinese government, through a power company it controls, The China Three Gorges Corporation. (It will be mentioned as CTG from hereafter)

Shareholder Structure

In terms of EDP's shareholder structure, and as mentioned before, the main shareholder in the firm is CTG, with a 23,27% stake in the utility.

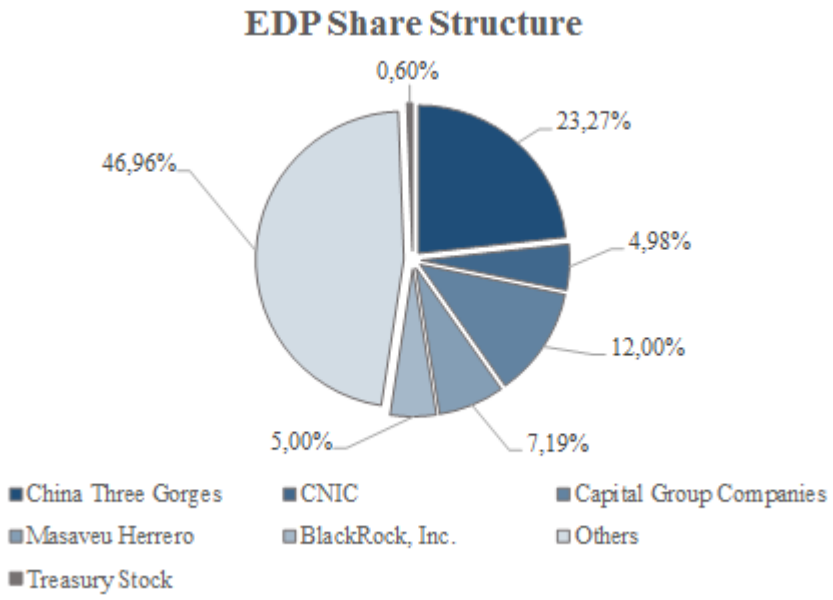

Figure 12 - EDP's Shareholders. Source: EDP's website

The Chinese government, however, actually owns 28,25% of EDP, as CNIC, a Chinese investment fund, is also owned by the Chinese.

Regarding EDP's control in its main subsidiaries, EDPR and EDP Brasil, Edp has 82,6% of the total share amount of EDPR. Besides other small shareholders, MFS Investment Management, a Massachusetts-based investment manager.

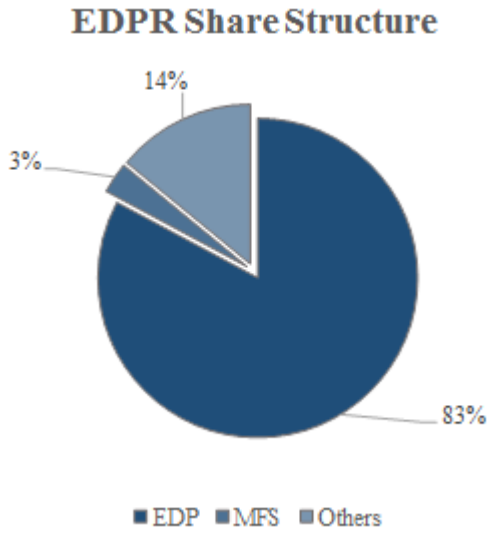

Figure 13 - EDPR's Shareholders. Source: EDP's website

In EDP Brasil, EDP's stake stands slightly above the minimim required for assured control of the firm, 51,2%. The rest of the shares are either treasury stock or belong to various American and European investment funds.

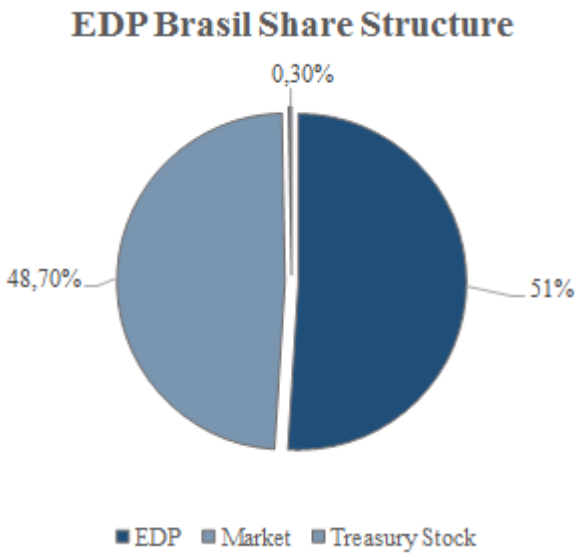

Figure 14 - EDP Brazil's shareholders. Source: EDP's website

These subsidiaries will receive a closer look in the following sub-chapter.

Operations

Generation

The first step in the energy value chain is generation, and EDP is present all around the globe, having a strong presence in Portugal (electricity generation leader), Iberian Península (3rd largest) and Brazil (5th largest), according to EDP's website.

Also, tha main sources of generation used by EDP in 2017 were: Wind (39%), Coal (31%), Hydro (16%), Combined-cycle gas turbine (CCGT) (11%), Nuclear (2%) and Solar (0,2%).

In total, these add up to 26.753 MW of installed capacity, generating a whopping 70.000 GWh of electricity in 2017.

All historical values are sourced from EDP's annual reports.

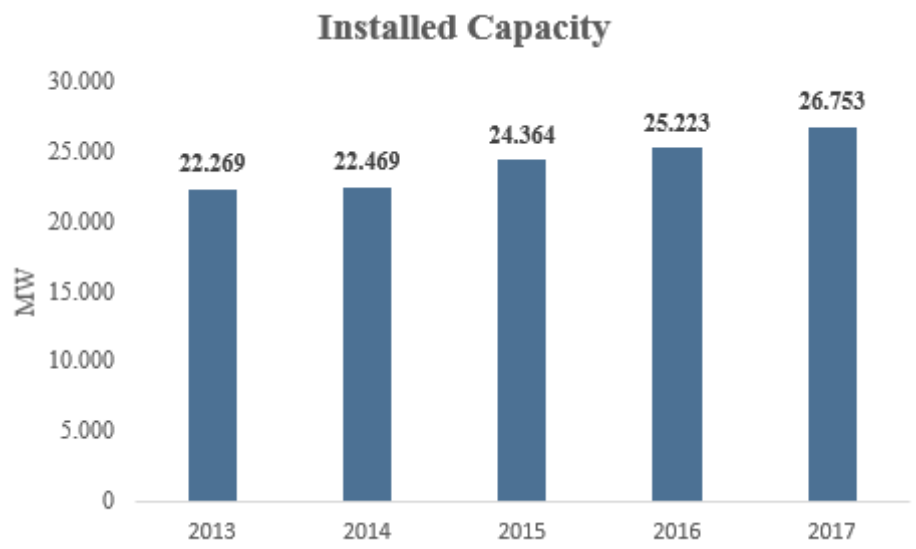

Figure 15 - Historical installed capacity EDP

As we can see from the graph above, EDP has gradually increased its total generation capacity throughout time, having already a pipeline approved until 2023.

Even though the growth of capacity seems smooth, the actual electricity generated does not follow the same trend.

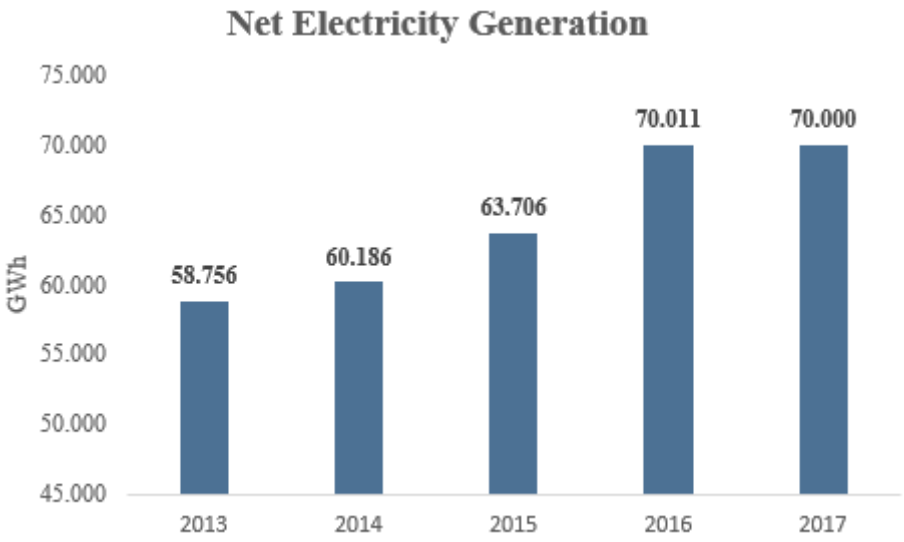

Figure 16 - Historical generation EDP

As we can see, there's a "jump" from 2015 to 2016 and a slight decrease to 2017, even though the capacity has been always growing.

According to EDP's annual reports, 2016 experienced one of the best weather conditions ever for hydro-sourced generation, while 2017 registered one of the worst, thus explaining these results.

Distribution

Inbetween generation and supply, the distribution operations of EDP are stationed in Portugal, Spain (only in some communities in and near the Astúrias region) and in the states of São Paulo and Espírito Santo of Brazil.

All together, EDP distributed 78.788 GWh in 2017 across its entire network of more than 245 thousand kilometres.

In 2017, EDP alienated its gas distribution operations, through the sale of EDP Gás Distribuição (Portugal) and Naturgás (Spain), keeping only its gas supply operations.

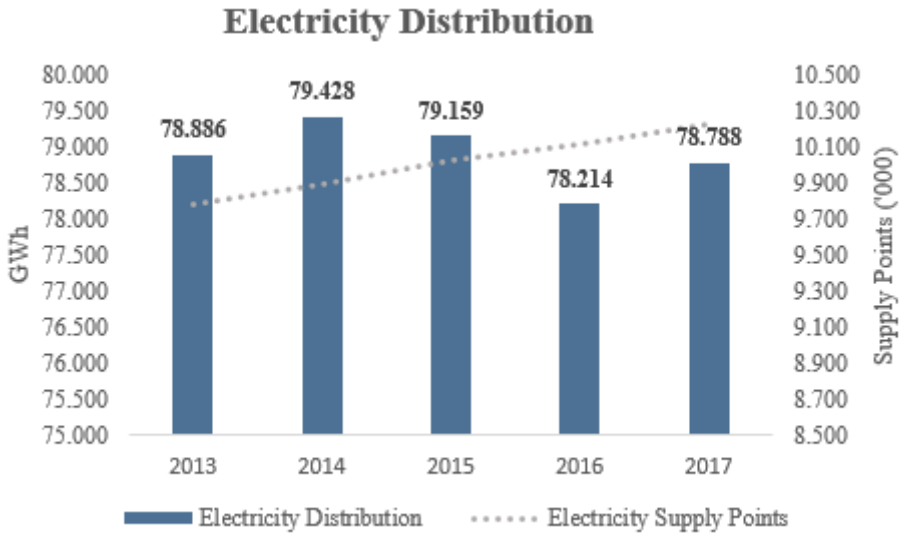

Figure 17 - Historical distribution levels EDP

Analyzing recent years, we see a clear decrease in 2016 of electricity distribution, mainly due to new regulation in the Spanish market and the situation at the time in Brazil. In a degrading economy, not only consumption fell, but new tariffs were imposed, which "led to the migration of customers to the free market in 2015 and 2016, leaving the distributors in a scenario of energy contracted higher than necessary to meet the demand". (EDP 2016 Annual Report, 2017)

The growth in 2017 supported itself in a slight demand increase in every region it operates.

Supply

Lastly, the supply operations reside in the same geography as the distribution operations, being divided in electricity and gas supply.

Electricity

In Portugal, EDP basks in a market leader position, having, according to its annual report, 87,34% of the total market share (4,15 million consumers). However, and as mentioned in the industry overview, the market in Portugal is almost completely liberalized, preventing EDP from increasing its price. They can, still, use price decreases to clear the competition, but the margin loss wouldn't compensate due to the duration and specificities of energy contracts. In total, the electricity supplied in Portugal amounts to 21.489 GWh.

In Spain, their market share is around 4%, about 1,1 million consumers, with the market presenting the same characteristics as the Portuguese one.

In Brazil, the market is either free or regulated, with the criteria to be free being a consumption level higher than 3000 kWh. EDP serves 3,3 million consumers in Brazil, totalling 31.501 GWh. Consequently, even though 99,99% of the customers are present in the regulated market, they only account for 43,5% of total electricity supplied.

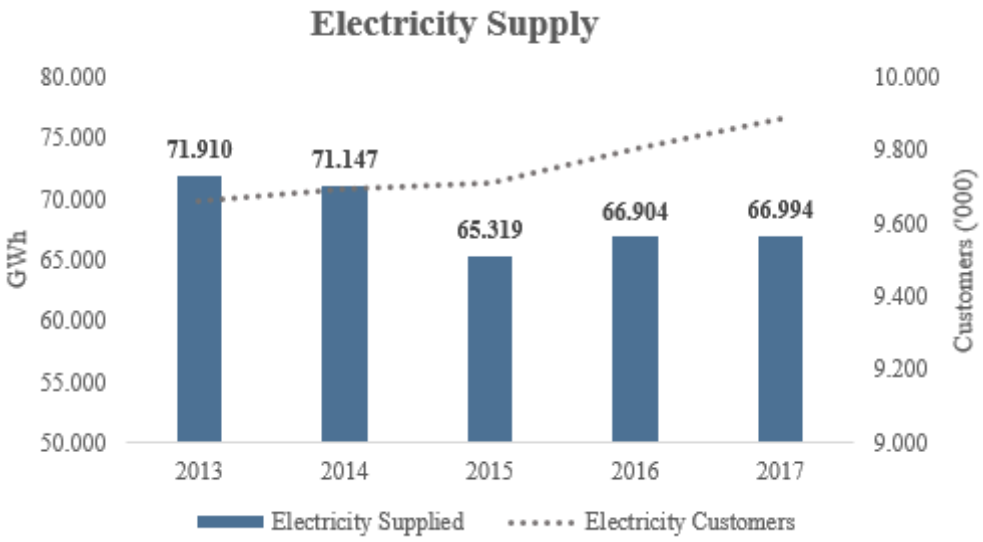

Figure 18 - Electricity supply levels EDP

Due to the Brazilian crisis aforementioned, the decrease in the 2015 is more pronounced than in previous years. EDP managed to increase the amount supplied in the following years, but at

a slow rate. According to EDP's annual reports, the migration of customers from the regulated to liberalized market and good weather conditions "harmed" EDP's growth.

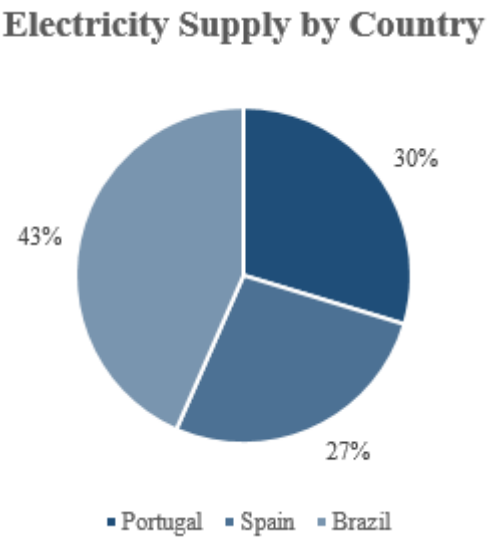

Figure 19 - Supply by country EDP

Regarding regions, EDP is fairly distributed between Portugal, Spain and Brazil, mitigating its dependency risk in this segment.

Gas

The remaining gas operations of EDP are the supply ones, based in Portugal and Spain, supplying 18.642 GWh in 2017.

With a total of 1,54 million customers in the Iberian Peninsula, divided in a 43/57 ratio between Portugal and Spain, respectively. Even so, 80,5% of total GWh supplied refers to the Spanish side.

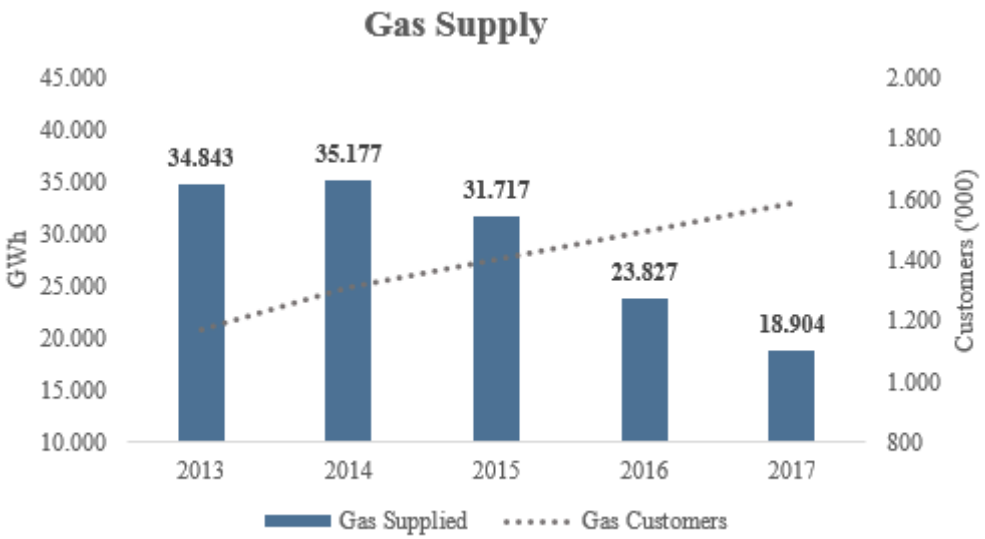

Figure 20 - Gas supply levels EDP

The amount of gas supplied has been decreasing since 2015, even though the amount of customers increased for the entire time frame. According to EDP, this can be explained by a decrease in big customers' consumption, and the new customers being domestic ones.

Other Operations

Finally, representing solely 1% of the firm's operational revenue, we reach EDP's consulting side.

Here, EDP provides advisory services for efficiency and development projects across the globe and throughout the energy value chain, as well as in "training, sustainable management, regulatory modelling & legal Framework and act as a Center for Technical Excellence". (EDP's corporate website)

From generation studies in Latin America, to distribution network development in Angola and training services in China, EDP provides these and other international services through its subsidiary EDP International.

Strategy

According to EDP's website, EDP's long-term stategy is composed of three main pillars: "Oriented Growth", "Superior Efficiency" and "Controlled Risk".

In its "Oriented Growth" pillar, the main focus is renewable energy, specifically wind, solar and hydro, but with a bigger emphasys on the wind source.

Looking into 2020 EDP Objectives investor presentation, the goal is to "achieve 75% of clean capacity", allocate €200 million to "innovative projects" and promote energy efficiency in its products in order to "reduce overall consumption by 1 TWh". By 2030, EDP also intends to have 90% of smart meters in Iberia.

EDP's current clean capacity stands at 74%, so the first objective seems easily attainable. With an increase in installed capacity of already 0.8 GW in renewable-sourced projects secured for 2018, and another 0.88 GW until 2020, as seen in the following graph. A "problem-free" scenario would allow for an increase of 4,7% in clean capacity by 2020. (Investor Presentation, 2018)

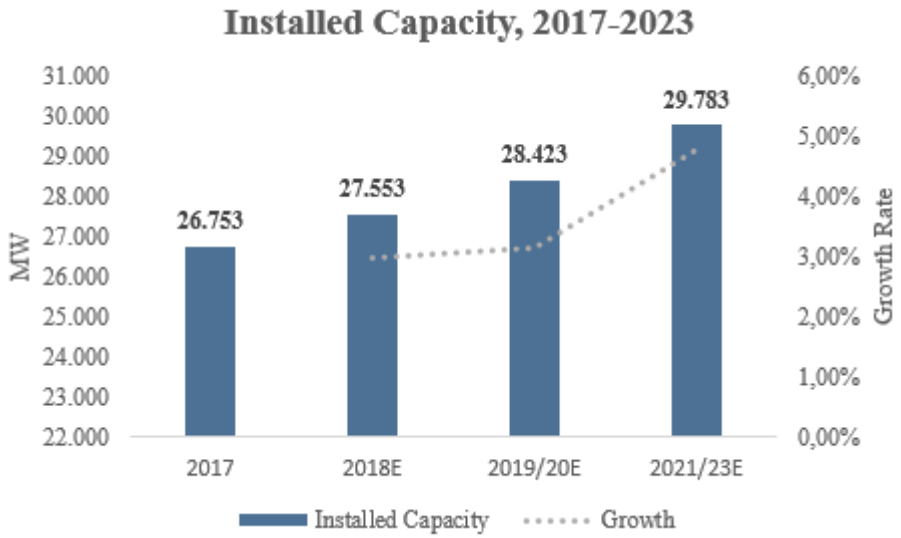

Figure 21 - Projected installed capacity EDP

The majority of this increase is related to American markets (U.S., Canada and Brazil), where EDP will focus its investment in coming years. EDP already has secured projects for the U.K. and France with a total of 1.16 GW capacity, but with an expected COD (Commercial operations date) of 2022 and 2023/24, respectively.

Besides generation, EDP is also focused on growth in the Brazilian regulated networks, with 5 Greenfield transmission lines built until 2021/22 and a stake on a distribution concession in the state of Santa Catarina.

It's in these investments that the 2nd pillar steps in. Here, "Superior Efficiency" translates into "a judicious investment policy, favoring high returns and controlled risk". This is visible in the Brazilian investment, with an expected return on equity between 12% and 14%.

The 2nd pillar's definition actualy includes the 3rd one, "Controlled Risk", which focus on environmental awareness in its innovation processes and energy savings, already stresses in the 2020 EDP Objectives.

Regarding EDP's innovation, its sight is set in 5 "Key Areas": "Clean Energy", "Smart Grids", "Customer Solutions", "Digital Innovation" and "Energy Storage". (EDP's company website)

Financial Performance

Looking into EDP's financials, we can understand the weights of each operation in EDP's business.

Taking into consideration the past 2 years, we see a clear increase in contribution from EDPR, mainly due to higher capacity and improvements in operatings costs.

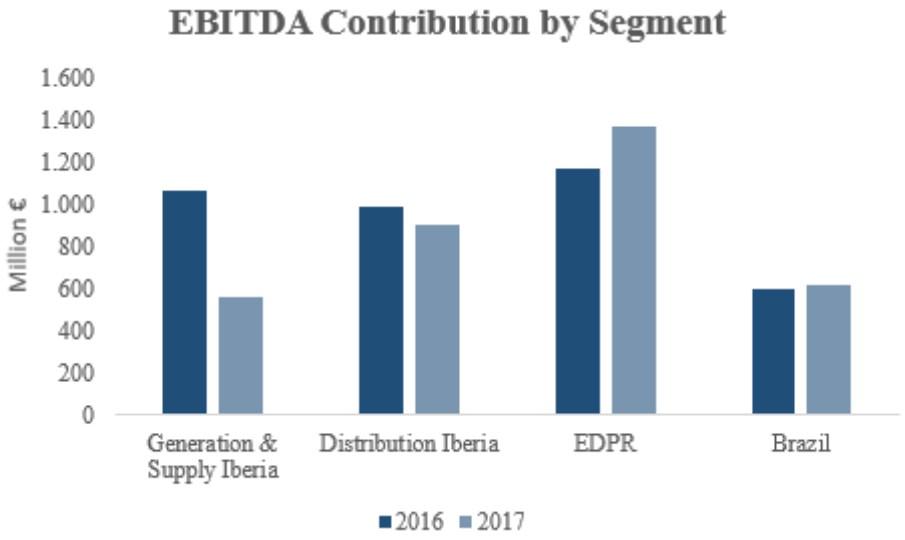

Figure 22 - EBITDA contribution EDP

All other segments also move due to the previous explanations: Generation decreased with a bad hydro year and supply and distribution were affected by a loss in big consumers moving from regulated to liberalized markets.

On a broader view, the following graph displays the evolution of EDP's main financial metrics from 2013 to 2017.

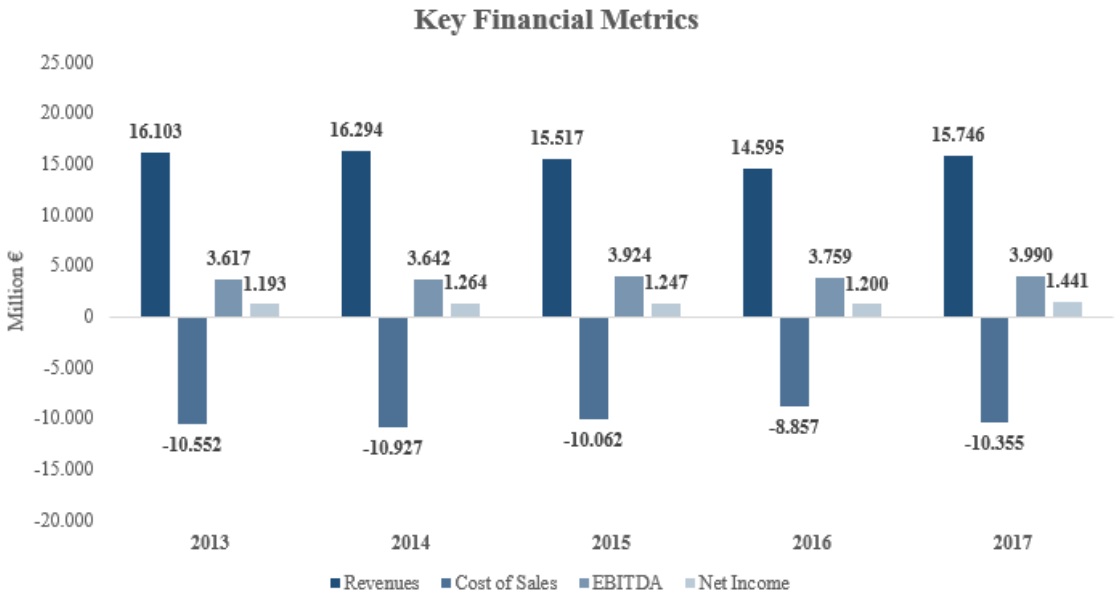

Figure 23 - EDP's financial metrics

The revenue item has been decreasing since 2014, making a strong recovery in 2017, powered by EDPR's performance. The cost of sales has also been decreasing, with an extraordinary low point in 2016, since, in contrast to 2017, 2016 was one of the best for hydro-powered generation, thus decreasing the costs for the firm, that didn't have to rely as much on coal and CCGT.

These resulted in a slow-paced increase throught time for the EBITDA metric, while net income only recovered in 2017, with most of the recovery due to the disposal of the gas distribution assets in Portugal and Spain.

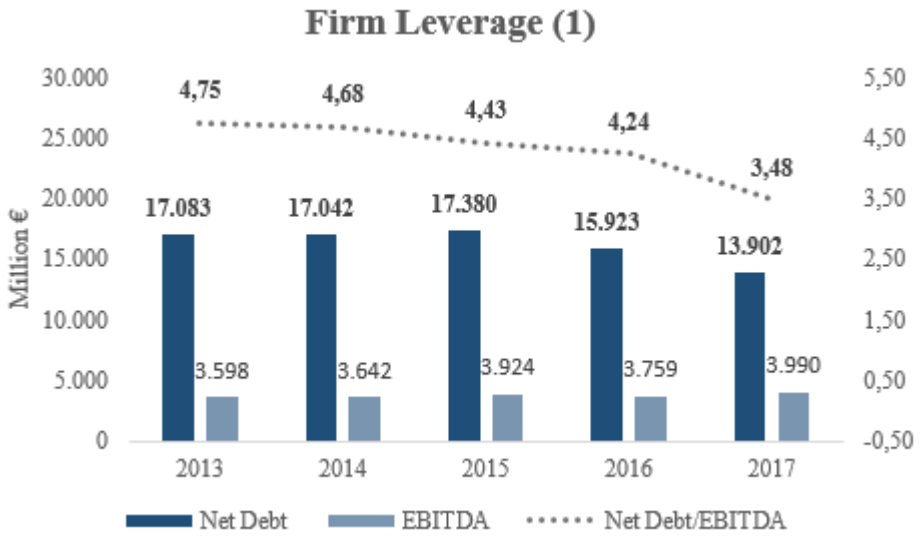

Figure 24 - Leverage EDP 1

Regarding Net Debt, which consists on long-term debt net of cash and equivalents, its value was fairly stable until 2015, and then it started decreasing in the two following years. A part of EDP's 2016-2020 plan consisted on decreasing its Net Debt/EBITDA ratio to 3x by 2020 and, with 70% of the work done in the first 2 years, it is plausible that EDP will be successful in achieving this goal in the three remaining years.

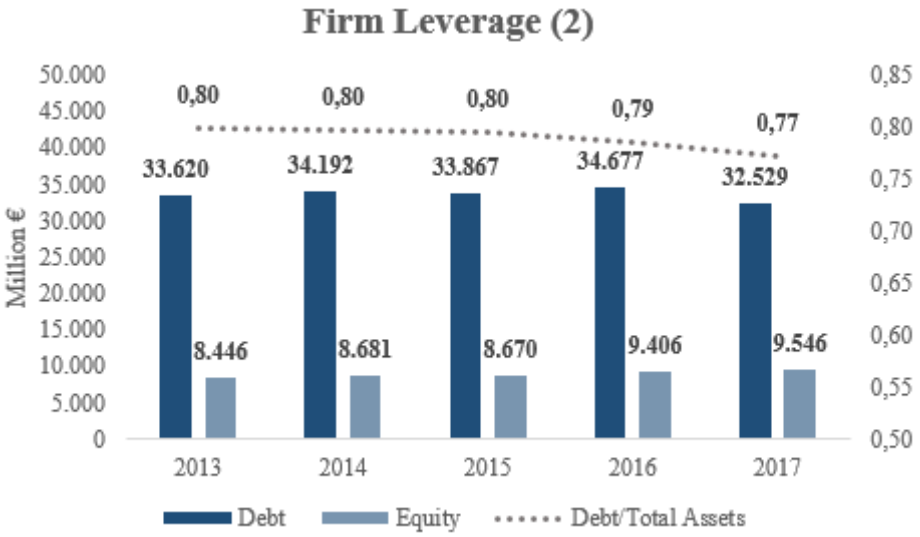

Figure 25 - Leverage EDP 2

Another leverage indicator is the amount of debt-funded assets in the firm. With the equity value increasing throughout time and the debt amount remaining fairly unchanged, EDP's reliance on debt has been slightly dimished.

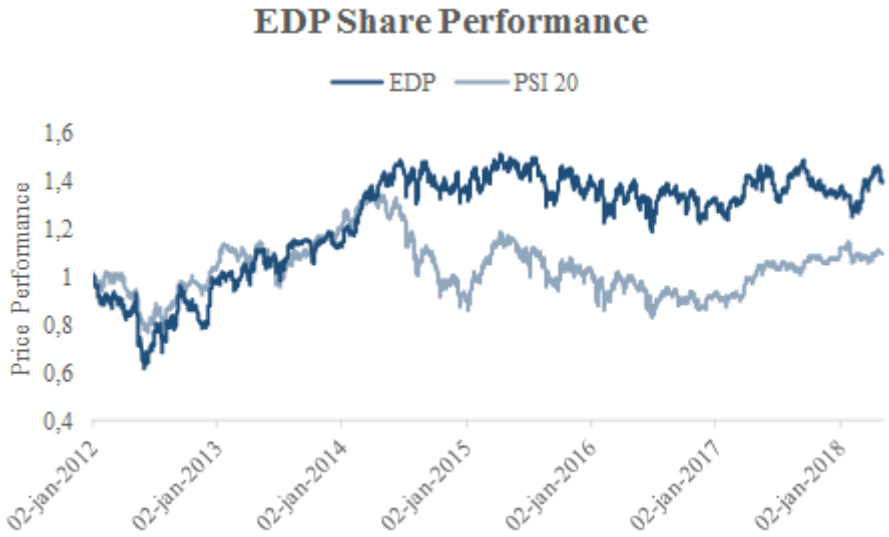

Figure 26 - Share performance EDP. Source: Reuters

In the financial market, EDP's share is part of the PSI-20, the top 20 Portuguese companies index. Its performance almost mimicked PSI-20's variation until the 1st quarter of 2014. Afterwards, EDP managed to beat the Portuguese market until now.

The fact that EDP is a utility explains this fact in part, due to the growth in both utility and tech industries.

Naturgy

Background

The acquirer, Naturgy, only sports this designation since 2009. In 1991, the at the time Catalana de Gas merged with Gas Madrid, creating Gas Natural, and in 2009 it finalized Unión Fenosa's acquisition through a merger, thus creating GNF. In 2018 it changed its denomination to Naturgy.

After the 1991 merger, Naturgy started its international expansion, mainly in Europe and Latin America. Currently it operates in over 30 countries, in every step of the value chain of the electricity and gas sectors. (GNF's 2017 Annual Report) (Naturgy's reports are mentioned as GNF's since the naming of past reports wasn't changed)

The main focus of the company resides on the gas market, where it leads the Spanish and Chilean gas markets, having also a "strong presence in the energy markets of (...) México, Brazil, (...) Argentina and Peru." (Naturgy's corporate website)

All historical values are sourced from Naturgy's annual accounts.

Shareholder Structure

Naturgy's top shareholders are Criteria Caixa, one of the largest banks in Catalunia, which is ultimately owned by Fundación Bancária Caixa D'Estalvis i Pensions de Barcelona La Caixa, a Mallorca-based pension fund, CVC Capital Partners, an european private equity firm, GIP, an American infrastructure fund and Sonatrach, a power firm owned by the Algerian government, according to Reuters.

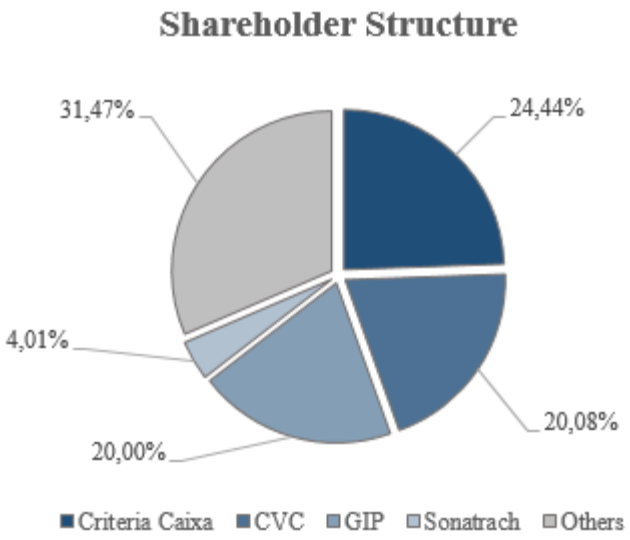

Figure 27 - Naturgy's shareholders. Source: Naturgy's website

CVC Capital Partners only became effectively Naturgy's shareholder in the 18th of May, two months after Repsol's decision to sell its stake to CVC.

According to The Financial Times, Repsol decided to terminate its connection to Naturgy to use the amount received to "try and compete in the Spanish energy retail market, as well as share buybacks". The oil company could not enter these markets before due to its stake in Naturgy, a top player in these markets.

Operations

Generation

Just like EDP, Naturgy is also present in every step of the energy value chain. Starting with generation, we can see in the graph below that most of Naturgy's generation capacity is present in Spain. The rest of the installed capacity is agglomerated in the Global Power Generation, Naturgy's foreign generation vehicle operating in Latin America. (Naturgy's corporate website)

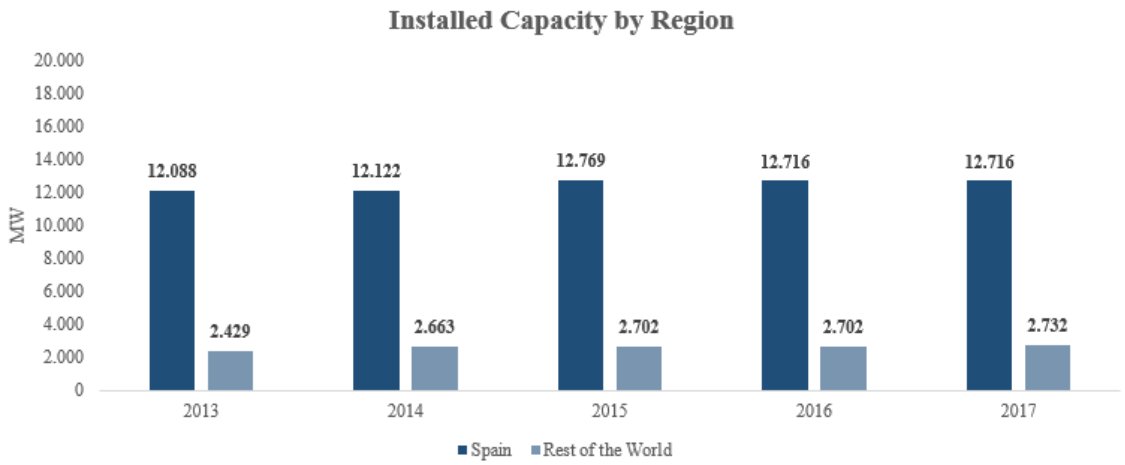

Figure 28 - Installed capacity Naturgy

The generation mix is as follows: 58,89% CCGT, 22,65% renewables, 14,89% termal and 3,88% nuclear.

Naturgy has continuously invested in new capacity, however, is has decreased its capacity in Spain. According to GNF 2016-2020 strategic plan, future installed capacity will preferebly be built in Spain and Latin America, with a possibility of going to India or Southeast Asia. The "ambition for 2020", according to GNF's 2016 annual report, is to reach 13,6 GW of capacity in Spain, and 5,4 GW abroad.

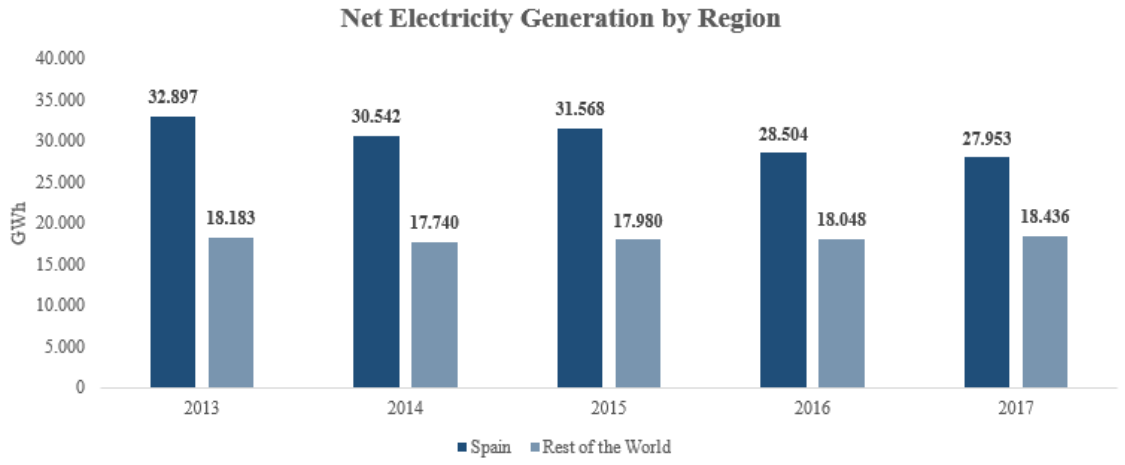

Figure 29 - Electricity generation Naturgy

Regading actual generation, Naturgy has been increasing its output internationaly, but failed to do so at home. Even though Naturgy doesn't dive into its analysis in the reports, the main reasons could be the lack of incentive from the Spanish government, sponsoring price decreases in regulated markets and cutting down benefits for renewable generation. However, with the

European Union's focus on renewables and its new policies, Spain will have to increase its renewable proportion in the generation mix, which could be a turning point for the generation market. (GNF 2016 Annual Report)

Distribution

Electricity

According to Naturgy's corporate website, the electricity distribution segment operates in Spain, where it holds the 3rd spot in the podium, behind only Endesa and Iberdrola.

It also operates in Argentina, Chile and Panama.

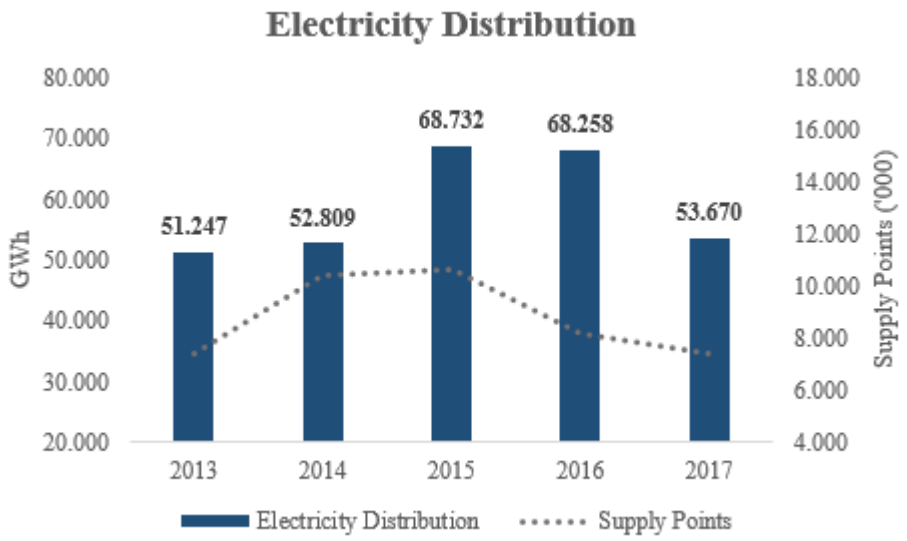

Figure 30 - Electricity distribution levels Naturgy

According to Naturgy, 2015 was a year with high demand of electricity in Spain, as well as Colombia and Panama. The acquisition of CGE, a Chilean electricity distributor, in December 2014 also contributed to the 2015 "jump".

The decrease in 2017 came from a loss of consumption market share in Spain, due to Naturgy's positioning (small consumers focus) and the divestment of the distribution assets in Moldova.

Gas

In the gas sector, besides leading the Spanish market, it also has a strong position in Latin America, specifically "Argentina, Brazil, Chile, Mexico and Peru". (Naturgy's corporate website)

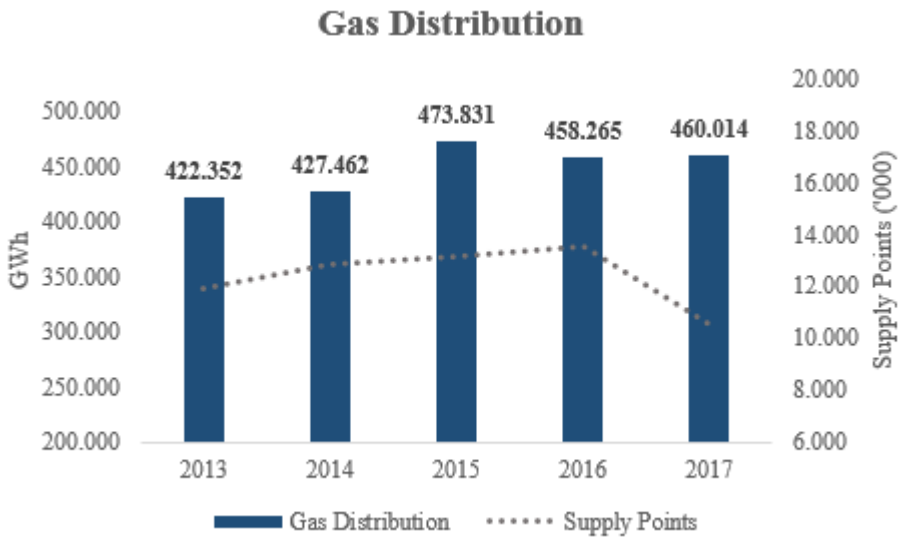

Figure 31 - Gas distribution levels Naturgy

Even though Naturgy sold its gas distribution operations in Italy and Colombia in 2017, it still managed to slightly increase its total GWh distributed, mainly due to a 14,7% increase in demand from Latin America.

Supply

Electricity

Moving on to the supply section, Naturgy serves electricity customers in Spain, sporting a 15% of market share in 2016, as well as Argentina, Chile and Panama.

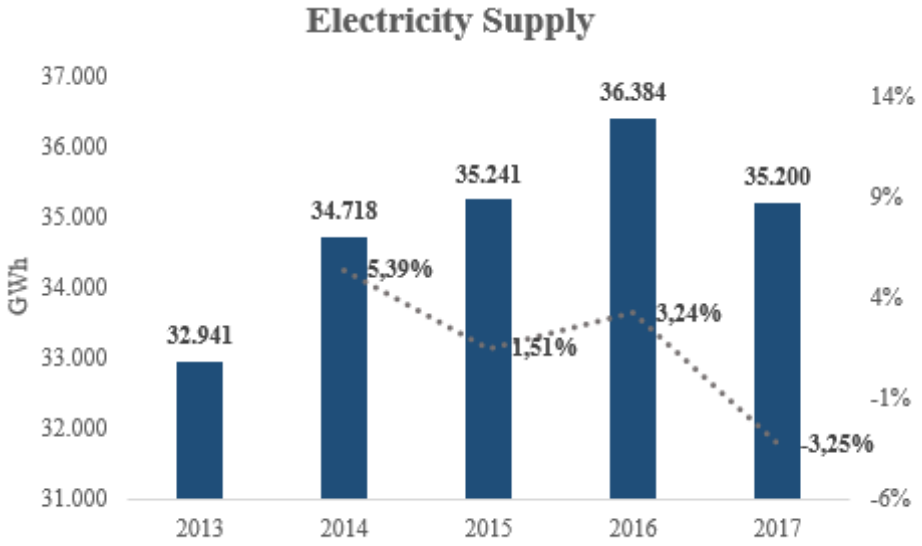

Figure 32 - Electricity Supply levels Naturgy

Having been growing every year, the amount supplied only decreased in 2017, due to a decrease in its consumption market share, where its focus is on the domestic market and to an increase in electricity prices in Spain, according to REE (*Red Eléctrica de España*).

Gas

Here I include every step of the gas market process except distribution, equal to Naturgy's own division, named Gas Infrastructure and Supply.

Naturgy has a strong procurement department, with various international contracts ensuring its safety of supply. Transport-wise, it possesses 9 LNG tankers for maritime transport and 2 gas pipelines for land. To change from natural gas to LNG and vice-versa, Naturgy also has interests in regasification plants and owns 2 liquefaction plants. (Naturgy's corporate website)

Combining natural gas and LNG, Naturgy currently supplies around 360.000 GWh in 11 different countries, being the market leader in Spain.

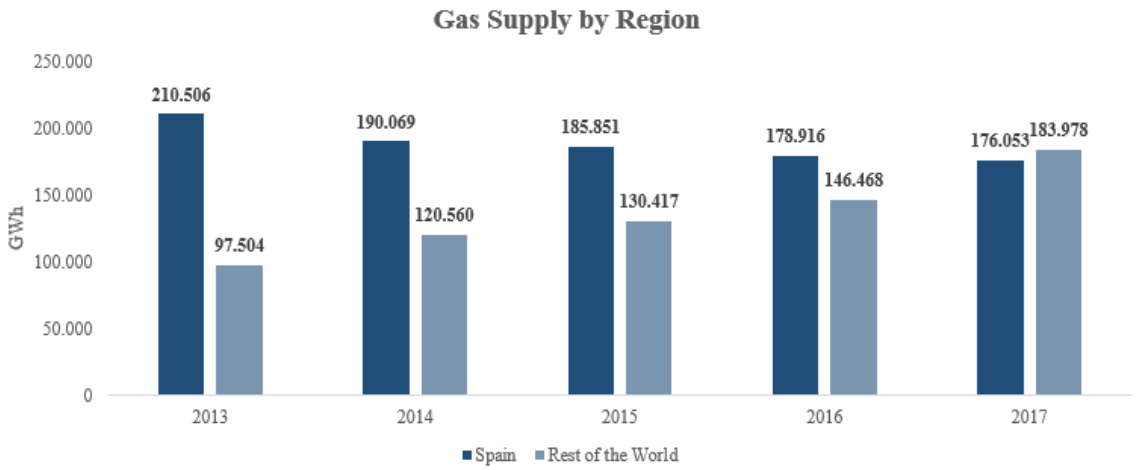

Figure 33 - Gas supply levels Naturgy

In the previous graph we can see a clear trend for both regions, with Spain decreasing its consumption amount and the foreign consumption levels rising steadily.

Again, Naturgy's positioning explains the reduction in Spain. Even with more customers every year, these are mainly domestics, instead of industrials and big consumers.

The emerging markets in Latin America combined with the international LNG sales supported the strong increase in 2017, according to Naturgy.

Strategy

The 2016-2020 strategic plan starts by listing the "three main trends" for the energy sector, which I mention in the Industry Overview chapter: focus on emerging markets, growth in renewables and gas and new energy.

Company-wise, Naturgy intends to focus its investment in networks and renewables, with a "cumulative net €14 billion investment during the period".

On a more specific view, Naturgy intends to develop new renewables in Spain and increase its foreign generation operations, with already 4 GW of installed capacity under construction just in the Global Power Generation vehicle, increase its network reach in Chile and accelerate the growth in its other regions, invest in tankers and FSRUs (floating storage regasification unit, consisting in a tanker that can also employ regasification operations) and improve the firm's digitalization.

Financial Performance

On to Naturgy's financials, we start by looking in the graph below into each operation segment's contribution to the group EBITDA (earnings before interests, taxes, depreciation and amortization).

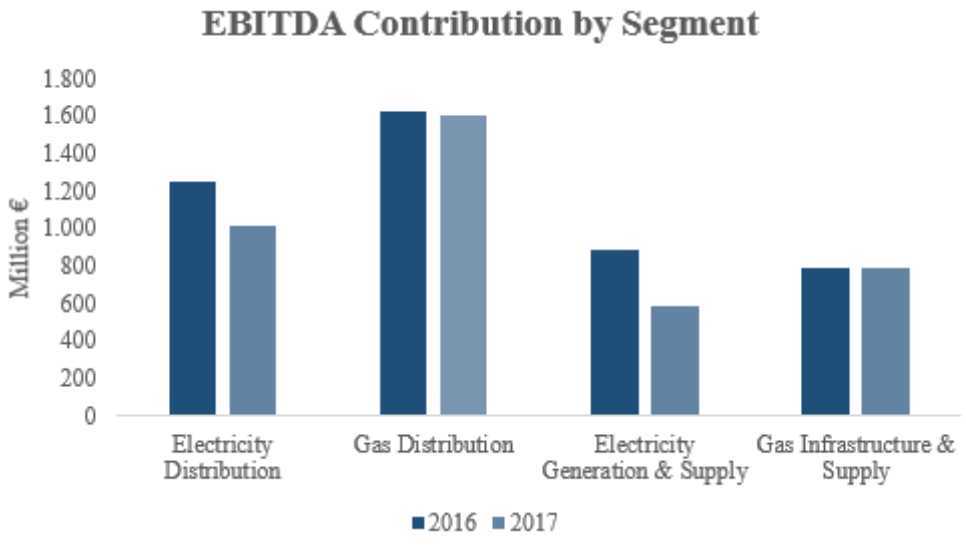

Figure 34 - EBITDA contribution Naturgy

Naturgy has a fairly strong diversification in terms of source of EBITDA, having however lost a bit in diversification due to the decreases in the electricity value chain, due to the reasons

mentioned above, Moldova assets disposal and loss of market share, along with a bad generation year resulting in the necessity of using costier sources of generation.

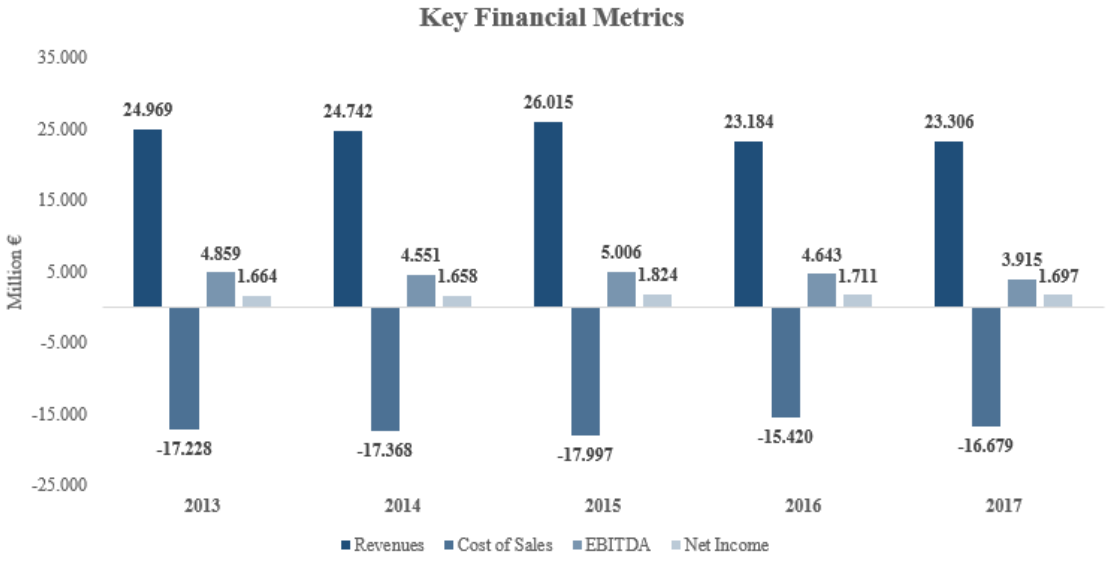

Figure 35 - Naturgy's financial metrics

In the graph above, we have a snapshot of the evolution of Naturgy's key metrics, where the standout point is the significant increase in cost of sales in 2017 (more €1.259 million compared to 2016), combined with a weak increase in the revenues (more €122 million compared to the previous year).

Naturgy disregards concerns over this situation, arguing that its a one-off situation, directly correlated to the various assets disposals during the year and "a new efficiency (...) which led to non-recurring capture costs of 110 million euros in 2017". (Naturgy's corporate website)

The EBITDA situation will also affect the next graph, where we visualize the Net Debt/EBITDA ratio.

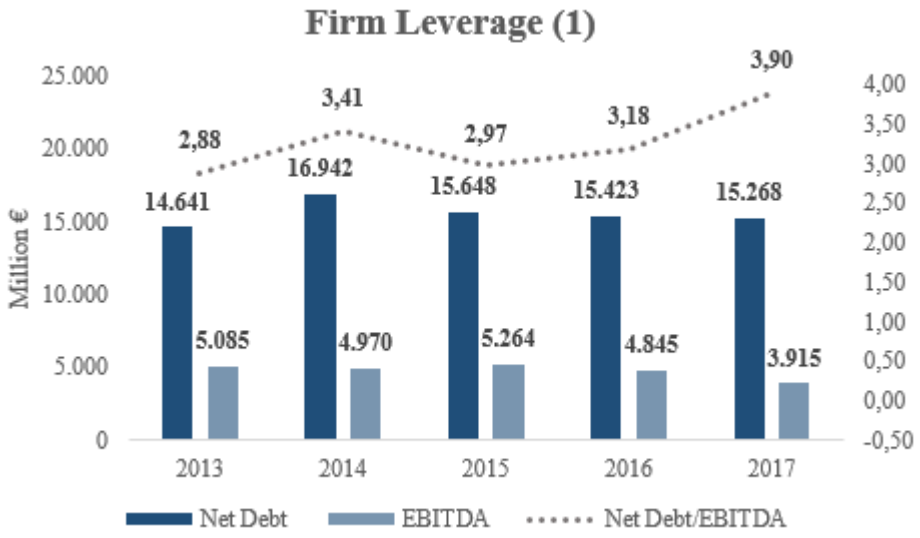

Figure 36 - Leverage Naturgy 1

The net debt amount has been fairly stable for the last 3 years, while the EBITDA suffered the previously explained decrease in 2017. Nevertheless, Naturgy still has a heathy leverage ratio, which will certainly fall next year, if no other one-time situations occur.

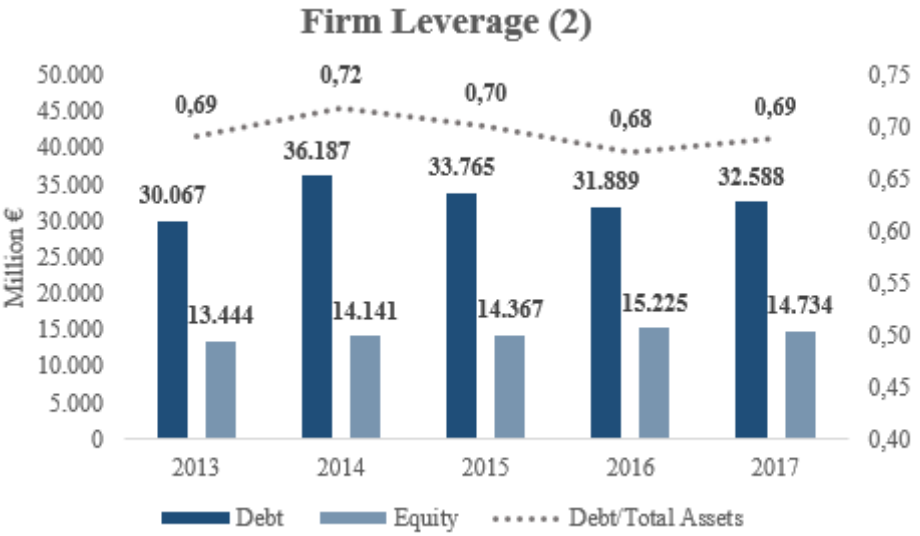

Figure 37 - Leverage Naturgy 2

Naturgy's funding mix was stable in recent years, always around a 70/30 ratio for Debt and Equity, respectively.

Regarding share performance, I compared Naturgy and the Ibex 35, the Spanish index that follows the top 35 public firms in Spain, which can be seen below.

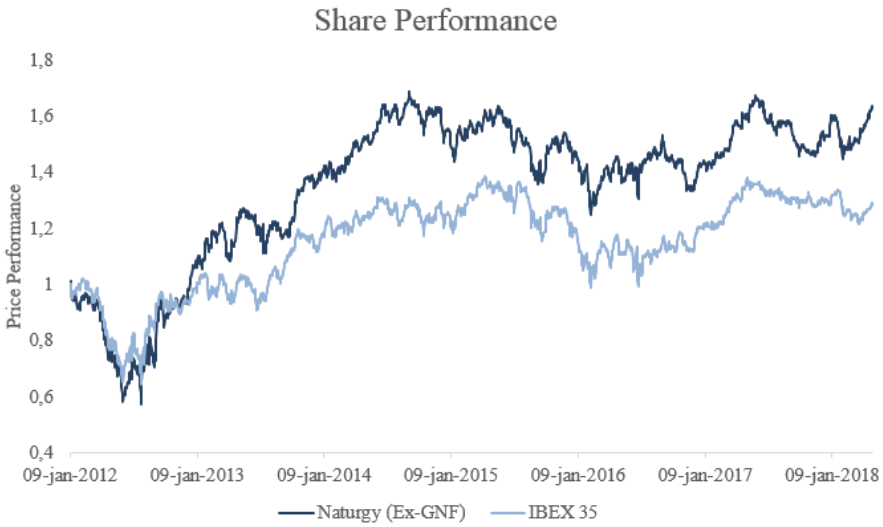

Figure 38 - Share Performance Naturgy. Source: Reuters

The correlation between the two is extremely high, with Naturgy still managing to beat the index for 5 years running, showing the effect of Naturgy in the Ibex 35 and the healthy moment of the utilities sector.

Competition Analysis

Portuguese Electricity Supply

Even though EDP has around 83% of the market share of Portuguese customers, in terms of consumption it only holds 42% of the market share. This fact reflects EDP positioning, being more focused in domestic customers. EDP serves 79% of the domestic customers, but only 18% of the Industrials and 22% of Big Consumers, according to ERSE.

In total terms, EDP still leads in Portugal, with Endesa and Iberdrola (two of the main electric utilities in Spain, running close. (18% and 16% of overall market share, respectively) Naturgy's market share stands only at 2,9% of total consumption.

EDP has been able to maintain its market share, having only decreased its position in 0,6% from 2016 to 2017. (Interms of consumption) In the same time frame, Naturgy increased its position in 0,2%.

Portuguese Gas Supply

In terms of number of customers, EDP also leads this market (57%) with Galp (24%) and Goldenergy (14%) nearby. However, regarding consumption, the one leading is Galp (59%),

while the others are nowhere near this value. (Endesa with 12%, Naturgy with 8,8%, EDP with 8% and Goldenergy with 3,9%) (ERSE, 2018)

These values represent a 2% decrease in consumption market share for EDP and a 3,2% decrease for Naturgy.

Regarding segments, EDP leads the Domestic and Small Businesses ones, with 58% and 53% market share, respectively. In the Big Consumers one, Naturgy has 9,2% of market share in the Big Consumers segment and 6,5% in the Industrials one. (ERSE, 2018)

The market positioning explains once more the difference from number of customers to consumption.

Spanish Electricity Supply

As explained in the industry review, there is still no data available for 2017, so I can only analyse 2016 market shares. There is a top 5 in this market, with Endesa leading with 32,5%, followed by Iberdrola with 22% and Naturgy with 15%. EDP and Viesgo both have around 10% market share. Naturgy has been losing market share year after year. In 2014, their market share was 21,9%. EDP has been moving in the opposite direction, coming from an 8% market share in 2014.

Spanish Gas Supply

In terms of gas consumption, the clear leader is Naturgy, with a 43,87% market share, followed by Endesa (16,81%), UFG (7,9%) and Iberdrola (7,49%). EDP plays a small part in this market, with only a 2,34% stake in the market. In terms of customers, EDP has a bigger share, 11,09%, while Naturgy has 55,73% of the customers.

Naturgy's share of the market has been slighlty decreasing since 2014 (46%), while EDP's share decreased from 4% in 2014. Again the market positioning takes it toll.

Share Performance Comparison

In terms of share performance, I decided to compare the previously shown EDP and Naturgy ones with the *EURO STOXX Utilities Index*, an utilities index tracking the performance of 21 European utilities, including EDP and Naturgy.

The index includes the top utilities operating in Europe, such as E.ON, Engie, Iberdrola and EDF.

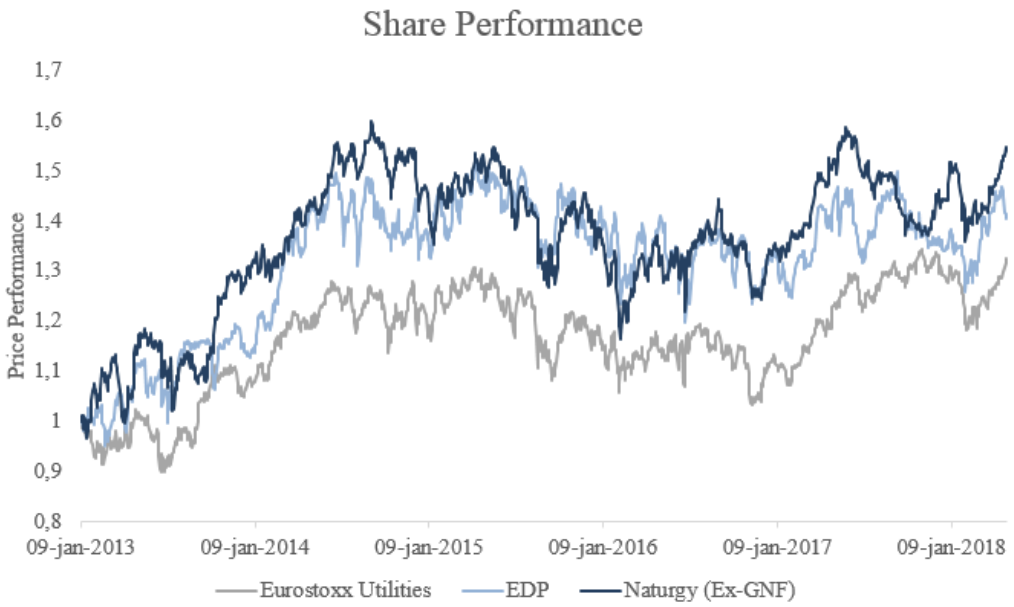

Figure 39 - Share performance comparison. Source: Reuters

As we can see, EDP's performance is quite similar to Naturgy's one, the latter having a slight advantage.

Comparing with *EURO STOXX Utilities Index,* both firms were able to continuously outperform the index, even though they are still highly correlated, as it's visible in the previous graph.

Firm Valuation

Having made an "X-Ray" of both EDP and Naturgy, and thoroughly analyzed the industry and sector where these companies operate, we are now prepared to step into the valuation chapter of this thesis.

In this chapter, an individual valuation of each company will take place, as well as a valuation of the various types of synergies this M&A deal will expectedly create. Finally I will arrive at a combined firm value, as well as an analysis of the pros and cons of the deal.

Projection Methodology

The items being projected in my valuation will be as follows: Electricity Sales, Gas Sales, Others Sales, Cost of Sales, Personnel Costs, Net Other Results, Depreciation and Long-Term Investments.

With these, other items made possible due to them (Working Capital and Investment in Working Capital), and the values mentioned in the "Projection Inputs" of each firm, I will arrive at the values necessary for the FCFF (Free Cash Flow to the Firm) computation.

The projections per-se will be made possible through Monte Carlo Simulation.

Quoting Peter Dizikes, member of the MIT News Office in an artcle of the same publisher: Monte Carlo Simulation is a "statistical technique used to model probabilistic (or "stochastic") systems and establish the odds for a variety of outcomes."

In a more approachable definition, "a Monte Carlo Simulation uses essentially random inputs (within realistic limits) to model the system and produce probable outcomes."(MIT News Office, 2010)

For my valuation, I decided on 5000 iterations per item, along 10 periods, each equaling one full reporting year. Even though a higher number of iterations would decrease the marginal error of these projections and thus increase its quality, a bigger data set would compromise the stability and efficiency of the Excel file where it was computed.

At a starting point, the random factor mentioned before will be inserted in the computations through a "Random Numbers" matrix. This 5000x10 matrix will be filled with random numbers between -1 and 1, ensuring a random factor with some degree of plausibility, the "within realistic limits" assurance.

This is achieved by writing in each cell of the matrix a Rand function (which delivers a random number between 0 and 1) inside a Norm.s.inv function (that returns the inverse of the standard normal cumulative distribution).

With that settled, we move on to the 7 items mentioned earlier. Each item will have two matrices. One with the log-value of the 2017 value of the respective item in period 0, and the formula for the projected random variations in the following periods, and another where I do the exponential of that matrix to arrive at the projected values of each item, in each period, for every iteration.

It's in the formula for the log-value that I include some of the "Projection Inputs" mentioned earlier, specifically the ones related to expected variations of each item. The average of each column will equal the projected amount of that each item in each future period.

The following steps consist in your run-of-the-mill DCF calculations, but in matrix format.

Revenue Division

The projection of the revenues of EDP and Naturgy will be divided by energy sector: Electricity, Gas and Others. The first two also include network access revenues in that sector and the latter corresponds to the company's remaining services, analyzed previously in the Company Overview chapter.

DCF Model Inputs

Projection Inputs

As mentioned before, the formula used for the projections uses expected growth rates in line with industry and margin projections, as well as the weights of each item in regard to total revenues and the standard deviations of each one. (Annexes 11 and 12)

The latter are calculated by computing the average and standard deviation of the corresponding values of weights from 2013 to 2017, present in both firms' Income Statement (Annexes 5 and 8)

The projection formula also uses the correlation of each item's growth rate to the growth rate of Total Revenues, thus ensuring projections that somewhat maintain the operational structure. (Annexes 13 and 14)

EDP

Regarding EDP, I arrive at the following values for the items mentioned before.

(In thousands of euros)	2017	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E
Electricity Sales	14.328.626	14.453.646	14.583.102	14.723.707	14.862.331	15.001.698	15.131.653	15.282.188	15.410.461	15.550.297	15.697.313
Growth Rate %		0,90%	0,90%	0,96%	0,94%	0,94%	0,87%	0,99%	0,84%	0,91%	0,95%
Gas Sales	831.090	827.375	821.546	818.634	813.686	809.429	806.185	802.103	797.658	792.175	788.628
Growth Rate %		-0,50%	-0,70%	-0,35%	-0,60%	-0,52%	-0,40%	-0,51%	-0,55%	-0,69%	-0,45%
Other Sales	586.271	588.550	592.211	595.131	597.582	600.540	605.275	607.883	611.832	614.127	617.039
Growth Rate %		0,50%	0,62%	0,49%	0,41%	0,49%	0,79%	0,43%	0,65%	0,38%	0,47%
Total Revenues	15.745.987	15.869.571	15.996.859	16.137.472	16.273.599	16.411.668	16.543.112	16.692.174	16.819.951	16.956.599	17.102.980
Growth Rate %		0,78%	0,80%	0,88%	0,84%	0,85%	0,80%	0,90%	0,77%	0,81%	0,86%
Cost of Sales	10.354.909	10.505.637	10.666.966	10.839.359	11.012.668	11.181.995	11.352.608	11.534.062	11.691.621	11.871.804	12.056.152
Growth Rate %		1,51%	1,54%	1,62%	1,60%	1,54%	1,53%	1,60%	1,37%	1,54%	1,55%
Gross Margin %	34,24%	33,80%	33,32%	32,83%	32,33%	31,87%	31,38%	30,90%	30,49%	29,99%	29,51%
Personnel Costs	680.833	690.965	700.374	711.247	718.706	729.407	738.852	748.353	757.932	767.667	778.741
Growth Rate %		1,40%	1,36%	1,55%	1,05%	1,49%	1,29%	1,29%	1,28%	1,28%	1,44%
Net Other Results	-720.296	-730.184	-742.655	-746.034	-758.781	-776.614	-797.496	-808.998	-824.554	-832.564	-832.966
Growth Rate %		1,40%	1,71%	0,45%	1,71%	2,35%	2,69%	1,44%	1,92%	0,97%	0,05%
EBITDA	3.989.949	3.942.786	3.886.864	3.840.833	3.783.444	3.723.651	3.654.156	3.600.762	3.545.844	3.484.564	3.435.121
Growth Rate %		-1,18%	-1,42%	-1,18%	-1,49%	-1,58%	-1,87%	-1,46%	-1,53%	-1,73%	-1,42%
EBITDA Margin %	25,34%	24,84%	24,30%	23,80%	23,25%	22,69%	22,09%	21,57%	21,08%	20,55%	20,08%
Depreciation	-1.672.032	-1.696.114	-1.721.884	-1.747.649	-1.773.407	-1.796.991	-1.822.066	-1.845.946	-1.872.513	-1.898.657	-1.923.675
Growth Rate %		1,40%	1,52%	1,50%	1,47%	1,33%	1,40%	1,31%	1,44%	1,40%	1,32%
Long-term Investments	1.170.000	1.186.676	1.200.199	1.215.740	1.234.827	1.252.471	1.270.377	1.290.540	1.307.709	1.329.326	1.347.074
Growth Rate %		1,40%	1,14%	1,29%	1,57%	1,43%	1,43%	1,59%	1,33%	1,65%	1,34%

Table 1 - EDP's growth rates

Due to the random factor in the model that allows my projections to take in account unexpected exterior effects, the growth rates change throughout the years but always keeping a stable level of consistency.

Here, and using the projections of the Industry Overview, I arrived at growth rates that somewhat stay in the same course. An increase in electricity consumption, both in Europe and in Brazil, and a bigger demand for renewable-sourced energy support the 0,9% growth rate for electricity. Gas sales are expected to continue decreasing due to EDP's strategy, thus the -0,5% rate.

The cost of sales growth rate outweighs the revenue growth, since a decrease in the company's margins is to be expected. (Garrido, 2017) The depreciation and long-term investments increase at similar speeds, accompanying EDP's sales growth.

Naturgy

Just like EDP, Naturgy's growth rates also change along the time frame of my projection.

(In thousands of euros)	2017	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E
Electricity Sales	8.833.000	8.853.040	8.903.882	8.966.852	9.022.939	9.100.766	9.142.267	9.185.089	9.228.059	9.273.499	9.315.288
Growth Rate %		0,50%	0,57%	0,71%	0,63%	0,86%	0,46%	0,47%	0,47%	0,49%	0,45%
Gas Sales	12.944.000	13.221.475	13.488.074	13.773.795	14.062.468	14.341.047	14.607.178	14.929.170	15.212.588	15.505.717	15.852.954
Growth Rate %		2,00%	2,02%	2,12%	2,10%	1,98%	1,86%	2,20%	1,90%	1,93%	2,24%
Other Sales	1.529.000	1.537.646	1.541.504	1.552.389	1.560.191	1.566.266	1.571.970	1.582.782	1.590.731	1.598.346	1.604.629
Growth Rate %		0,50%	0,25%	0,71%	0,50%	0,39%	0,36%	0,69%	0,50%	0,48%	0,39%
Total Revenues	23.306.000	23.612.162	23.933.460	24.293.036	24.645.598	25.008.079	25.321.415	25.697.041	26.031.377	26.377.562	26.772.872
Growth Rate %		1,31%	1,36%	1,50%	1,45%	1,47%	1,25%	1,48%	1,30%	1,33%	1,50%
Cost of Sales	16.679.000	16.970.674	17.274.981	17.594.768	17.917.072	18.248.121	18.583.645	18.948.084	19.281.535	19.656.359	20.019.865
Growth Rate %		1,83%	1,79%	1,85%	1,83%	1,85%	1,84%	1,96%	1,76%	1,94%	1,85%
Gross Margin %	28,43%	28,13%	27,82%	27,57%	27,30%	27,03%	26,61%	26,26%	25,93%	25,48%	25,22%
Personnel Costs	1.031.000	1.042.290	1.054.150	1.067.210	1.080.142	1.090.044	1.103.890	1.116.793	1.129.504	1.140.599	1.152.735
Growth Rate %		1,10%	1,14%	1,24%	1,21%	0,92%	1,27%	1,17%	1,14%	0,98%	1,06%
Net Other Results	-1.681.000	-1.700.848	-1.724.664	-1.742.554	-1.765.637	-1.785.478	-1.806.053	-1.827.158	-1.851.307	-1.869.799	-1.890.586
Growth Rate %		1,10%	1,40%	1,04%	1,32%	1,12%	1,15%	1,17%	1,32%	1,00%	1,11%
EBITDA	3.915.000	3.898.349	3.879.665	3.888.503	3.882.747	3.884.436	3.827.827	3.805.007	3.769.030	3.710.805	3.709.685
Growth Rate %		-0,43%	-0,48%	0,23%	-0,15%	0,04%	-1,46%	-0,60%	-0,95%	-1,54%	-0,03%
EBITDA Margin %	16,80%	16,51%	16,21%	16,01%	15,75%	15,53%	15,12%	14,81%	14,48%	14,07%	13,86%
Depreciation	1.803.000	1.831.176	1.859.871	1.885.293	1.911.627	1.939.815	1.967.201	1.999.401	2.026.683	2.057.539	2.085.604
Growth Rate %		1,50%	1,57%	1,37%	1,40%	1,47%	1,41%	1,64%	1,36%	1,52%	1,36%
Long-term Investments	2.060.000	2.092.769	2.130.157	2.169.786	2.206.560	2.236.847	2.265.724	2.295.951	2.329.240	2.367.996	2.403.936
Growth Rate %		1,50%	1,79%	1,86%	1,69%	1,37%	1,29%	1,33%	1,45%	1,66%	1,52%

Table 2 - Naturgy's growth rates

I expect gas sales to increase at a faster rate than the electricity ones, while the cost of sales growth also outweighs the revenue side. (Garrido, 2018)

Again, depreciations and long-term investments grow at around 1,5% to support the business growth.

However, these projections assume that the companies are in a "status quo" state, without any major operation or strategic change in the 10-year period.

WACC Inputs

EDP

Inputs	Value
Levered Beta	0,86
Rf Rate	0,6%
MRP	6,5%
Tax Rate	21%
CRP	2,73%
Debt Ratio	63,48%
Cost of Equity	8,92%
Cost of Debt	4,11%
WACC	5,32%

Naturgy

Inputs	Value
Levered Beta	0,76
Rf Rate	0,6%
MRP	6,5%
Tax Rate	25%
CRP	2,45%
Debt Ratio	52,22%
Cost of Equity	7,99%
Cost of Debt	3,00%
WACC	4,99%

Table 3 - Inputs for EDP and Naturgy

Beta

For the beta, I use the values presented in Reuters for both firms.

Risk-Free Rate

The Risk-Free Rate refers to the German 10-year Bond yield (as of 28/5/2018). I saw a German one to be more fitting to the calculation than the USA's Treasury Bond yield due to the firm's European setting.

Market Risk Premium

Here I use the value of 6,5%, a common practice.

Tax Rate - EDP

According to EDP's 2017 Annual Report, the nominal tax rate to be paid in 2017 would equal 21%. However, due to fiscal credits, provisions, asset disposals, among other items, the effective rate amounted to only 0,68%. If one disregards the gas asset sales in Spain and Portugal during the year, the effective tax rate would be 16,48%. As such, I assumed the "status quo" scenario during my valuation, a value of 21%.

Tax Rate - Naturgy

In Naturgy's case, the nominal tax rate equals 25% but, just like EDP, they too had various items that assured tax deferrals. As such, the amount paid corresponded to an effective rate of 13,3%. If we disregarded some assets disposals in Chile during the year, the effective rate to be paid would be 21,51%. (GNF 2017 Financial Report, 2018)

Country Risk Premium

Here I calculated the increased risk inherent to every different country where each company operates. This value will be part of the cost of equity computation.

To find these values, I took the country risk premiums present in the Damodaran website and calculated a weighted average country risk premium, the weights being the proportion of revenues each country represents in the total revenue amount.

These values can be consulted in Annexes 15 and 16, for EDP and Naturgy, respectively.

Cost of Equity

With the country risk premium calculated, I have every segment needed to arrive at the cost of equity, 8,92% for EDP and 7,99% for Naturgy.

Cost of Debt

The cost of debt values are given by Reuters, through the yields of each company's 10-year corporate bond.

Debt Ratio

The only part missing in order to compute the discount factor for the FCFFs, the WACC, is the capital structure of each company.

According to Reuters, these are 63,48% and 52,22%, for EDP and Naturgy, respectively.

WACC

With all these steps taken, I arrive at a WACC value of 5,32% for EDP and 4,99% for Naturgy.

Final Valuation

EDP

Regarding EDP, and as we can see in the table below, I reach a final enterprise value of €34,7 billion.

Average Values (in thousands of euros)	2015	2016	2017	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E
Revenues	15.516.799	14.595.164	15.745.987	15.869.571	15.996.859	16.137.472	16.273.599	16.411.668	16.543.112	16.692.174	16.819.951	16.956.599	17.102.980
EBITDA	3.923.958	3.759.307	3.989.949	3.942.786	3.886.864	3.840.833	3.783.444	3.723.651	3.654.156	3.600.762	3.545.844	3.484.564	3.435.121
EBIT	2.443.379	2.264.079	2.317.917	2.246.673	2.164.981	2.093.184	2.010.037	1.926.660	1.832.090	1.754.816	1.673.331	1.585.908	1.511.446
Tax Rate	21,00%	21,00%	21,00%	21,00%	21,00%	21,00%	21,00%	21,00%	21,00%	21,00%	21,00%	21,00%	21,00%
EBIT (1-Tc)	1.930.269	1.788.622	1.520.985	1.774.871	1.710.335	1.653.615	1.587.930	1.522.061	1.447.351	1.386.304	1.321.932	1.252.867	1.194.042
Long-term Investments	1.163.000	1.223.000	1.170.000	1.186.676	1.200.199	1.215.740	1.234.827	1.252.471	1.270.377	1.290.540	1.307.709	1.329.326	1.347.074
Investments in Working Capital	-1.747	1.154	1.116	748	1.210	749	1.185	508	1.369	1.040	343	938	938
Depreciations	1.480.579	1.495.228	1.672.032	1.696.114	1.721.884	1.747.649	1.773.407	1.796.991	1.822.066	1.845.946	1.872.513	1.898.657	1.923.675
FCFF			1.762.108	1.736.041	1.696.304	1.665.248	1.624.340	1.582.180	1.531.159	1.493.724	1.456.105	1.412.042	1.377.650
WACC			-	5,32%	5,32%	5,32%	5,32%	5,32%	5,32%	5,32%	5,32%	5,32%	5,32%
DCFs			1.762.108	1.648.424	1.529.401	1.425.626	1.320.422	1.221.239	1.122.210	1.039.521	962.198	885.989	820.783
Terminal Value			-	-	-	-	-	-	-	-	-	-	21.257.514
Final Value			34.995.434										
Cash			2.299.000										
Minority Interests			8.565.081										
Total Debt			17.374.000										
Market Capitalization			11.355.353										
Shares Outstanding			3.656.540.000										
Valuation Share Price (€)			3,11										
Share Price (4/5/2018)			3,05										

Table 4 - EDP Valuation

Getting to a Market Capitalization value of €11,3 billion, I price EDP's shares at €3,11/share, almost the same as the market price on May 4th, 2018.

Naturgy

For the Spanish utility, I arrive at a final valuation of €47 billion, as we can see below.

Average Values (in thousands of euros)	2015	2016	2017	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E
Revenues	26.015.000	23.184.000	23.306.000	23.612.162	23.933.460	24.293.036	24.645.598	25.008.079	25.321.415	25.697.041	26.031.377	26.377.562	26.772.872
EBITDA	5.006.000	4.643.000	3.915.000	3.898.349	3.879.665	3.888.503	3.882.747	3.884.436	3.827.827	3.805.007	3.769.030	3.710.805	3.709.685
EBIT	3.261.000	3.006.000	2.112.000	2.067.172	2.019.795	2.003.211	1.971.120	1.944.620	1.860.626	1.805.607	1.742.348	1.653.266	1.624.081
Tax Rate	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%	25,00%
EBIT (1-Tc)	2.445.750	2.254.500	1.584.000	1.550.379	1.514.846	1.502.408	1.478.340	1.458.465	1.395.470	1.354.205	1.306.761	1.239.950	1.218.061
Long-term Investments	1.874.000	2.196.000	2.060.000	2.092.769	2.130.157	2.169.786	2.206.560	2.236.847	2.265.724	2.295.951	2.329.240	2.367.996	2.403.936
Investments in Working Capital	-804	-557	19.244	20.428	25.558	23.923	24.638	14.891	22.756	19.076	15.916	26.548	26.548
Depreciations	1.745.000	1.637.000	1.803.000	1.831.176	1.859.871	1.885.293	1.911.627	1.939.815	1.967.201	1.999.401	2.026.683	2.057.539	2.085.604
FCFF			1.564.850	1.558.222	1.546.253	1.560.872	1.562.423	1.580.484	1.537.009	1.531.623	1.514.621	1.468.034	1.474.211
WACC			-	4,99%	4,99%	4,99%	4,99%	4,99%	4,99%	4,99%	4,99%	4,99%	4,99%
DCFs			1.564.850	1.484.142	1.402.726	1.348.670	1.285.830	1.238.857	1.147.502	1.089.119	1.025.826	947.004	905.778
Terminal Value			-	-	-	-	-	-	-	-	-	-	34.428.334
Final Value			47.868.638										
Cash			3.225.000										
Minority Interests			11.377.861										
Total Debt			19.343.000										
Market Capitalization			20.372.777										
Shares Outstanding			1.000.000.000										
Valuation Share Price (€)			20,37										
Share Price (4/5/2018)			21,15										

Table 5 - Naturgy Valuation

With a Market Capitalization value of €20,4 billion, my price per share for Naturgy stands at €20,37, minus 4% than the value on May 4th.

Combined Valuation

Joining both firms, but still not accounting for merger synergies, I arrive at the combined valuation present in the following table.

Average Values (in thousands of euros)	2017	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E
Revenues	39.051.987	39.481.733	39.930.320	40.430.508	40.919.198	41.419.746	41.864.528	42.389.215	42.851.328	43.334.161	43.875.851
EBITDA	7.904.949	7.841.135	7.766.530	7.729.336	7.666.191	7.608.087	7.481.983	7.405.769	7.314.874	7.195.369	7.144.806
EBIT	4.429.917	4.313.845	4.184.775	4.096.394	3.981.158	3.871.280	3.692.717	3.560.422	3.415.679	3.239.174	3.135.527
Tax Rate	(Weighted Tax Rate)										
EBIT (1-Tc)	3.104.985	3.325.251	3.225.181	3.156.023	3.066.270	2.980.526	2.842.821	2.740.509	2.628.692	2.492.817	2.412.103
Long-term Investments	3.230.000	3.279.445	3.330.355	3.385.526	3.441.388	3.489.319	3.536.100	3.586.491	3.636.948	3.697.323	3.751.010
Investments in Working Capital	20.360	21.176	26.768	24.672	25.823	15.399	24.124	20.117	16.259	27.486	27.486
Depreciations	3.475.032	3.527.290	3.581.755	3.632.942	3.685.033	3.736.807	3.789.267	3.845.347	3.899.196	3.956.195	4.009.279
FCFF	3.326.957	3.294.263	3.242.557	3.226.120	3.186.763	3.162.664	3.068.168	3.025.347	2.970.726	2.880.076	2.851.860
WACC	(Weighted WACC)										
DCFs	3.326.957	3.132.566	2.932.128	2.774.297	2.606.252	2.460.096	2.269.712	2.128.639	1.988.023	1.832.993	1.726.560
Terminal Value (Weighted Growth)	-	-	-	-	-	-	-	-	-	-	55.685.848
Final Value	**82.864.072**										
Cash	**5.524.000**										
Minority Interests	**19.942.942**										
Total Debt	**36.717.000**										
Market Capitalization	**31.728.130**										
Shares Outstanding	**1.557.378.768**										
Valuation Share Price (€)	**20,37**										

Table 6 - Combined Valuation

Sensitivity Analysis

Even though my projection's methodology format takes various different observations in consideration, a sensitivity analysis is always due.

Here, I decided to use variations in the WACC and growth rate of the main business segments of each company.

EDP

EDP Enterprise Value (Millions of euros)

Sensitivity Analysis		WACC		
		- 0,5%	Original	+ 0,5%
Electricity Sales Growth	- 0,5%	37.517	34.732	32.010
	Original	37.633	34.995	32.255
	+ 0,5%	37.729	35.644	32.535

Table 7 - EDP's sensitivity analysis

Here we can infer that the even if the growth rate of electricity sales weighs heavily on EDP's valuation, a change in the WACC has a stronger effect on the final value.

Naturgy

Naturgy Enterprise Value (Millions of euros)

Sensitivity Analysis		WACC		
		- 0,5%	Original	+ 0,5%
Gas Sales Growth	- 0,5%	43.662	41.747	37.067
	Original	48.892	47.869	39.411
	+ 0,5%	52.502	48.163	43.743

Table 8 - Naturgy's sensitivity analysis

Changing the growth rate from electricity to gas sales, Naturgy's sensitivity analysis shows similar results to EDP in terms of WACC, but in this case the main operation's growth rate has a similar effect. Some values may look to have higher changes, a fact that is due to the Monte Carlo simulation.

Relative Valuation

With the DCF valuation complete, we move to a different approach.

Here I will reach a final value for the firms by comparing market and transaction multiples of comparable firms to the firms' ratios.

Market Multiples

After researching for companies in the same industry as EDP and Naturgy, I arrived at a list of 18 companies (EDP and Naturgy included), along with market multiples, taken from the Thompson Reuters Eikon server, that I saw fit to compare. (Annex 17)

After performing a Cluster Analysis for both firms (Annex 18), I arrived at a final peer group for each company.

EDP

After selecting three multiples for the valuation (EV/EBITDA, Price to Earnings ratio and EV/Total assets), I arrived at the following results.

Multiple Valuation	EV/EBITDA	P/E	EV/Total Assets
NATURGY	12,23x	16,00x	0,74x
ENDESA	7,60x	14,40x	0,81x
E.ON	6,80x	13,20x	0,58x
RWE	6,40x	12,90x	0,35x
SSE PLC	9,50x	11,20x	0,87x
Average	8,51x	13,54x	0,67x
EV EDP	33.936.098 €	35.725.030 €	28.100.113 €
Total Debt		17.374.000 €	
Cash		2.299.000 €	
Minority Interests		8.565.081 €	
Market Capitalization	10.296.017 €	12.084.949 €	4.460.032 €
Shares Outstanding		3.656.540.000	
Share Price (€)	2,82	3,31	1,22
Share Price (4/5/2018)		3,05	

Table 9 - EDP market multiples valuation

As I warned before, the values are slightly different from the market price, with P/E ratio standing as the closest to the market valuation. The P/E ratio is often used to check for over/undervaluation in firms, which in this case it does make sense since, when I introduce ahead the CTG issue, the value that EDP's shares jumped to after the offer was of €3,44 per share.

Naturgy

Multiple Valuation	EV/EBITDA	P/E	EV/Total Assets
EDP	8,77x	13,70x	0,83x
ENDESA	7,60x	14,40x	0,81x
E.ON	6,80x	13,20x	0,58x
RWE	6,40x	12,90x	0,35x
SSE PLC	9,50x	11,20x	0,87x
Average	7,81x	13,08x	0,69x
EV NATURGY	30.592.513 €	40.372.760 €	32.567.264 €
Total Debt		19.343.000 €	
Cash		3.225.000 €	
Minority Interests		11.377.861 €	
Market Capitalization	3.096.652 €	12.876.899 €	5.071.403 €
Shares Outstanding		1.000.000.000	
Share Price (€)	3,10	12,88	5,07
Share Price (4/5/2018)		21,15	

Table 10 - Naturgy market multiples valuation

In Naturgy's case, the ratios largely undervalue the firm, with the P/E ratio being again the closest to my valuation and the market value.

Transaction Multiples

For the comparable transactions valuation, I used expected values from *EY's Power Transactions and Trends Q4 2017* and the multiples referring to four recent deals in the sector. Those values are visible below.

Multiple Valuation	EV/EBITDA	P/E
EY Q4 2017 LT Average (P&U)	7,80x	15,40x
EY Q4 2017 2-Y Fx (P&U)	8,40x	15,90x
EY Q4 2017 LT Average (IU)	6,80x	11,60x
EY Q4 2017 2-Y Fx (IU)	7,10x	12,50x
Consortium/Elenia Group	20,42x	-
E.ON/RWE	10,22x	19,34x
AltaGas/WGL	17,00x	25,48x
Hydro One/Avista	11,16x	27,62x
Average Recent Transactions	14,70x	24,15x

Table 11 - Transaction multiples

Here, we have the expected values of EY for the power and utility sector as a whole and for the integrated utilities sub-sector, where I believe both EDP and Naturgy are present, as well as the 2-year forward price of each one, with higher values, representing the an expectation of an increase in the value of companies in this sector.

Multiple Valuation	EV/EBITDA	P/E
EY Q4 2017 LT Average (P&U)	7,80x	15,40x
EDP Share Price	2,05 €	4,04 €
Naturgy Share Price	3,04 €	16,81 €
EY Q4 2017 LT Average (IU)	6,80x	11,60x
EDP Share Price	0,95 €	2,54 €
Naturgy Share Price	- 0,87 €	10,37 €
Average Recent Transactions	14,70x	24,15x
EDP Share Price	9,58 €	7,49 €
Naturgy Share Price	30,05 €	31,66 €

Table 12 - Transaction multiples valuation

Tackling the values in the table above, we can note higher values for the P/E comparison in the Power and Utilities sector, while for the Integrated Utilities it assumes it as undervalued.

Also, the recent transactions comparables give extremely high valuations, mainly due to the high premiums that are being paid in this sector. This fact will be taken into account when pricing the deal.

Synergies

The merger of two companies often creates synergies: revenue; cost or financial synergies, as mentioned in the Literature Review chapter - and this case is no exception.

Having similar businesses in matching countries, I assumed revenue synergies in the Iberian Electricity and Gas Market. The amount, however, doesn't amount to much on a yearly basis, as I can't expect this merger to create substantial increases in market share, due to the market's saturation.

Revenue synergies in the Brazilian market are more likely, thus I assumed an increase of 5% per year in both companies' Brazilian revenues, assuming that the joint firm would have more power to win bids for extra projects in Brazil. In these 5% I also include possible market share increases due to increased supply safety and stronger branding.

Moving on to the cost synergies, I assumed Naturgy personnel cuts in Portugal and EDP cuts in Spain, as well as in Brazil. These will be higher in the first years due to necessary layoffs (5% of total personnel costs), and in the following years I assume hiring optimization synergies of 1%.

Lastly, I assumed no financial synergies, as the possibility of there being one is slim, and its amount wouldn't be significant.

Average Values (in thousands of euros)	2017	2018E	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E
Electricity Sales	23.161.626	23.306.686	23.486.985	23.690.559	23.885.270	24.102.465	24.273.920	24.467.277	24.638.520	24.823.795	25.012.601
Iberian Synergies	-	89.974	90.723	91.552	92.358	93.210	93.943	94.781	95.508	96.298	97.117
Brazil Synergies	-	116.533	117.435	118.453	119.426	120.512	121.370	122.336	123.193	124.119	125.063
Gas Sales	13.775.090	14.048.850	14.309.620	14.592.429	14.876.154	15.150.475	15.413.363	15.731.273	16.010.245	16.297.892	16.641.583
Synergies	-	70.244	71.548	72.962	74.381	75.752	77.067	78.656	80.051	81.489	83.208
Personnel Costs	-1.711.833	-1.733.255	-1.754.524	-1.778.458	-1.798.849	-1.819.451	-1.842.742	-1.865.145	-1.887.436	-1.908.266	-1.931.477
Synergies	-	86.663	87.726	88.923	17.988	18.195	18.427	18.651	18.874	19.083	19.315
EBITDA	7.904.949	8.204.550	8.133.962	8.101.226	7.970.344	7.915.756	7.792.790	7.720.194	7.632.501	7.516.359	7.469.509
EBIT	4.429.917	4.677.260	4.552.208	4.468.284	4.285.311	4.178.949	4.003.523	3.874.847	3.733.305	3.560.163	3.460.230
Tax Rate	(Weighted Tax Rate)										
EBIT (1-Tc)	3.104.985	3.432.616	3.340.841	3.279.250	3.144.967	3.066.909	2.938.164	2.843.730	2.739.853	2.612.785	2.539.444
Long-term Investments	3.230.000	3.279.445	3.330.355	3.385.526	3.441.388	3.489.319	3.536.100	3.586.491	3.636.948	3.697.323	3.751.010
Investments in Working Capital	20.360	21.176	26.768	24.672	25.823	15.399	24.124	20.117	16.259	27.486	27.486
Depreciations	3.475.032	3.527.290	3.581.755	3.632.942	3.685.033	3.736.807	3.789.267	3.845.347	3.899.196	3.956.195	4.009.279
FCFF	3.326.957	3.659.285	3.565.472	3.501.994	3.362.790	3.298.998	3.167.206	3.082.468	2.985.841	2.844.171	2.770.227
WACC	(Weighted WACC)										
DCFs	3.326.957	3.481.483	3.227.410	3.015.938	2.755.356	2.571.768	2.349.086	2.175.179	2.004.646	1.816.780	1.683.599
Terminal Value (Weighted Growth)	-	-	-	-	-	-	-	-	-	-	59.183.405
Final Value	87.591.608										
Synergies	4.727.536										
Cash	5.524.000										
Minority Interests	19.942.942										
Total Debt	36.717.000										
Market Capitalization	36.455.666										
Shares Outstanding	1.557.378.768										
Valuation Share Price (€)	23,41										

Table 13 - Combined valuation with synergies

The value per year in synergies amounts to around €360 million in the first 3 years, and between €300 and €320 million per yearin the following years, slightly off BPI's synergies of €450 million per year. BPI, *Banco Português de Investimentos,* did a research about a possible merger between Naturgy and EDP, where they arrived at that value. Unfortunately, the access to said research wasn't available.

In the end, I arrive at a total synergy amount of €4,7 billion, and a total enterprise value of €87,6 billion.

Naturgy/EDP Deal

Regarding the deal, I will first make an introduction to the Chinese offer for EDP, which I find important to mention, followed by the rationale behind this deal.

Lastly, I will introduce the deal format as well as the payment method.

China Three Gorges New Bid

On May 11th, 2018, CTG decided to announce a Public Acquisition Offer for the remaining shares it does not own of EDP (76,73% of total shares).

In this offer, CTG would pay €3,26 per share, representing a premium of 5,5% to the closing price of the previous day, and a 17,9% premium over the 6-month average. This offer valued EDP at €11,8 bn.

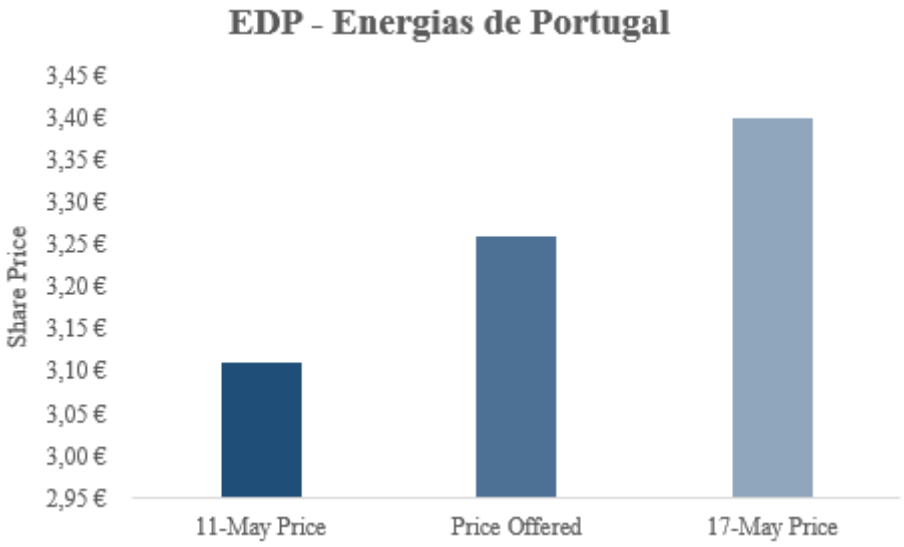

Figure 40 - Share price change EDP. Source: Reuters

After the offer, CMVM (Portuguese Securities Market Comission) put a hault on the trading of EDP shares to evaluate the deal proposed. The trading was then restarted and on the 17th of May the shares had already reached a value of €3,40, having reached inbetween a maximum of €3,44. This increase shows that the shareholders deem the offer proposed by the Chinese to be undervaluing the firm.

Also, the firm's bylaws force any entity bidding for a controlling stake in EDP to also bid for the entire stake in *EDP Renováveis*.

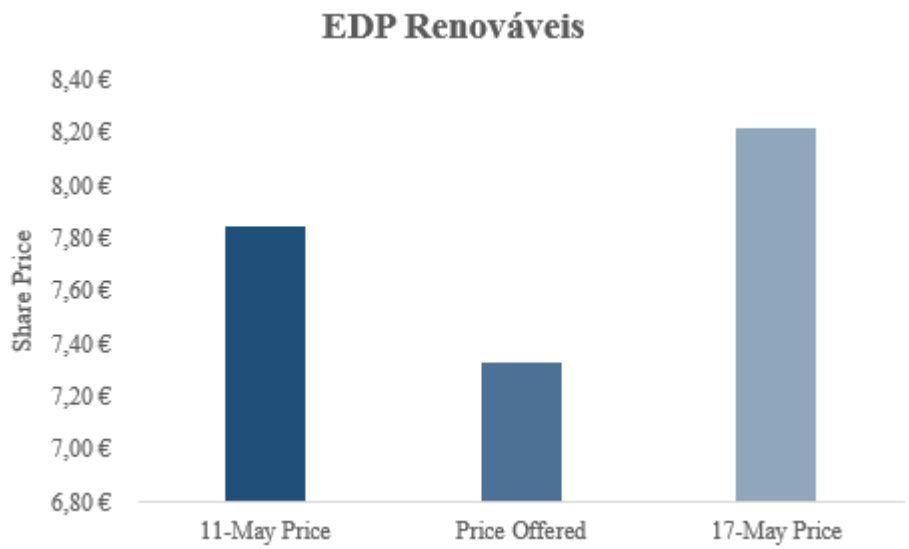

Figure 41 - Share price change EDPR. Source: Reuters

As seen in the previous graph, the share price at the announcement date was of €7,85, and CTG offered only €7,33/share, a clear undervaluation of EDP's branch. The market reacted similarly, reaching a value of €8,22 per share on the 17th of May, a 5% increase from the 11th of May, and 12% more than CTG offered. The % variation in both shares can be seen in the graph below.

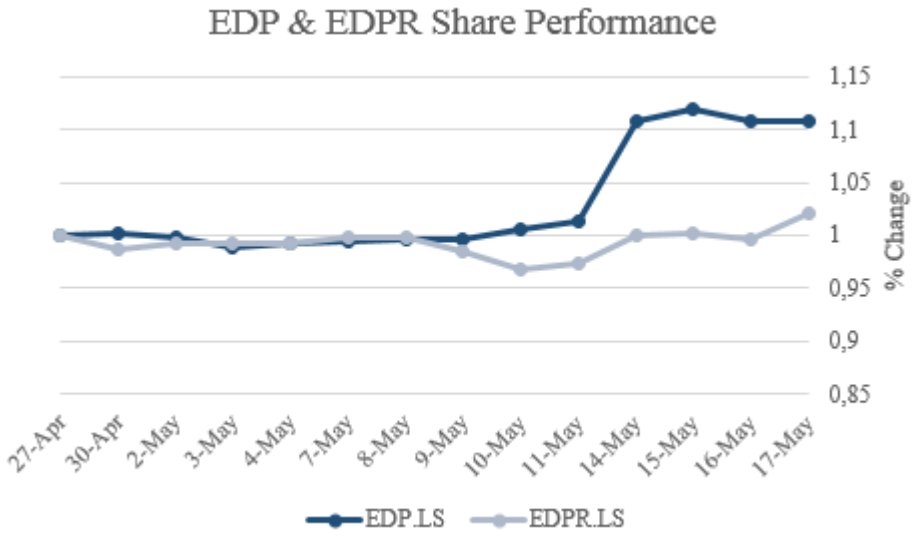

Figure 42 - Share performance

Even though the Portuguese Prime Minister, António Costa, "has said that the government has no objections to the CTG offer", other "hurdles" stand in CTG's way until this deal can be secured.

First off, EDP has already recommended its shareholders to reject of this offer, has it is "too low" and "doesn't reflect the value of the eletric". (Bloomberg, 2018)

After this issue, CTG would have to fight through around 13 regulatory hurdles, a list compiled by the Portuguese economic digital newspaper, *ECO*.

Having to receive confirmation from either the European comission or the Portuguese competition authority, CTG will also have to receive the "green light" from 2 U.S. authorities, 3 european countries' regulators (Poland, France and Romania), 2 Spanish port authorities (Gijón and Avilés), 2 Brazilian regulators and 3 Canadian authorities.

The judicial battle looks like a mountain to climb, with so many authorities to discuss with and a renewed American "aversion" to Chinese investments.

Deal Rationale

Recalling the Industry Overview's M&A sub-chapter, three of the trends mentioned form the rationale for this deal.

De-carbonization/Nuclear phaseouts promote Renewables & Gas: EDP is a world leader in renewable energy, thanks to its subsidiary *EDP Renováveis.* Naturgy's strategy has as a main pillar the investment in renewables, something that can be optimized with EDP's knowledge and experience in the matter. Naturgy's financing capacity will help support that investment.

Retail Consolidation and Sector Convergence: Struggling with market share losses due to the market liberalization and with a possibility of future taxes from the Spanish government, Naturgy needs to strenghten its position in both the electrical and gas markets in Spain. EDP's small presence in the gas sector provides some retail market consolidation, but its electricity business allows for a "power play" in the sector, creating a stronger brand. The same goes for EDP, but with the strenght in the opposite sectors.

Focus on the Known and on the Profitable: This deal joins two firms with different specializations, but in the same core energy markets and regions, Portugal, Spain and Latin America, mainly Brazil, which eases the deal's complexity.

Also, as mentioned before, the most profitable future (and already in the present) energy sources are renewables and gas, the main focus of EDP and Naturgy, respectively.

Deal Format

For a deal between Naturgy and EDP, I decided to do it as an acquisition bid. Even though this won't avoid the "regulatory mountain" CTG would face, it's safe to assume that a European firm would be confronted with a more lax position from regulators.

Also, in terms of market competition, the merged firm's market share in Portugal and Spain wouldn't be much of a problem, due to the different value chain focus of each one. Naturgy's market share in Portugal's electricity market is fairly low, as well as EDP's gas market share in Spain. Even the Spanish electricity market, where Naturgy and EDP are 3rd and 4th, respectively, wouldn't suffer a change in leadership, as Endesa and Iberdrola, 1st and 2nd, respectively, would still retain their positions if this merger were to go through.

As mentioned in the Literature Review, shareholders aren't fond of having their shares change stock exchanges or their headquarters change countries, so a a commitment would have to be made by both firm's, which can present itself as a potential standstill.

Finally, the shareholder issue, as each shareholder's stake will diminish in the merged firm. This issue is especially tricky, due to the CTG offer in May, since their intention was to increase their stake to achieve a control position.

The payment, and the consequent premium, will be visible as an increased stake in the final firm, instead of the proportional option.

Payment Method

Firstly, I present the shareholder structure if the stakes equalled the respective value proportion of each company's equity, in my valuation.

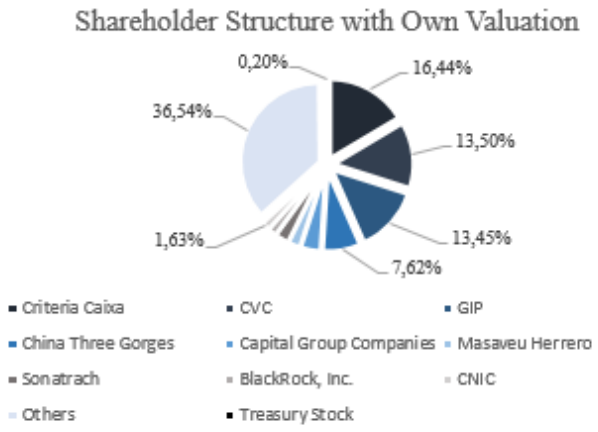

Figure 43 - New shareholder structure 1

As we can see, the three top shareholders belong to Naturgy's structure, with CTG appearing in 4th place, with only a 7,62% share. This would give the Chinese government a 9,25% stake, still below GIP's position.

Here the payment would be EDP's proportion of the synergies, around €1,7 billion, but EDP would be undervaluated in 9,2% compared to the market price post-CTG offer of €3,42, since my valuation resulted in a price per share of €3,11.

The payment would be done by an exchange of EDP shares by newly issued Naturgy shares, with a ratio of 1:0,15. This would result in the emission of around 557 million shares. The ratio is calculated by checking how many Naturgy shares are needed to reach the value of EDP, giving us the shares issued, and then dividing the number of new shares by the amount of EDP shares.

For this deal, I decided to assume a 15% premium on my EDP valuation, 4,6% above EDP's market valuation of €3,42. In this case, the shareholder structure would result in the following.

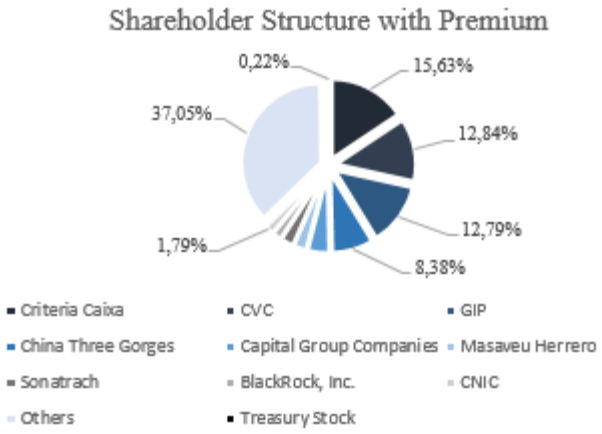

Figure 44 - New shareholder structure 2

The Chinese government would now possess a 10,17% position in the merged firm, still in 4th position.

-	1.957.097,53 €	Loss by Naturgy Shareholders
	1.957.097,53 €	Gain by EDP Shareholders
	253.794,55 €	Gain in Synergies
	1.703.302,98 €	Overvaluation of EDP

Table 14 - Premium value increased payment

In terms of payment, this would represent €0,22 billion added to the synergies amount, totaling a payment of 1,92€ billion to EDP's shareholders. The exchange ratio would now stand at 1:0,18.

The loss by Naturgy shareholders, visible in Table 14, refer to the amount they would have also detained if the ratio used was the first ratio. The deal continues to be profitable for the Spanish side.

In the end, the success of the deal would rely on three factors: The payment offered, the definition of the firm's headquarters and stock exchange issuance and the Chinese faction acceptance of the loss of control.

Conclusion

Having showed the rationale and payment possibilities from a Naturgy/EDP merger, and the respective hurdles it can face, its time for me to draw conclusions on the pros and cons of both this deal and CTG's possible acquisition of a controlling stake in EDP.

As mentioned in the deal rationale sub-chapter, Naturgy's deal provides valuable synergies, market entries and power to EDP's shareholders, which can be a strong deterrent for objections and a great opportunity for the electric. Currently Naturgy's focus is to bet on renewables and the electricity side of the energy sector, both at home and in LatAm, which aligns with EDP's strategy.

However, this deal would possibly mean a change of stock exchange for EDP shareholders.

On the other side, CTG has been present in EDP since 2011, and a possible increase of its stake in EDP was well received by the Portuguese government. The Chinese promised heavy investment on the electric and full acquisition of EDP's renewables subsidiary, making EDP a renewable powerhouse.

The cons, in this case, lie on the "legal battle" mentioned before, and the political situation in the United States. *EDP Renováveis* has most of its infrastructures in the U.S., and further investing in the country by Chinese investors, even if through a European company, won't be easily accepted by U.S. authorities due to President Trump's current "war" with China.

Nevertheless, if CTG can guarantee that these hurdles can be surpassed and steps up their initially rejected offer, Naturgy might be forced to either increase the premium offered (thus increasing EDP's power in the joint firm) or a more symbolic gesture, like allocating the Chairman position to a EDP representative, which was actually mentioned before when there were rumours of a possible deal between the two. (Larguesa, 2018)

All in all, I believe that Naturgy poses as a great infrastructural and strategic fit for EDP, offering similar investment strength as the Chinese, but without the increased regulatory hurdles and political conundrums.

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Annex 1 – E.ON/RWE Deal

Firms and Background

RWE

A 120-year-old German company, RWE is a top player in Europe, being present in all "stages of the energy value chain", according to *RWE 2017 annual report*. It is present in energy production (lignite, coal, nuclear gas and renewables), energy trading, grid management, electricity and gas supply and new energy solutions.

Alongside various energy companies that are part of the group, Innogy SE stands out, not only for its size but also mainly due to the firm's recent history. In 2016, RWE aggregated all network, renewable and supply businesses in its newly made subsidiary, leaving the main group with "conventional electricity generation and energy trading." Innogy will play a central role in this deal, as explained ahead. (*"Live Wire"* chapter)

E.ON

Another leading firm in Europe's energy landscape, E.ON is also based in Germany, doing its business in grid management, energy production, energy supply ("power, gas and heat" and renewables) and personalized energy solutions.

Similarly to RWE, in 2016, E.ON decided to divide its business in two sections: the main group, that kept all retail, network, renewable and nuclear assets, and a new subsidiary, Uniper, that received the fossil fuel assets from the group. E.ON's stake in Uniper amounts to 46,65%, having spun off the remainder to shareholders. Earlier this year, Fortum, a finnish utility, tried to acquire Uniper, but was only offered 0,47% of the total share amount. However, and as part of the RWE/E.ON deal, Fortum will be able to acquire E.ON's stake in Uniper. Even though it doesn't guarantee complete control over Uniper, Fortum's leadership is already settings plans for negotiations with Uniper's top management team to discuss strategic views for the company. (Reuters, 2018)

Both E.ON and RWE executed these moves to allow the sectors with most potential to thrive, while also preparing for Germany's nuclear phase-out, as Utility Week writer Tom Grimwood explains.

Annex 2 – E.ON/RWE Deal (2)

"Both (RWE and E.ON) have faced the massive challenge of repositioning their businesses in response to Germany's seismic shift away from nuclear and fossil fuel generation towards renewables – known across the world as the "Energiewende" – as well as similar moves elsewhere in Europe. Both reacted by splitting themselves apart, creating two new companies in the process" – **Tom Grimwood in an *Utility Week* article, March 2018**

"Live Wire"

Codenamed *"Live Wire"*, this deal between the German utilities is a rather complex one.

The complete deal takes place between January 1st 2018 and the 4th quarter of 2019, and it is divided in two transaction steps, according to RWE's general assembly.

1st Step

Firstly, E.ON already sent a bid document to the German market regulator BaFin (Federal Financial Supervisory Authority), where it states a bid for Innogy's free shareholders. The clearance by the authority is expected to arrive at the end of the 2nd quarter of 2018. Following this clearance, "E.ON and RWE will need antitrust approvals at national and European levels", which according to RWE, will be applied "as soon as possible".

If all applications pass, expectedly around mid-2019, the first part of the transaction can take place. E.ON will receive 76,8% of RWE's Innogy, while 16,7% of E.ON's shares go to RWE. The 2018 and 2019 dividends of Innogy will still be due to RWE, but E.ON will be compensated in €1.5 billion.

2nd Step

As soon as the share transfer takes place, E.ON will legally integrate Innogy and transfer all renewable assets, both E.ON's and Innogy's, to RWE, along with "the gas storage facilities and the 37,9% stake in Kelag", according to RWE. (Kelag is a renewable energy company with electricity, gas and heat operations in Austria)

In addition, "irrespective of the timing of the legal implementation, we (RWE) are entitled to the profits of the transferred assets from 1 January 2018 onwards."

Annex 3 – E.ON/RWE Deal (3)

In total, and according to the Financial Times, this deal amounts to €60 billion, with €43 billion referring to the takeover of Innogy by E.ON and €17 billion in E.ON assets given to RWE. There won't be a lot of cash being tranfered, since the 16,7% stake in the rival can cover it, as E.ON will "only" spend €5 billion to acquire the minority stake in Innogy and will still receive €1,5 billion from RWE.

Even though, as mentioned before, the regulators' acceptance of the deal is still in order, "bankers working on the transaction expect few antitrust hurdles. As one puts it: "The bulk of the deal affects regulated assets, where the consumer is protected by regulatory authorities"." (Financial Times, 2018)

Deal Rationale

"This strategic alliance of businesses will create two highly focused companies that will shape a better future for Europe's energy landscape" – **Johannes Teyssen, E.ON chief executive in an interview for Utility Week, March 2018**

Looking back at the main rationales for energy deals mentioned before, three clearly pop out when reviewing the deal being discussed: the nuclear phase-out issue, the sector convergence and the focus on the known and profitable.

Having to deal with the nuclear energy situation in Germany, both firms decided to "double-down" on their 2016 moves and incur in an asset swap to further specialize in what they know best, being energy generation for RWE or Networks and Retail for E.ON.

By letting go of Innogy SE and receiving both E.ON's and Innogy's renewable assets, as well as a 16,67% stake in E.ON, RWE gets exposure to the retail and grid sector to diversify its risk, while also creating a sizeable renewable asset portfolio, that, according to Bloomberg, "can be scaled up in solar and wind".

"The asset swap will give RWE the opportunity to diversify its exposure from its fossil-fuel generation with a decent scale renewable division. Over a period of time, RWE should be able to replace its cash flows from conventional generation with renewables" – **Deepa Venkateswaran, analyst at Bernstein in an interview to the Financial Times, March 2018**

Annex 4 – E.ON/RWE Deal (4)

E.ON, on the other hand, will completely lose its renewable division, focusing solely on its newly enhanced network and retail businesses, where they will be able to consolidate and strengthen their grip on the market, while also benefiting from economies of scale to "generate decent cost savings". (Bloomberg, 2018)

Furthermore, the sale of the remaining stake in Uniper marks the end of E.ON's exposure to fossil fuel.

Finally, Ms. Venkateswaran forecasts synergies for E.ON in the amount of €500 millions.

Annex 5 – EDP's Income Statement

(in thousands of euros)

Year	2012		2013			2014			2015			2016			2017		
	Value	% Revenues	Value	% Revenues	% Change	Value	% Revenues	% Change	Value	% Revenues	% Change	Value	% Revenues	% Change	Value	% Revenues	% Change
Revenues	16.339.854	**100,0%**	16.103.190	**100,0%**	**-1,45%**	16.293.883	**100,0%**	**1,18%**	15.516.799	**100,0%**	**-4,77%**	14.595.164	**100,0%**	**-5,94%**	15.745.987	**100,0%**	**7,88%**
Electricity and Network Access	14.404.399	**88,2%**	14.253.446	**88,5%**	**-1,05%**	14.172.119	**87,0%**	**-0,57%**	13.731.633	**88,5%**	**-3,11%**	12.992.189	**89,0%**	**-5,38%**	14.328.626	**91,0%**	**10,29%**
Gas and Network Access	1.771.137	**10,8%**	1.660.121	**10,3%**	**-6,27%**	1.604.825	**9,8%**	**-3,33%**	1.302.037	**8,4%**	**-18,87%**	992.883	**6,8%**	**-23,74%**	831.090	**5,3%**	**-16,30%**
Others	537.379	**3,7%**	613.728	**3,8%**	**2,63%**	516.939	**3,2%**	**-15,77%**	483.129	**3,1%**	**-6,54%**	610.092	**4,2%**	**26,28%**	586.271	**3,7%**	**-3,90%**
Sales of CO2 Licenses	17.313	**0,1%**	26.419	**0,2%**	**52,60%**	14	**0,0%**	**-99,95%**	7.887	**0,1%**	**56235,71%**	-			-		
Revenue from Assets Assigned to Concessions	433.661	**2,7%**	424.105	**2,6%**	**-2,20%**	413.233	**2,5%**	**-2,56%**	372.953	**2,4%**	**-9,75%**	398.059	**2,7%**	**6,73%**	422.801	**2,7%**	**6,22%**
Other	147.005	**0,9%**	163.204	**1,0%**	**11,02%**	103.692	**0,6%**	**-36,46%**	102.289	**0,7%**	**-1,35%**	212.033	**1,5%**	**107,29%**	163.470	**1,0%**	**-22,90%**
Cost of Revenues	-10.911.687	**66,8%**	-10.552.160	**65,5%**	**-3,29%**	-10.926.754	**67,1%**	**3,55%**	-10.062.093	**64,8%**	**-7,91%**	-8.857.132	**60,7%**	**-11,98%**	-10.354.909	**65,8%**	**16,91%**
Cost of Electricity	-8.392.199	**51,4%**	-8.235.491	**51,1%**	**-1,87%**	-8.480.403	**52,0%**	**2,97%**	-7.634.223	**49,2%**	**-9,98%**	-6.825.649	**46,8%**	**-10,59%**	-7.990.062	**50,7%**	**17,06%**
Cost of Gas	-1.375.841	**8,4%**	-1.264.745	**7,9%**	**-8,07%**	-1.158.253	**7,1%**	**-8,42%**	-933.216	**6,0%**	**-19,43%**	-811.493	**5,6%**	**-13,04%**	-885.523	**5,6%**	**9,12%**
Expenditure with Assets Assigned to Concessions	-433.661	**2,7%**	-424.105	**2,6%**	**-2,20%**	-413.233	**2,5%**	**-2,56%**	-372.953	**2,4%**	**-9,75%**	-398.059	**2,7%**	**6,73%**	-422.801	**2,7%**	**6,22%**
Raw Materials and Consumables	-1.143.647	**7,0%**	-1.051.924	**6,5%**	**-8,02%**	-874.865	**5,4%**	**-16,83%**	-1.121.701	**7,2%**	**28,21%**	-821.931	**5,6%**	**-26,72%**	-1.056.523	**6,7%**	**28,54%**
Fuel, Steam and Ashes	-497.340	**3,0%**	-483.178	**3,0%**	**-2,85%**	-399.568	**2,5%**	**-17,30%**	-567.021	**3,7%**	**41,91%**	-449.551	**3,1%**	**-20,72%**	-661.539	**4,2%**	**47,16%**
Gas	-493.792	**3,0%**	-325.663	**2,0%**	**-34,05%**	-279.267	**1,7%**	**-14,25%**	-286.966	**1,8%**	**2,76%**	-120.048	**0,8%**	**-58,17%**	-115.338	**0,7%**	**-3,92%**
Cost of consumables used	-16.552	**0,1%**	-17.152	**0,1%**	**3,62%**	-13.535	**0,1%**	**-21,09%**	-14.724	**0,1%**	**8,78%**	-			-		
CO2 Licenses	-48.394	**0,3%**	-135.146	**0,8%**	**179,26%**	-87.625	**0,5%**	**-35,16%**	-140.603	**0,9%**	**60,46%**	-95.312	**0,7%**	**-32,21%**	-108.137	**0,7%**	**13,46%**
Own Work Capitalised	87.808	**0,5%**	74.154	**0,5%**	**-15,55%**	84.907	**0,5%**	**14,50%**	77.474	**0,5%**	**-8,75%**	99.873	**0,7%**	**28,91%**	93.037	**0,6%**	**-6,84%**
Other	-175.377	**1,1%**	-164.939	**1,0%**	**-5,95%**	-179.777	**1,1%**	**9,00%**	-189.861	**1,2%**	**5,61%**	-256.893	**1,8%**	**35,31%**	-264.546	**1,7%**	**2,98%**
Gross Margin	5.428.167	**33,2%**	5.551.030	**34,5%**	**2,26%**	5.367.129	**32,9%**	**-3,31%**	5.454.706	**35,2%**	**1,63%**	5.738.032	**39,3%**	**5,19%**	5.391.078	**34,2%**	**-6,05%**
Personnel Costs and Employee Benefits	-671.536	**4,1%**	-638.516	**4,0%**	**-4,92%**	-555.438	**3,4%**	**-13,01%**	-652.979	**4,2%**	**17,56%**	-660.616	**4,5%**	**1,17%**	-680.833	**4,3%**	**3,06%**
Net Other Results	-1.128.173	**6,9%**	-1.295.546	**8,0%**	**14,84%**	-1.169.298	**7,2%**	**-9,74%**	-877.769	**5,7%**	**-24,93%**	-1.318.109	**9,0%**	**50,17%**	-720.296	**4,6%**	**-45,35%**
Other Income	389.967	**2,4%**	360.003	**2,2%**	**-7,68%**	402.278	**2,5%**	**11,74%**	848.783	**5,5%**	**110,93%**	427.314	**2,9%**	**-49,66%**	1.036.999	**6,6%**	**142,68%**
Supplies and Services	-928.287	**5,7%**	-934.903	**5,8%**	**0,71%**	-896.959	**5,5%**	**-4,06%**	-920.608	**5,9%**	**2,64%**	-947.874	**6,5%**	**2,96%**	-990.533	**6,3%**	**4,50%**
Other Expenses	-589.853	**3,6%**	-720.646	**4,5%**	**22,17%**	-674.617	**4,1%**	**-6,39%**	-805.944	**5,2%**	**19,47%**	-797.549	**5,5%**	**-1,04%**	-766.762	**4,9%**	**-3,86%**
EBITDA	3.628.458	**22,2%**	3.616.968	**22,5%**	**-0,32%**	3.642.393	**22,4%**	**0,70%**	3.923.958	**25,3%**	**7,73%**	3.759.307	**25,8%**	**-4,20%**	3.989.949	**25,3%**	**6,14%**
Depreciation	-1.485.043	**9,1%**	-1.532.124	**9,5%**	**3,17%**	-1.449.333	**8,9%**	**-5,40%**	-1.480.579	**9,5%**	**2,16%**	-1.495.228	**10,2%**	**0,99%**	-1.672.032	**10,6%**	**11,82%**
Provisions	-16.055	**0,1%**	-54.877	**0,3%**	**241,81%**	-52.095	**0,3%**	**-5,07%**	-16.056	**0,1%**	**-69,18%**	15.076	**0,1%**	**-6,10%**	3.627	**0,0%**	**-75,94%**
Amortisation and Impairment	-1.493.889	**9,1%**	-1.503.616	**9,3%**	**0,65%**	-1.397.238	**8,6%**	**-7,07%**	-1.464.523	**9,4%**	**4,82%**	-1.510.304	**10,3%**	**3,13%**	-1.675.659	**10,6%**	**10,95%**
Compensation of amortisation and depreciation	24.901	**0,2%**	26.369	**0,2%**	**5,90%**	-			-			-			-		
EBIT	2.143.415	**13,1%**	2.084.844	**12,9%**	**-2,73%**	2.193.060	**13,5%**	**5,19%**	2.443.379	**15,7%**	**11,41%**	2.264.079	**15,5%**	**-7,34%**	2.317.917	**14,7%**	**2,38%**
Financial Income	731.658	**4,5%**	904.910	**5,6%**	**23,68%**	960.845	**5,9%**	**6,18%**	936.221	**6,0%**	**-2,56%**	899.323	**6,2%**	**-3,94%**	439.636	**2,8%**	**-51,11%**
Financial Expenses	-1.435.924	**8,8%**	-1.642.350	**10,2%**	**14,38%**	-1.532.742	**9,4%**	**-6,67%**	-1.768.736	**11,4%**	**15,40%**	-1.790.803	**12,3%**	**1,25%**	-1.248.089	**7,9%**	**-30,31%**
Share of Net Profit in Joint Ventures and Associates	23.777	**0,1%**	34.132	**0,2%**	**43,55%**	15.094	**0,1%**	**-55,78%**	-23.899	**0,2%**	**58,33%**	-22.062	**0,2%**	**-7,69%**	11.521	**0,1%**	**-47,78%**
Gains/(Losses) on the sale of financial assets	2.766	**0,0%**	-16	**0,0%**	**-99,42%**	-			-			-			-		
EBT	1.462.926	**9,0%**	1.381.520	**8,6%**	**-5,56%**	1.636.257	**10,0%**	**18,44%**	1.586.965	**10,2%**	**-3,01%**	1.350.537	**9,3%**	**-14,90%**	1.520.985	**9,7%**	**12,62%**
Income Tax Expense	-282.537	**1,7%**	-187.997	**1,2%**	**-33,46%**	-310.952	**1,9%**	**65,40%**	-277.769	**1,8%**	**-10,67%**	-88.796	**0,6%**	**-68,03%**	-10.304	**0,1%**	**-88,40%**
Extraordinary Contribution to the Energy Sector						-61.495	**0,4%**		-62.054	**0,4%**	**0,91%**	-61.630	**0,4%**	**-0,68%**	-69.246	**0,4%**	**12,36%**
Net Profit for the Period	1.180.389	**7,2%**	1.193.523	**7,4%**	**1,11%**	1.263.810	**7,8%**	**5,89%**	1.247.142	**8,0%**	**-1,32%**	1.200.111	**8,2%**	**-3,77%**	1.441.435	**9,2%**	**20,11%**
Attributable to:																	
Equity Holders of EDP	1.012.483		1.005.091			1.040.448			912.703			960.561			1.113.169		
Non-controlling Interests	169.672		188.432			223.362			334.439			239.550			328.266		
Net Profit for the Period	1.180.389		1.193.523			1.263.810			1.247.142			1.200.111			1.441.435		

Annex 6 – EDP's Balance Sheet (Assets)

Annual Standardised in Millions of Euros

Year	2012		2013			2014			2015			2016			2017		
Assets (€ Millions)	Value	% Assets	Value	% Assets	% Change	Value	% Assets	% Change	Value	% Assets	% Change	Value	% Assets	% Change	Value	% Assets	% Change
Cash and Short Term Investments	5.693		4.422			3.573			2.391			2.067			3.227		
Cash	1.538		--			2.376			1.467			985			1.946		
Cash & Equivalents	2.896		4.172			1.196			923			1.082			1.279		
Short Term Investments	1.259		250			1			1			0			2		
Accounts Receivable - Trade, Net	5.010		4.504			4.892			4.521			4.348			4.347		
Accounts Receivable - Trade, Gross	5.837		--			5.832			5.411			5.024			4.997		
Provision for Doubtful Accounts	-827		--			-940			-890			-676			-650		
Total Receivables, Net	5.106		5.138			6.060			5.465			5.271			5.270		
Notes Receivable - Short Term	--		--			470			362			388			395		
Receivables - Other	96		634			698			582			535			528		
Total Inventory	897		783			1.077			826			758			720		
Inventories - Other	72		--			110			111			196			145		
Fuel - Inventory	825		--			967			715			562			575		
Prepaid Expenses	--		--			87			83			70			81		
Other Current Assets, Total	0		--			24			962			47			1.785		
Discountinued Operations - Current Asse	0		--			--			955			0			1.682		
Other Current Assets	--		--			24			7			47			103		
Total Current Assets	11.696		10.343			10.821			9.727			8.213			11.083		
Property/Plant/Equipment, Total - Gross	30.822		--			34.363			34.889			35.827			35.733		
Land/Improvements - Gross	694		--			964			817			768			644		
Machinery/Equipment - Gross	16.561		--			22.970			23.371			24.756			24.592		
Construction in Progress - Gross	885		--			883			891			992			1.105		
Other Property/Plant/Equipment - Gross	12.682		--			9.546			9.810			9.311			9.392		
Property/Plant/Equipment, Total - Net	22.308		23.836			24.267			23.693			23.627			22.654		
Accumulated Depreciation, Total	-8.514		--			-10.097			-11.196			-12.100			-13.079		
Goodwill, Net	5.837		4.495			4.959			4.962			5.036			4.760		
Goodwill - Gross	--		--			4.959			4.962			5.036			4.760		
Accumulated Goodwill Amortization	--		--			0			0			0			0		
Intangibles, Net	4.927		--			5.824			5.563			5.884			5.161		
Intangibles - Gross	7.301		--			8.321			8.279			9.048			7.952		
Accumulated Intangible Amortization	-2.374		--			-2.497			-2.716			-3.164			-2.791		
Utility Plant, Net	--		--			--			--			--			--		
Total Utility Plant, Net	--		--			--			--			--			--		
Long Term Investments	1.083	2,31%	3.811	8,76%	251,89%	2.181	4,33%	-42,77%	1.874	3,89%	-14,08%	2.196	4,66%	17,18%	2.060	4,35%	-6,19%
LT Investment - Affiliate Companies	100	0,21%	2.393	5,50%	2293,00%	2.034	4,04%	-15,00%	1.730	3,59%	-14,95%	1.575	3,34%	-8,96%	1.500	3,17%	-4,76%
LT Investments - Other	983	2,10%	1.418	3,26%	44,25%	147	0,29%	-89,63%	144	0,30%	-2,04%	621	1,32%	331,25%	560	1,18%	-9,82%
Note Receivable - Long Term	--		--			1.112			1.035			1.175			740		
Other Long Term Assets, Total	1.036		1.026			1.164			1.278			983			864		
Defered Income Tax - Long Term Asset	1.036		1.026			1.134			1.070			872			849		
Other Long Term Assets	--		--			30	0,06%		208			111			15		
Total Assets	46.887	100,00%	43.511	100,00%	-7,20%	50.328	100,00%	15,67%	48.132	100,00%	-4,36%	47.114	100,00%	-2,12%	47.322	100,00%	0,44%

Annex 7 – EDP's Balance Sheet (Equity and Liabilities)

Year	2012		2013		2014		2015		2016		2017	
Liabilities & Equity (Millions)	Value	% Assets	Value	% Change	Value	% Assets	% Change	Value	% Assets	% Change	Value	% Assets	% Change
Accounts Payable	2.731		1.239		1.124			979			1.021			948		
Payable/Accrued	--		--		--			--			--			--		
Accrued Expenses	494		1.551		1.818			1.890			2.052			2.044		
Notes Payable/Short Term Debt	0		0		0			0			0			0		
Current Port. of LT Debt/Capital Leases	3.436		3.802		3.520			3.377			2.389			1.314		
Other Current liabilities, Total	1.431		2.394		1.500			1.849			2.103			1.955		
Dividends Payable	56		36		68			63			68			42		
Customer Advances	--		56		46			46			34			83		
Income Taxes Payable	468		574		416			517			953			563		
Other Payables	739		1.021		866			1.006			884			1.027		
Discontinued Operations - Curr Liability	39		578		11			58			76			115		
Other Current Liabilities	128		128		93			158			88			124		
Total Current Liabilities	8.152		8.386		7.962			8.096			7.565			6.260		
Total Long Term Debt	16.716		15.603		16.515			15.717			15.990			16.060		
Long Term Debt	16.716		15.603		16.515			15.687			15.961			15.981		
Capital Lease Obligations	--		--		--			29			29			79		
Total Debt	20.212		19.405		20.035			19.094			18.379			17.374		
Deferred Income Tax	852		759		805			795			722			467		
Deferred Income Tax - LT Liability	852		759		805			795			722			467		
Minority Interest	3.239		3.082		3.288			3.452			4.330			3.934		
Other Liabilities, Total	5.477		5.189		5.621			5.808			6.070			5.808		
Reserves	340		354		464			481			638			727		
Pension Benefits - Underfunded	1.751		1.751		1.683			1.648			1.410			1.198		
Other Long Term Liabilities	3.386		3.084		3.474			3.679			4.022			3.883		
Total Liabilities	34.435		33.620		34.192			33.867			34.677			32.523		
Total Loans	27.120		26.988		27.156			26.751			26.552			25.137		
Shareholders Equity (Millions)																
Redeemable Preferred Stock, Total	--		--		--			--			--			--		
Preferred Stock - Non Redeemable, Net	--		--		--			--			--			--		
Common Stock, Total	3.657		3.657		3.657			3.657			3.657			3.657		
Common Stock	3.657		3.657		3.657			3.657			3.657			3.657		
Additional Paid-In Capital	504		504		504			504			504			504		
Retained Earnings (Accumulated Deficit)	4.136		4.371		4.591			4.572			5.309			5.855		
Treasury Stock - Common	-104		-86		-70			-63			-64			-63		
ESOP Debt Guarantee	--		--		--			--			--			--		
Unrealized Gain (Loss)	--		--		--			--			--			31		
Other Equity, Total	--		--		--			--			--			-438		
Total Equity	8.192		8.446		8.681			8.670			9.406			9.546		
Total Liabilities & Shareholders' Equity	42.628		42.066		42.873			42.537			44.084			42.075		

Annex 8 – Naturgy's Income Statement

(in thousands of euros)

Year	2012		2013			2014			2015			2016			2017		
	Value	% Revenues	Value	% Revenues	% Change	Value	% Revenues	% Change	Value	% Revenues	% Change	Value	% Revenues	% Change	Value	% Revenues	% Change
Revenues	24.904.000	100,0%	24.969.000	100,0%	0,26%	24.742.000	100,0%	-0,91%	26.015.000	100,0%	5,15%	23.184.000	100,0%	-10,88%	23.306.000	100,0%	0,53%
Electricity and Network Access	9.041.000	36,3%	8.519.000	34,1%	-5,77%	8.671.000	35,0%	1,78%	10.575.000	40,6%	21,96%	10.106.000	43,6%	-4,43%	8.833.000	37,9%	-12,60%
Gas and Network Access	14.188.000	57,0%	14.265.000	57,1%	0,54%	14.709.000	59,4%	3,11%	13.904.000	53,4%	-5,47%	11.531.000	49,7%	-17,07%	12.944.000	55,5%	12,25%
Other Sales	1.675.000	6,7%	1.538.000	6,2%	-8,18%	1.362.000	5,5%	-11,44%	1.536.000	5,9%	12,78%	1.547.000	6,7%	0,72%	1.529.000	6,6%	-1,16%
Rental of Facilities, Maintenance and Other Services	1.501.000	6,0%	1.407.000	5,6%	-6,26%	1.266.000	5,1%	-10,02%	1.445.000	5,6%	14,14%	1.472.000	6,3%	1,87%	1.431.000	6,1%	-2,79%
Other Sales	174.000	0,7%	131.000	0,5%	-24,71%	96.000	0,4%	-26,72%	91.000	0,3%	-5,21%	75.000	0,3%	-17,58%	98.000	0,4%	30,67%
Cost of Revenues	-17.309.000	69,5%	-17.228.000	69,0%	-0,47%	-17.368.000	70,2%	0,81%	-17.997.000	69,2%	3,62%	-15.420.000	66,5%	-14,32%	-16.679.000	71,6%	8,16%
Energy Purchases	-14.801.000	59,4%	-14.576.000	58,4%	-1,52%	-14.912.000	60,3%	2,31%	-15.075.000	57,9%	1,09%	-12.782.000	55,1%	-15,21%	-14.279.000	61,3%	11,71%
Access to Transmission Networks	-1.845.000	7,4%	-1.809.000	7,2%	-1,95%	-2.033.000	8,2%	12,38%	-2.176.000	8,4%	7,03%	-2.152.000	9,3%	-1,10%	-1.798.000	7,7%	-16,45%
Other Purchases and Stock Variation	-663.000	2,7%	-507.000	2,0%	-23,53%	-423.000	1,7%	-16,57%	-746.000	2,9%	76,36%	-486.000	2,1%	-34,85%	-602.000	2,6%	23,87%
Gross Margin	7.595.000	30,5%	7.741.000	31,0%	1,92%	7.374.000	29,8%	-4,74%	8.018.000	30,8%	8,73%	7.764.000	33,5%	-3,17%	6.627.000	28,4%	-14,64%
Personnel Costs	-871.000	3,5%	-861.000	3,4%	-1,15%	-832.000	3,4%	-3,37%	-973.000	3,7%	16,95%	-1.013.000	4,4%	4,11%	-1.031.000	4,4%	1,78%
Net Other Results	-1.879.000	7,5%	-2.021.000	8,1%	7,56%	-1.991.000	8,0%	-1,48%	-2.039.000	7,8%	2,41%	-2.108.000	9,1%	3,38%	-1.681.000	7,2%	-20,26%
Other Operating Income	250.000	1,0%	213.000	0,9%	-14,80%	255.000	1,0%	19,72%	257.000	1,0%	0,78%	265.000	1,1%	3,11%	238.000	1,0%	-10,19%
Other Operating Expenses	-2.163.000	8,7%	-2.274.000	9,1%	5,13%	-2.291.000	9,3%	0,75%	-2.360.000	9,1%	3,01%	-2.467.000	10,6%	4,53%	-1.984.000	8,5%	-19,58%
Gain/(Loss) on Disposals of Fixed Assets						-			-			51.000	0,2%		23.000	0,1%	-54,90%
Release of Fixed Assets Grants to Income and Others	34.000	0,1%	40.000	0,2%	17,65%	45.000	0,2%	12,50%	64.000	0,2%	42,22%	43.000	0,2%	-32,81%	42.000	0,2%	-2,33%
EBITDA	4.845.000	19,5%	4.859.000	19,5%	0,29%	4.551.000	18,4%	-6,34%	5.006.000	19,2%	10,00%	4.643.000	20,0%	-7,25%	3.915.000	16,8%	-15,68%
Depreciation	-1.778.000	7,1%	-1.896.000	7,6%	6,64%	-1.361.000	5,5%	-28,22%	-1.745.000	6,7%	28,21%	-1.637.000	7,1%	-6,19%	-1.803.000	7,7%	10,14%
Depreciation, Amortisation and Impairment Expenses	-1.798.000	7,2%	-1.907.000	7,6%	6,06%	-1.619.000	6,5%	-15,10%	-1.750.000	6,7%	8,09%	-1.759.000	7,6%	0,51%	-1.648.000	7,1%	-6,31%
Impairment of Credit Losses			-			-			-			-			-155.000	0,7%	
Other Results	20.000	0,1%	11.000	0,04%	-45,00%	258.000	1,0%	2245,45%	5.000	0,0%	-98,06%	122.000	0,5%	2340,00%	-		
EBIT	3.067.000	12,3%	2.963.000	11,9%	-3,39%	3.190.000	12,9%	7,66%	3.261.000	12,5%	2,23%	3.006.000	13,0%	-7,82%	2.112.000	9,1%	-29,74%
Financial Income	178.000	0,7%	212.000	0,8%	19,10%	137.000	0,6%	-35,38%	140.000	0,5%	2,19%	131.000	0,6%	-6,43%	111.000	0,5%	-15,27%
Financial Expenses	-1.060.000	4,3%	-1.048.000	4,2%	-1,13%	-922.000	3,7%	-12,02%	-1.032.000	4,0%	11,93%	-954.000	4,1%	-7,56%	-808.000	3,5%	-15,30%
Variations in Fair Value of Financial Instruments	15.000	0,1%	-2.000	0,0%	-86,67%	-2.000	0,0%	0,00%	-1.000	0,0%	-50,00%	-2.000	0,0%	100,00%	-2.000	0,0%	0,00%
Profit/(Loss) of Entities Recorded by Equity Method	10.000	0,0%	7.000	0,0%	-30,00%	-474.000	1,9%	6671,43%	-4.000	0,0%	-99,16%	-98.000	0,4%	2350,00%	14.000	0,1%	-85,71%
Net Exchange Gains/(Losses)	-7.000	0,0%	-			-14.000	0,1%		-1.000	0,0%	-92,86%			-100,00%			
EBT	2.203.000	8,8%	2.132.000	8,5%	-3,22%	1.915.000	7,7%	-10,18%	2.363.000	9,1%	23,39%	2.083.000	9,0%	-11,85%	1.427.000	6,1%	-31,49%
Corporate Income Tax	-546.000	2,2%	-468.000	1,9%	-14,29%	-257.000	1,0%	-45,09%	-573.000	2,2%	122,96%	-416.000	1,8%	-27,40%	-190.000	0,8%	-54,33%
Net Profit	1.657.000	6,7%	1.664.000	6,7%	0,42%	1.658.000	6,7%	-0,36%	1.790.000	6,9%	7,96%	1.667.000	7,2%	-6,87%	1.237.000	5,3%	-25,79%
Profit for the Year from Discontinued Operations	0	0,0%	0			0			34.000	0,1%		44.000	0,2%	29,41%	460.000	2,0%	945,45%
Consolidated Profit for the Year	1.657.000	6,7%	1.664.000	6,7%	0,42%	1.658.000	6,7%	-0,36%	1.824.000	7,0%	10,01%	1.711.000	7,4%	-6,20%	1.697.000	7,3%	-0,82%
Attributable to:																	
The Parent Company	1.441.000		1.445.000			1.462.000			1.502.000			1.347.000			1.360.000		
From Continuing Operations	1.441.000		1.445.000			1.462.000			1.491.000			1.325.000			932.000		
From Discontinued Operations	0		0			0			11.000			22.000			428.000		
Non-controlling Interests	216.000		219.000			196.000			322.000			364.000			337.000		
Consolidated Profit for the Year	1.657.000		1.664.000			1.658.000			1.824.000			1.711.000			1.697.000		

Annex 9 – Naturgy's Balance Sheet (Assets)

Annual Standardised in Millions of Euros

Year	2012		2013			2014			2015			2016			2017		
Assets (€ Millions)	Value	% Assets	Value	% Assets	% Change	Value	% Assets	% Change	Value	% Assets	% Change	Value	% Assets	% Change	Value	% Assets	% Change
Cash and Short Term Investments	5.693		4.422			3.573			2.391			2.067			3.227		
Cash	1.538		--			2.376			1.467			985			1.946		
Cash & Equivalents	2.896		4.172			1.196			923			1.082			1.279		
Short Term Investments	1.259		250			1			1			0			2		
Accounts Receivable - Trade, Net	5.010		4.504			4.892			4.521			4.348			4.347		
Accounts Receivable - Trade, Gross	5.837		--			5.832			5.411			5.024			4.997		
Provision for Doubtful Accounts	-827		--			-940			-890			-676			-650		
Total Receivables, Net	5.106		5.138			6.060			5.465			5.271			5.270		
Notes Receivable - Short Term	--		--			470			362			388			395		
Receivables - Other	96		634			698			582			535			528		
Total Inventory	897		783			1.077			826			758			720		
Inventories - Other	72		--			110			111			196			145		
Fuel - Inventory	825		--			967			715			562			575		
Prepaid Expenses	--		--			87			83			70			81		
Other Current Assets, Total	0		--			24			962			47			1.785		
Discountinued Operations - Current Asse	0		--			--			955			0			1.682		
Other Current Assets	--		--			24			7			47			103		
Total Current Assets	11.696		10.343			10.821			9.727			8.213			11.083		
Property/Plant/Equipment, Total - Gross	30.822		--			34.363			34.889			35.827			35.733		
Land/Improvements - Gross	694		--			964			817			768			644		
Machinery/Equipment - Gross	16.561		--			22.970			23.371			24.756			24.592		
Construction in Progress - Gross	885		--			883			891			992			1.105		
Other Property/Plant/Equipment - Gross	12.682		--			9.546			9.810			9.311			9.392		
Property/Plant/Equipment, Total - Net	22.308		23.836			24.267			23.693			23.627			22.654		
Accumulated Depreciation, Total	-8.514		--			-10.097			-11.196			-12.100			-13.079		
Goodwill, Net	5.837		4.495			4.959			4.962			5.036			4.760		
Goodwill - Gross	--		--			4.959			4.962			5.036			4.760		
Accumulated Goodwill Amortization	--		--			0			0			0			0		
Intangibles, Net	4.927		--			5.824			5.563			5.884			5.161		
Intangibles - Gross	7.301		--			8.321			8.279			9.048			7.952		
Accumulated Intangible Amortization	-2.374		--			-2.497			-2.716			-3.164			-2.791		
Utility Plant, Net	--		--			--			--			--			--		
Total Utility Plant, Net	--		--			--			--			--			--		
Long Term Investments	1.083	2,31%	3.811	8,76%	251,89%	2.181	4,33%	-42,77%	1.874	3,89%	-14,08%	2.196	4,66%	17,18%	2.060	4,35%	-6,19%
LT Investment - Affiliate Companies	100	0,21%	2.393	5,50%	2293,00%	2.034	4,04%	-15,00%	1.730	3,59%	-14,95%	1.575	3,34%	-8,96%	1.500	3,17%	-4,76%
LT Investments - Other	983	2,10%	1.418	3,26%	44,25%	147	0,29%	-89,63%	144	0,30%	-2,04%	621	1,32%	331,25%	560	1,18%	-9,82%
Note Receivable - Long Term	--		--			1.112			1.035			1.175			740		
Other Long Term Assets, Total	1.036		1.026			1.164			1.278			983			864		
Defered Income Tax - Long Term Asset	1.036		1.026			1.134			1.070			872			849		
Other Long Term Assets	--		--			30	0,06%		208			111			15		
Total Assets	46.887	100,00%	43.511	100,00%	-7,20%	50.328	100,00%	15,67%	48.132	100,00%	-4,36%	47.114	100,00%	-2,12%	47.322	100,00%	0,44%

Annex 10 – Naturgy's Balance Sheet (Equity and Liabilities)

Year	2012		2013			2014			2015			2016			2017		
Liabilities & Equity (€ Millions)	Value	% Assets	Value	% Assets	% Change	Value	% Assets	% Change	Value	% Assets	% Change	Value	% Assets	% Change	Value	% Assets	% Change
Accounts Payable	3.936		3.472			3.825			3.096			3.274			2.885		
Payable/Accrued	--		--			--			--			--			--		
Accrued Expenses	151		--			445			328			270			361		
Notes Payable/Short Term Debt	0		0			0			0			0			0		
Current Port. of LT Debt/Capital Leases	2.440		3.351			2.827			2.645			2.684			2.636		
Other Current liabilities, Total	1.370		1.534			1.326			2.064			948			1.726		
Dividends Payable	411		--			419			421			37			45		
Income Taxes Payable	98		29			60			135			106			147		
Other Payables	526		642			599			499			548			611		
Discontinued Operations - Curr Liability	--		--			--			585			0			621		
Other Current Liabilities	335		863			248			424			257			302		
Total Current Liabilities	7.897		8.357			8.423			8.133			7.176			7.608		
Total Long Term Debt	18.597		15.091			18.254			16.070			15.906			16.707		
Long Term Debt	18.046		15.091			17.683			15.488			14.941			15.868		
Capital Lease Obligations	551		--			571			582			965			839		
Total Debt	21.037		18.442			21.081			18.715			18.590			19.343		
Deferred Income Tax	2.688		2.000			2.798			2.543			2.509			2.312		
Deferred Income Tax - LT Liability	2.688		2.000			2.798			2.543			2.509			2.312		
Minority Interest	1.618		1.523			3.879			4.151			3.780			3.571		
Other Liabilities, Total	2.826		3.096			2.833			2.868			2.518			2.390		
Reserves	876		1.467			820			829			759			664		
Pension Benefits - Underfunded	789		--			740			659			489			465		
Other Long Term Liabilities	1.161		1.629			1.273			1.380			1.270			1.261		
Total Liabilities	33.626		30.067			36.187			33.765			31.889			32.588		
Total Loans	25.233		23.072			25.240			23.647			22.056			23.459		
Shareholders Equity (€ Millions)																	
Redeemable Preferred Stock, Total	--		--			--			--			--			--		
Preferred Stock - Non Redeemable, Net	--		--			--			--			--			--		
Common Stock, Total	1.001		1.001			1.001			1.001			1.001			1.001		
Common Stock	1.001		1.001			1.001			1.001			1.001			1.001		
Additional Paid-In Capital	3.808		3.808			3.808			3.808			3.808			3.808		
Retained Earnings (Accumulated Deficit)	8.843		9.376			9.928			10.579			10.896			11.264		
Treasury Stock - Common	--		--			--			--			-21			-9		
ESOP Debt Guarantee	--		--			--			--			--			--		
Unrealized Gain (Loss)	--		--			--			4			7			--		
Other Equity, Total	-391		-741			-596			-1.025			-466			-1.330		
Translation Adjustment	19		-348			-200			-498			-183			-899		
Other Equity	-391		-394			-397			-408			-330			-431		
Other Comprehensive Income	-19		1			1			-119			47			--		
Total Equity	13.261		13.444			14.141			14.367			15.225			14.734		
Total Liabilities & Shareholders' Equity	46.887		43.511			50.328			48.132			47.114			47.322		

Annex 11 – EDP Growth Rates

	Mean Weight	Average Growth	STDEV Weight	STDEV Growth
Electricity Sales	88,8%	0,90%	1,45%	6,04%
Gas Sales	8,1%	-0,50%	2,10%	8,62%
Other Sales	3,6%	0,50%	0,45%	15,83%
Cost of Sales	64,8%	1,51%	2,42%	11,34%
Personnel Costs	4,1%	1,40%	0,43%	11,29%
Other Results	6,9%	1,40%	1,79%	36,96%
Depreciations	9,8%	1,40%	0,68%	6,17%

Annex 12 – Naturgy Growth Rates

	Mean Weight	Mean Growth	STDEV Weight	STDEV Growth
Electricity Sales	38,3%	0,50%	3,93%	13,20%
Gas Sales	55,1%	2,00%	3,70%	10,87%
Other Sales	6,2%	0,50%	0,48%	9,38%
Cost of Sales	69,3%	1,83%	1,86%	8,44%
Personnel Costs	3,9%	1,10%	0,50%	7,95%
Other Results	8,1%	1,10%	0,68%	10,87%
Depreciations	6,9%	1,50%	0,89%	8,44%

Annex 13 – Correlations EDP

	Total Revenues	Electricity Sales	Gas Sales	Other Sales	Cost of Sales	Personnel Costs	Other Results	Depreciations
2013	-1,45%	-1,05%	-6,27%	2,63%	-3,29%	-4,92%	14,84%	3,17%
2014	1,18%	-0,57%	-3,33%	-15,77%	3,55%	-13,01%	-9,74%	-5,40%
2015	-4,77%	-3,11%	-18,87%	-6,54%	-7,91%	17,56%	-24,93%	2,16%
2016	-5,94%	-5,38%	-23,74%	26,28%	-11,98%	1,17%	50,17%	0,99%
2017	7,88%	10,29%	-16,30%	-3,90%	16,91%	3,06%	-45,35%	11,82%
Correlation		**0,9667753**	**0,3435587**	**-0,5050633**	**0,9972402**	**-0,2908877**	**-0,7096803**	**0,5430826**

Annex 14 – Correlations Naturgy

	Total Revenues	Electricity Sales	Gas Sales	Other Sales	Cost of Sales	Personnel Costs	Other Results	Depreciations
2013	0,26%	-5,77%	0,54%	-8,18%	-0,47%	-1,15%	7,56%	6,64%
2014	-0,91%	1,78%	3,11%	-11,44%	0,81%	-3,37%	-1,48%	-28,22%
2015	5,15%	21,96%	-5,47%	12,78%	3,62%	16,95%	2,41%	28,21%
2016	-10,88%	-4,43%	-17,07%	0,72%	-14,32%	4,11%	3,38%	-6,19%
2017	0,53%	-12,60%	12,25%	-1,16%	8,16%	1,78%	-20,26%	10,14%
Correlation		**0,4899030**	**0,5987090**	**0,2576071**	**0,8806632**	**0,3604680**	**-0,1621083**	**0,5212600**

Annex 15 – EDP's Operations Weights by Region

CRP 2018				
	Total Revenue	**Weight**	**CRP**	**WCRP**
Portugal	7.518.101	49,18%	2,88%	1,42%
Spain	3.046.275	19,93%	2,19%	0,44%
Brazil	3.724.606	24,36%	3,46%	0,84%
U.S.	633.254	4,14%	0,00%	0,00%
Other	365.636	2,39%	1,61%	0,04%
Total	15.287.873	1	-	2,734%

Annex 16 – Naturgy's Operations Weights by Region

CRP 2018				
	Total Revenue	**Weight**	**CRP**	**WCRP**
Spain	10.921.793	46,49%	2,19%	1,02%
Rest of Europe	2.734.748	11,64%	1,13%	0,13%
Latin America	8.480.106	36,10%	3,04%	1,10%
Other	1.355.593	5,77%	3,50%	0,20%
Total	23.492.240	100,00%	-	2,448%

Annex 17 – Peers' Ratios

Companies	Country	EV	EV/Revenues	EV/EBITDA	P/E	EV/Total Assets	Net Debt/EBITDA	ROA	P/B
EDP*	Portugal	€34.881 mn	2,22x	8,74x	13,70x	0,83x	5,71x	6,24%	2,21x
GNF*	Spain	€43.089 mn	1,85x	11,01x	16,00x	0,74x	4,19x	3,00%	1,32x
Galp	Portugal	€15.508 mn	1,01x	6,20x	20,00x	1,25x	0,98x	10,30%	3,04x
REN	Portugal	€4.459 mn	5,96x	9,00x	15,50x	0,83x	5,33x	4,10%	1,20x
ENDESA	Spain	€25.132 mn	1,25x	7,60x	14,40x	0,81x	1,31x	6,10%	2,27x
Iberdrola	Spain	€80.219 mn	2,57x	8,20x	13,30x	0,72x	4,03x	1,90%	7,38x
RED	Spain	€14.179 mn	7,30x	9,30x	13,10x	1,30x	3,19x	8,30%	3,20x
EDF	France	€72.791 mn	1,05x	4,80x	17,90x	0,26x	2,15x	1,20%	0,82x
Engie	France	€63.677 mn	0,98x	6,00x	14,00x	0,42x	2,61x	1,00%	3,82x
Direct Energie	France	€2.457 mn	1,25x	12,60x	21,90x	1,03x	1,25x	4,50%	4,89x
A2A	Italy	€8.551 mn	1,48x	6,90x	13,50x	0,86x	2,80x	5,70%	1,79x
ENEL	Italy	€111.354 mn	1,53x	5,60x	12,50x	0,72x	2,84x	4,60%	1,55x
HERA Group	Italy	€7.396 mn	1,32x	7,10x	17,00x	0,84x	3,11x	4,20%	1,77x
E.ON	Germany	€32.625 mn	0,86x	6,80x	13,20x	0,58x	1,70x	7,70%	5,02x
RWE	Germany	€23.982 mn	0,57x	6,40x	12,90x	0,35x	0,94x	4,20%	1,82x
MVV Energie	Germany	€2.699 mn	0,67x	6,30x	14,70x	0,57x	2,41x	4,20%	1,22x
Centrica PLC	U.K.	€12.965 mn	0,46x	5,40x	11,70x	0,63x	1,89x	0,70%	3,20x
SSE PLC	U.K.	€20.787 mn	0,72x	9,50x	11,20x	0,87x	2,32x	7,70%	2,33x

Source: Reuters

Annex 18 – Cluster Analysis

Cluster Membership

Case	5 Clusters	4 Clusters	3 Clusters	2 Clusters
1:EDP*	1	1	1	1
2:GNF*	2	1	1	1
3:Galp	3	2	1	1
4:REN	3	2	1	1
5:ENDESA	1	1	1	1
6:Iberdrola	4	3	2	2
7:RED	3	2	1	1
8:EDF	4	3	2	2
9:Engie	4	3	2	2
10:Direct Energie	3	2	1	1
11:A2A	3	2	1	1
12:ENEL	5	4	3	2
13:HERA Group	3	2	1	1
14:E.ON	1	1	1	1
15:RWE	1	1	1	1
16:MVV Energie	3	2	1	1
17:Centrica PLC	3	2	1	1
18:SSE PLC	1	1	1	1

Various possibilities of groups were created in SPSS, with the 4 Clusters' group 1 being chosen as the peer group.