



Universidade Católica Portuguesa

Faculdade de Ciências Económicas e Empresariais

Equity Valuation

Enagás, S.A.

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in Management, at the Universidade Católica Portuguesa, 2016.

## Enagás – An overlooked opportunity



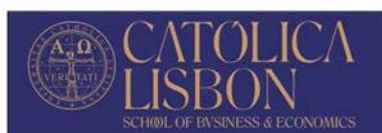
I am locking a target share price of 30.28 Euros, 15.52% above its current valuation of 26.00 Euros. However, on 27/11/2015, approximately one month ago, the company's shares were trading at 28.43 Euros. There does not seem to be any identifiable reason for this decrease, being that there were not released any negative news on the company.

**STRATEGY: BUY**

Price 31/12/2015	26.00
<b>Target price</b>	<b>30.03</b>
PT end date	31/12/2016
Upside to TP	15.52%
52-week range	22.19 - 28.68
Mkt cap, curr (bn)	6.34

From Enagás' projects, the highlight goes to the Trans Adriatic Pipeline, a mega-pipeline, from where Enagás' 16% participation can turn out to be source of considerable income. In fact, as Enagás does not have much more room to increase in Spain, I believe the future sources of growth are its overseas investments. I also see an opportunity of appreciation coming from the macroeconomic near-term set: lower interest rates in Europe and a stronger dollar may bring up the share price.

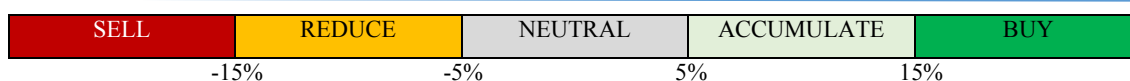
Key Financials	2013	2014	2015E	2016E
Net Fixed Assets	5,730,559	5,474,865	5,414,617	5,414,617
Net Debt/Assets	52.16%	53.51%	55.52%	55.37%
Revenues	1,232,982	1,206,192	1,271,606	1,269,329
EBITDA margin	80.77%	77.90%	77.03%	76.94%
Net Debt/EBITDA	3.69	4.39	4.62	4.63
Interest Coverage Ratio	5.22	4.67	7.00	7.38
Net Income Margin	32.70%	33.70%	36.40%	38.11%
EPS	1.69	1.71	1.94	2.03



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## Recommendation System



## i. Abstract

The purpose of this thesis is to calculate the fair price per share of Enagás, on the 31<sup>st</sup> of December 2016. For this matter, by doing my literature review, I found the Discounted Cash Flow approach to be the most suitable. However, given the circumstance that there is not enough information to do the DCF model to all the company's operations, I had to resort to multiples for some parts of the company.

By the performing the Sum of the Parts, including all the company's assets, I reached a Equity market value of 7.17 Billion Euros, corresponding to a share price of 30.03 Euros. This valuation represents an upside potential of 15.52%, when comparing to the closing price of 31/12/2015, of 26.00 Euros.

According to my research, I share the belief of some analysts that Enagás is being undervalued by the market and so, it represents an attractive investment opportunity. Accordingly, a “buy” recommendation is the result of my best effort to predict the future direction of the company, while taking into account the macroeconomic set.

O propósito desta tese é o cálculo do valor justo para as acções da Enagás, a 31 de Dezembro de 2016. Para tal, ao escrever a minha revisão literária, concluí que o modelo de “Discounted Cash Flow” é o mais adequado para este efeito. No entanto, dadas as circunstâncias da ausência de informação para a realização do modelo DCF a todas as operações da empresa, tive de recorrer à avaliação por múltiplos para partes da empresa.

Ao realizar o “sum of the parts”, incluindo todos os activos da empresa, calculei uma capitalização bolsista de 7.17 mil milhões de Euros, correspondendo a um valor de 30.03 Euros por acção. Esta avaliação representa um potencial de valorização de 15.52%, quando comparando com o preço de fecho do dia 31/12/2015, de 26.00 Euros.

De acordo com o meu trabalho, partilho a crença de alguns analistas da qual a Enagás está presentemente subavaliada e, portanto, representa uma atractiva oportunidade de investimento. Assim, uma recomendação de “compra” é o resultado do meu melhor esforço para prever a direcção futura da empresa, tendo em consideração a conjuntura macroeconómica.

## **ii. Acknowledgements**

I would like to thank a few people, whose help and support were crucial for the completion of this thesis. First of all, I would like to thank my family and close friends for supporting me through my Master's degree, and for keeping me motivated. I appreciate the support from Professor Tudela Martins, who guided my project and helped me with questions I raised to him. I would like to thank Catarina Castro, my boss, for offering me a schedule that enabled me to continue working on this thesis. By last, I would like to mention the Santander M&A team for being so supportive and for helping with some decisions I had to make during the completion of the thesis.

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### iii. Introduction

The writing of this Master thesis fulfils the final requirement for the achievement of the MSc in Management degree, from Universidade Católica Portuguesa. It was done under the seminar “Equity Valuation”, coordinated by professor José Carlos Tudela Martins. The document is divided into two parts:

- The first part, a literature review where I gathered the most relevant state of art regarding valuation and synthetized it into an easy-to-read and keen text;

- The second part is the valuation of Enagás. It contains a description of both the company and the industry it operates in, giving an illustrating insight of the operational dimension of the company: numbers are important, but one must first comprehend what is behind them to truly understand them. Following, I perform the valuation of Enagás using a sum of the parts (SOTP) model, where a combination of regular DCF and multiples’ models are used. In this part, besides presenting the results attained, I explain the most important steps I took to perform the valuations of the different parts of the company and the rationale from the assumptions made.

By last, I compare my valuation to the valuation performed by Societe Generale, and explain what the sources for the divergences in our results are.

For a better understanding of the valuation, the consultation of the Annexes is advised.

# 1 Literature Review

## 1.1 The importance of Valuation

“Price is what you pay. Value is what you get”

Warren Buffet

In the World of Finance, Value is the established measurement system, being applicable for all kinds of investments. The purpose of investment is that, by the time the investment ends, it will have grown enough to exceed the investment made, while covering the risk taken. In other words, from the financial point of view, an investment is attractive when it displays a positive value.

Through Financial Statements, companies display financial information that reflects essentially their past and current performance. However, without discrediting the importance of historical and current data, if someone or a company is considering to invest in a project/company, he will perform the resource-allocation decision based on the forecasted performance of the investment target (Luehrman, 1997). The underlying reason is that the success of an investment is inevitably correlated with the future performance of the investment target, i.e., its capacity of generating returns. Furthermore, unlike earnings or other short-term performance indicators, value measures investment in a broad sense, as it accounts for the “long-term interests of all the stakeholders in a company, and not just the shareholders” (Valuation, Fifth Edition, Mckinsey & Company).

For the sake of fair pricing, the fundamentals of valuation must never be forgotten. Accordingly, the existence of financial crisis has imposed doubt upon the financial system, making people wonder about the reliability of pricing mechanics. However, as the authors of (Valuation, Fifth Edition, Mckinsey & Company) state, the main cause to such crisis is the disregard of the value creation principles, that leads to incorrect pricing and ultimately to engagement in value-destroying investments that, when unmasked, make the markets crash. As so, instead of a revision of the legislation and financial theory, the authors suggest a relearning about the value creation process.

Involving numerical input and mathematical formulas, one would awry label valuation as an objective science. However, as each analyst performs a valuation based on his

assumptions and personal mindset and due to the uncertain nature of some inputs, valuation is rather an art and a challenge to analysts.

As this thesis consists of an Equity Valuation, based on (Fernández, 2007), I present below the situations when company valuations are done, leaving aside valuations of other assets, such as bonds or projects.

## **1.2 Scenarios of Equity valuation**

### **1.2.1 Basic Buying and Selling of Shares**

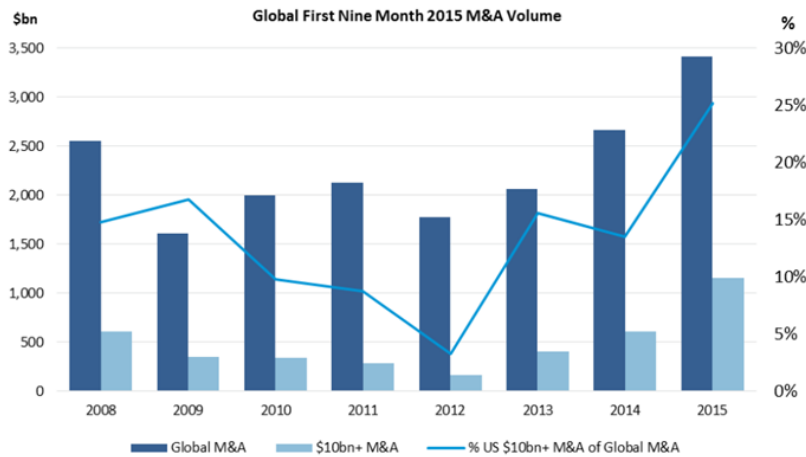
A valuation can determine the highest price to pay for a stock and the minimum price to sell a stock. The purpose of someone who invests in the stock market is to obtain a return in the form of dividends and capital gains. Thus, when performing a valuation of a company, the investor can accrue its own conclusions regarding the fairness of its current market value. As such, he may find the company either undervalued or overvalued. In the first case, the market is underestimating the value of the company, due to existence of information asymmetry. When that lapse is fixed, stock price is expected to increase. Accordingly, the investor can decide to buy the shares when they are undervalued and sell them in the future at a higher price, when the correction is made. On the other hand, when the company is overvalued, the investor may opt to sell its shares immediately, before the price of the stocks fall. He can also short sell the stocks, posteriorly buying them at a lower price.

The aforementioned tactics are the most popular and straightforward ones. An investor may, however, adopt more complex strategies, by using derivative instruments, for instance.

### **1.2.2 M&A**

A merger occurs when two or more companies fuse into a new legal entity. An acquisition occurs when a company buys another company's a) total outstanding shares or b) majority of share capital. While Mergers occur when companies agree the value of synergies is positive, acquisitions are generally a manner to transfer underperforming businesses with high potential to companies that can better manage them and get profit out of it.

### Exhibit 1 - Global first nine month 2015 M&A volume



The graph on the left illustrates the evolution of global M&A activity (in \$bn) from 2008 until September 2015. Since the financial crisis of 2008, M&A activity has increased around \$ 800 bn, while the number of M&A operations with a value higher than \$ 10 bn has doubled,

representing nearly 25% of global M&A activity, in 2015.

In M&A, valuation is frequently done by third parties (like Investment Banks), as the buyer and seller normally do not have the knowledge to perform it. When comparing to base case scenario valuations, valuations within the scope of M&A's are more complex. This happens due to the requirement of quantifying the synergies resulting from the operation and because companies frequently require financing operations in order to execute M&As. In the case of acquisitions, valuation is important for the seller to identify the minimum price at which to sell and for the buyer, the maximum price to pay.

#### 1.2.3 Impact Investment (medium/long term oriented)

Private investors and companies may buy company' stocks having other goals besides betting on the evolution of the stock price. For instance, entities such as venture capital and private equity firms buy large stakes in start-up firms, and firms in a developing phase. They do it with the aim of, through their know-how and tools, increasing the value of the company and exit their position with a profit. In these cases, valuation may not be as straight-forward as in valuing mature companies. Accordingly, perhaps the most sonant example is the valuation of innovative start-ups that, although not having profits at the moment of valuation, have a potential to turn into a profitable business. In the case of not being possible to make reliable forecasts, multiple valuations are commonly used. This method has two main issues: a) as the company is innovative and offers something new, there will not be truly comparable companies, leading to the inability to select an adequate peer group; b) if the company has zero profits at

the moment and future earnings are unknown, earning multiples cannot be used. In the beginning of the 21th century, valuations were done using non-financial inputs (web-page visits, number of subscribers, amongst others), leading to a huge market bubble and consequent losses.

#### **1.2.4 Public Offerings**

Whether going public, or doing public offerings, valuation is a tool to determine the fair value of the shares.

#### **1.2.5 Identification of Value Drivers**

This is an output not obtained from all valuation methods, not being attained by simplistic or superficial methods. More than knowing the value of a company, it is important to know how value is being created and what the points to improve are.

#### **1.2.6 Strategic Planning**

Being related to the previous point, valuation is extremely useful to make decisions. For instance, it can be used to invest more or abandon business units, as well as modifying the financial structure.

### **1.3 Valuation Methods**

There are several valuation methods. Although some are deemed as superior, the truth is that there is not a universally superior method, but rather the most adequate method for each occasion. For (Damodaran, 2005), valuation methods can be divided in four groups, according to the nature of their approach:

- Discounted cash flow Valuation: the value of the asset equals the present value of its forecasted Cash Flows;
- Liquidation and Accounting Valuation: values a firm, using the book value of its assets as a starting point;
- Relative Valuation: values a firm using multiples, i.e., using the ratios comparing firms' value in relation to other variables (such as earnings, book values and others);

- Contingent Claim Valuation: being only applicable to assets displaying option characteristics, this approach uses option pricing models in order to assess the values of assets.

### 1.3.1 Discounted Cash Flow Valuation (DCF)

Being highly regarded by academia, this approach has the best theoretical credentials regarding valuation. The essence of this approach is that the true value of the asset comes from the Cash Flows it is expected to generate, actualized to the moment of evaluation, using a discount rate that expresses its risk level. According to Stowe et al. (2007), the DCF model has three distinct application strands, being that Luehrman (1997) adds APV to that list:

- Free Cash Flow to the Firm (FCFF). The Cash Flow available to all investors;
- Free Cash Flow to Equity (FCFE). The Cash Flow available to shareholders, after payments to debtholders;
- Dividend Discount Model (DDM). Uses dividend as Cash Flow;
- Adjusted Present Value (APV). Values the company as all-Equity financed, adding Debt, contemplating the implications it has on the value of the company.

#### 1.3.1.1 Free Cash Flow to the Firm (FCFF)

##### 1.3.1.1.1 FCFF

Applying this DCF valuation, the enterprise value is calculated by discounting the forecasted FCFF (the Cash Flow available to all investors) and the continuing value back to the moment of valuation, using WACC as a discount rate. Below, I present the composition of FCFF.

#### Equation 1 – FCFF formula

$$\text{FCFF} = \text{EBIT}(1-\tau) + \text{Depreciations} - \text{CAPEX} - \text{WC Investments}$$

Where:

EBIT: operating income, taken from the Income Statement;

$\tau$ : corporate tax rate;

CAPEX: investment in fixed assets. Amount of money spent on either maintaining or improving fixed assets;

WC Investments: money invested in Working Capital needs.

### 1.3.1.1.2 WACC

WACC is the acronym for “Weighted Average Cost of Capital”. It represents the investors’ opportunity cost of investing in a company, by blending the cost of Equity and Debt, according to their proportion in the company’s financing. Also, WACC takes into account that, unlike Equity financing, Debt interest payments are tax deductible, as they enter the Income Statement. The formula for WACC calculation is presented below:

#### Equation 2 – WACC formula

$$WACC = \frac{E}{V} \times R_e + \frac{D}{V} \times R_d \times (1 - T_c)$$

Where:

E: market value of Equity;

D: market value of Debt;

V: Enterprise value;

Re: cost of Equity;

Rd: cost of Debt;

Tc: corporate tax rate.

While Market values of Debt and Equity are frequently used to compute the WACC, Fernández (2007) argues that it is more meaningful to use a leverage ratio in book-value terms than in market-value terms, which is supported by empirical evidence. The author states that managers and credit rating agencies pay more attention to capital structure in book-value terms.

### 1.3.1.1.3 Equity Market Value Calculation

**Equation 3 – Discounted Cash Flows formula**

$$\text{Enterprise Value} = \underbrace{\sum_{t=1}^n \frac{FCFF_t}{(1 + WACC_g)^t}}_{\text{Explicit Period}} + \underbrace{\frac{\left[ \frac{FCFF_{n+1}}{(WACC_{st} - g_n)} \right]}{(1 + WACC_g)^n}}_{\text{Continuing Value}} \text{ (WIKI)}$$

In the previous page, it is presented the formula used to perform a FCFF-based valuation. The value of the company can be broken down into two parts: explicit period and continuing value. The explicit period is the period to which FCFF are calculated on a yearly base, making clear projections for all the elements of the Cash Flow. Generally, this period is 5 to 10-year long, ending in a year from each onwards the company is assumed to be in a steady state. Calculating the continuing value comes from the impracticability of reliably forecasting FCFF for the remaining life of the firm. According to authors of (“All roads lead to Rome”, 1999), continuing value is not given much attention and it generally consumes a small portion of the time dedicated to valuation. Given that it represents the lion share of a company’s value, even for explicit periods of 10 years, it is fundamental to pay close attention to it, especially to the long-term growth rate, whose small variations have a heavy impact on the firm’s value. Moreover, the FCFF that serves as basis for the calculation of the continuing value must follow certain rules. For instance, it must be one from a “normal” year, meaning that it cannot contain single events or one time situations that lead to either an abnormally large or small Cash Flow. For example, years in which huge investments in working capital are done or revenue is especially low should not be used as basis of calculation for the continuing value.

Once the Enterprise value is obtained, Equity market value is calculated using the formula below:

**Equation 4 - Market value of Equity formula**

$$\text{Market Value of Equity} = \text{Enterprise Value} - \text{Market Value of Net Debt}$$

Where,

## Equation 5 - Market value of Net Debt formula

Net Debt = Short-term Debt + Medium/long-term Debt – Cash & Cash Equivalents

### 1.3.1.1.4 Issues and Limitations

The main limitation of this approach is the circularity of WACC and Enterprise Value calculations: WACC is used to calculate the Enterprise Value, while Enterprise Value and Market Values of Equity and Debt are used to calculate WACC. This approach also has the limitation of only being feasible when assuming a constant future financing structure. Moreover, as (Luehrman T., “What’s it Worth”, 1997) argues, in order to work, WACC needs further assumptions that are not consistent with reality, as is the case of assuming a constant tax rate and not accounting for issue costs.

### 1.3.1.2 Free Cash Flow to Equity (FCFE)

#### 1.3.1.2.1 FCFE

FCFE is the Cash Flow available to Shareholders, representing in practice the residual FCFF after taking into account Debt-related cash-flows.

## Equation 6 - FCFE formula

FCFE = EBIT\*(1- $\tau$ ) + Depreciations - CAPEX - WC Investments – Interest Payment\*(1-  $\tau$ ) + New Debt Issuance Proceeds – Debt Amortization

(=)

FCFE = FCFF - Interest Payment\*(1-  $\tau$ ) + Net Borrowing

#### 1.3.1.2.2 Cost of Equity

Because only Equity holders own the right to FCFE, Equity market value is computed by using the Cost of Equity, i.e., the required return of Equity holders, as the discount rate. Although there are multiple methods to calculate  $R_e$ , the most commonly used is CAPM (Capital Asset Pricing Model). Through this model, to the risk-free rate it is added the product of the Market risk premium by the company’s unleveraged beta. The market risk premium is

the excess rate of return that the stock market offers comparing to the risk-free rate. The company's beta is the correlation coefficient of it and the market (normally, it is used the main stock index from the geography the company operates in). The CAPM formula for Re is the following:

**Equation 7 – CAPM formula for calculation of cost of Equity**

$$\text{Cost of Equity} = R_f + (R_m - R_f) * \beta \text{ unlevered}$$

Where:

Rf: Risk-free rate.

**1.3.1.2.3 Equity market value calculation**

**Equation 8 – Discounted FCFE formula**

$$V_e = \underbrace{\sum_{t=1}^n \frac{FCFE_t}{(1+r)^t}}_{\text{Explicit Period}} + \underbrace{\frac{FCFE_n(1+g)}{(r-g)(1+r)^n}}_{\text{Continuing Value}}$$

Where:

Ve: Equity Market Value;

FCFE: Free Cash Flow to Equity;

r = Re: cost of Equity;

g: perpetual annual constant growth rate.

The formula shown above has the same structure as the FCFF formula for the calculation of the Enterprise value, where the difference lies on the use of FCFE and Cost of Equity instead of FCFF and WACC, respectively.

### 1.3.1.3 Dividend Discount Model (DDM)

Developed in 1938, by John Burr Williams, the key principle of this model is that it assumes that dividends represent the total return to which shareholders are entitled. The equation most widely used for the DDM is the Gordon Growth Model, developed in 1959 by Myron J. Gordon and Eli Shapiro.

#### 1.3.1.3.1 Stock price calculation using the GGM (Gordon Growth Model)

##### Equation 9 – Gordon Growth Model

$$P_0 = \frac{D_1}{(k - g)}$$

Where:

P<sub>0</sub>: Current stock price;

D<sub>1</sub>: forecasted dividend for next year;

K=r=Re: cost of Equity;

g: Growth rate.

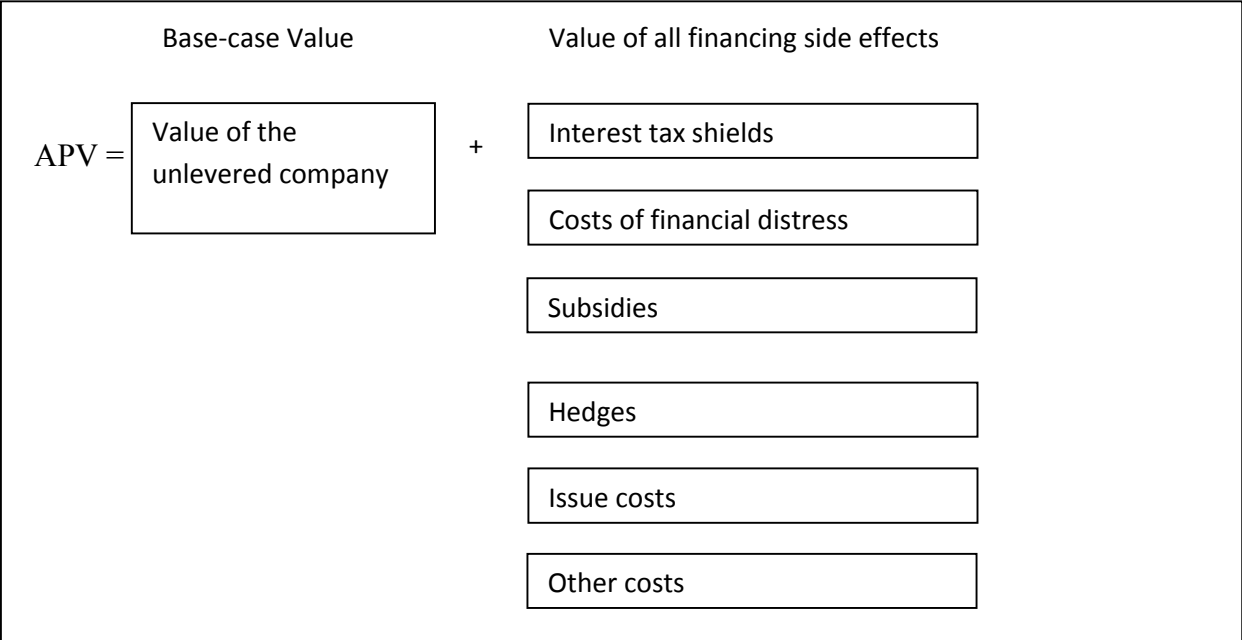
Although very straight-forward and simplistic, DDM is very limited due to the number of assumptions supporting it. For instance, it must only be applied to dividend paying companies and even for such cases, changes in the payout ratio policy can easily make the model infeasible. Moreover, for cases where payout ratio is not 100%, by taking dividends as the only value-adding element, DDM unfairly leaves capital gains out of the equation, thus undervaluing stocks.

#### 1.3.1.4 Adjusted Present Value (APV)

APV is the most praised DCF model, as it surpasses fundamental limitations of other models, enabling it to work in cases in which other models do not work. Luehrman (1997) wrote an acclaimed article “Using APV: A Better Tool for Valuing Operations”, arguing about the superiority of APV comparing to other valuation methods. The mechanics of this method is the following: the company is valued as if it were exclusively Equity financed, and then added the

value of the financing side effects. With this approach, different value sources are detached and added to grasp the Enterprise Value. The figure bellow illustrates the model.

**Equation 10 – Enterprise value calculation, using APV**



Following, I approach the value of the unlevered company, the interest tax shields and the costs of financial distress, as they are the most complex items.

**1.3.1.4.1 Value of the unlevered company**

As aforementioned, this is the value of the company as if it were all Equity financed. It is obtained, using the formula below.

**Equation 11 – FCF discount formula for APV model**

$$= \sum_{t=1}^{\infty} \frac{FCF_t}{(1 + R_A)^t} \text{Value of the unlevered company}$$

Where:

FCFt = FCFF: Free Cash Flow to the firm;

RA: Unlevered Cost of Equity.

### 1.3.1.4.2 Interest tax shields

Unlike payments to shareholders, cash-flows to Debt holders are included in the Income Statement, reducing EBIT and, consequently, reducing taxes. Interest tax shields are the product of interest payments and the corporate tax rate. The concept of interest tax shields is quite simple and straight-forward. However, there is not an academic consensus on what discount rate and formula to use. Below, I list the most relevant approaches to Interest Tax Shields:

- Modigliani & Miller (1959): under the assumptions of perpetual cash flows and risk-free Debt, the value of Interest Tax Shields is the present value of tax savings, using a risk-free rate;
- Myers (1974): the value of Interest Tax Shields is the present value of tax savings using the cost of Debt as a discount rate, as Myers defends the risk of receiving tax benefits is the same of Debt;
- Miles and Ezzel (1980): assuming that the firm has a fixed debt-ratio target, the authors consider Short-term and Medium/Long-term Debt to have different risks. Accordingly, the discount rate for the first year's tax savings is the cost of Debt, while the return on assets is used for the remaining years;
- Harris and Pringles (1985): under the assumption that tax savings are as risky as the firm's cash flows (because taxes are only paid if there is operational profit), all tax savings should be discounted at the return on assets.
- Fernández (2004): the author argues that the value of tax shields is the difference between the present value of taxes of the levered firm and the present value of taxes of the unlevered firm. As such, the formula for the calculation of tax shields is:

#### Equation 12 – Fernández (2007) formula for the calculation of interest tax shields

$$VTS = \frac{D \cdot T \cdot K_u}{1 + K_u}$$

However, the author modifies VTS calculation according to different assumptions.

- Cooper and Nyborg (2006): arguing that the value of tax shields is the present value of tax savings from interests, the authors present two approaches for tax savings calculation, while assuming Debt ratio to be variable:

a) Tax savings have the same risk of operational cash flows. Should be used when there is uncertainty about the firm's profitability, and as a result, there is uncertainty of paying taxes;

b) Tax savings are as risky as Debt. Should be used when the company is not in the situation mentioned in a). The difference from Modigliani & Miller theory is that it neither assumes a constant leverage ratio nor perpetual cash flows.

I personally believe that the most adequate rate to discount the Interest tax shields is the cost of debt. In theory, the interest rates demanded by creditors should reflect their perception of the risk of the company they lend money to. Accordingly, a firm that offers little guarantees of paying back its loans will be demanded a higher cost of Debt than a firm that offers strong guarantees. However, this theory solely holds if, instead of using the cost of Debt negotiated with creditors at the moment of the financing operation, the cost of debt used as the discount rate reflects the risk of Debt at the moment of the calculation of Interest Tax Shields.

#### **1.3.1.4.3 Costs of financial distress/bankruptcy costs**

The doctrine is divided regarding the calculation of Financial Distress costs. The standard approach to financial distress costs when performing APV is to calculate them specifically, generally by multiplying the costs of bankruptcy by its probability of occurrence, as defended by Damodaran (2006). However, some specialists, like Fernández, argue that these costs are already taken into account in tax shields, for companies with Debt.

The main problem with Damodaran (2006) formula is that it is extremely difficult to estimate both the probability of bankruptcy and the costs associated with it. The costs are especially difficult as they are divided into direct and indirect. While direct costs are more somewhat easily estimated and measurable, indirect costs, such as the loss of clients or negative reputation cannot be reliability estimated, due to its subjectivity and complexity.

Regarding the probability of bankruptcy, in 1967 Professor Edward Altman developed the Altman Z-score, a credit-strength test to the probability of a publicly traded firm. The model is the following:

### Equation 13 – Altman Z-score formula

Credit Score,  $Z = 1.2 * (\text{Net WC} / \text{Total Assets}) + 1.4 * (\text{Retained Earnings} / \text{Total Assets}) + 3.3 * (\text{EBIT} / \text{Total Assets}) + 0.6 * (\text{MV of Equity} / \text{BV of Debt}) + 1.0 * (\text{Sales} / \text{Total Assets})$

The Cut-off Z-score is 1.81, meaning that if a company score any lower, it faces a strong probability of going bankrupt.

#### 1.3.1.5 Input problematic

##### 1.3.1.5.1 Risk-free rate

While this rate offers plenty of discussion, I found the most insightful and reasonable information in Aswath Damodaran's paper "What is the riskfree rate? A Search for the Basic Building Block" from December, 2008. Damodaran is a highly regarded author, whose work serves as reference for finance practitioners across the Globe.

According to the author, for the choice of the risk-free, one must start with a "safe" security. Bonds are unanimously chosen as the security to use. According to the author, for an interest rate to be defined as risk-free, it has to meet two criteria:

- Default risk must not exist. According to this criterion, it cannot be a corporate bond, as for these kind of bonds, even if very little, there is always a risk of default by the company. Thus, one must chose Government bonds from countries whose Central Banks have the ability to print money at their will, i.e., are able to meet their obligations, at least in nominal terms;
- For the actual return of an investment to be equal to its expected return (condition required for a risk-free rate) it cannot have reinvestment risk. Accordingly, when a bond pays coupons, an investor cannot be sure at which rate he will be able to reinvest the coupon money. As such, one must chose a zero-coupon bond with a maturity equal to the estimated life of the asset. Most professionals and academics stick with 10-year bonds instead of 30-year bonds, claiming risk premiums are more easily estimated for the former.

In addition to the aforementioned criteria, the  $R_f$  must be in the same currency as the CFs it is applied to, to rule out the risk arising from changes in currency. This risk comes from the fickleness of currency exchange rates and the different inflation rates of countries, and so, currencies. If the CF are, for instance, denominated in a currency from a third-world country, an approximation to the risk-free rate can be obtained by extracting the country's risk premium, using a table provided in the paper.

### 1.3.1.5.2 Growth rate

The growth rate, alongside with the discount rate, have the biggest impact on the value of a company, when using DCF. However, it normally is not given the attention it deserves (All Roads Lead to Rome, 1999), because analysts can better predict more recent upcoming cash flows than establishing an average rate by which the company will grow perpetually. In reality, the growth rate is very subjective and has more to do with a “feeling” than objective thinking, given the virtual impossibility of accurately predicting it. The major constraint is that it must not exceed the sum of GDP growth and inflation rates, as it would mean the company would be growing at a higher pace than the economy itself, forever.

### 1.3.2 Liquidation and accounting valuation

According to Damodaran (2006), under this method, the value of a company is “the sum of the values of the individual assets owned by the business” that, in turn, are valued at the present value of its discounted cash flows. The flaw of this approach is that it does not take into account the value of future investments.

#### 1.3.2.1 Accounting valuation

Defenders of this approach argue that accounting values already provide the measures of a company’s performance. Therefore, there is no need in engaging in fancy valuations.

According to Ohlson (1995), the value of a company’s Equity is a function of its Equity BV and the future excess equity returns it is able to generate:

#### Equation 14 – Ohlson (1995) formula for calculation of Equity value

$$V_t = B_t + \sum_{i=1}^{\infty} \frac{E_{t+i} - rB_{t+i-1}}{(1+r)^i}$$

Where:

B<sub>t</sub>: Equity BV;

E<sub>t+1</sub>: Net Income for year t+1;

r: Cost of Equity.

### **1.3.2.2 Liquidation valuation**

This is the value the company would be paid if it sold its assets at the present moment. Despite that, in theory, this value should equal the discounted future cash flows, the truth is that the sale is very likely to be done at discount, given the urgency at which the assets are sold. As so, this approach is most fitted for companies that are in financial distress, as financially healthy companies are under valued, considering there is no urgency to sale.

### **1.3.3 Relative valuation**

Unlike the aforementioned valuation approaches, the differentiating factor of relative valuation lies on valuing the firm, using data from companies deemed as “comparable”. The link between companies is done by multiples, which are ratios that relate different figures of the company, often of financial nature. Suozzo (2001) states multiples fall into two categories: Enterprise and Equity. Koller, Goedhart & Wessels (2005a) show preference by Enterprise multiples, as they are independent from capital structure.

Regarding earnings, EBITA is deemed as the best choice by Koller et al. for Equity multiples, as it is not affected by amortizations. It is also preferred over EBITDA because it considers depreciations which, for most companies, represent a need to make future investments. For Equity multiples, Net Income is frequently used, because it considers debt-related payments. Forward-looking multiples are most commonly used as they are consistent with the perception that the value of the company depends mostly on future cash flows. Taking into account the aforementioned, the highest regarded multiples by academics are: EV/EBITDA, PER and Price-to-Book value.

#### **1.3.3.1 Peer group**

The Peer group is the group of companies perceived as comparable to the company being valued. As the sources of value come are cash flows, growth rate and risk, the peer group should be formed by companies with similar figures for these dimensions. While Damodaran argues that the industry of the companies of the peer group do not necessarily need to be the same, Alford (1992) and Cheng & McNamara (2000) state the contrary as they argue it provides lower valuation errors.

### **1.3.3.2 Personal view on multiples**

The greatness of multiples valuation comes from the easiness of its application. In my opinion, an Equity valuation should not be exclusively done by multiples. Having that said, multiples valuation works fine as a second-hand approach, used to compare results with the main valuation method.

### **1.3.4 Contingent claim valuation**

Using option theory, this valuation method uses complex mathematical models to value assets (like Black & Scholes model), predicting value changes caused by controversial conditions as (Luehrman, 1997) mentions: volatility, expiration date, risk and cash.

Despite its strong theoretical background, option pricing model is very impractical as: it does not incorporate other risk sources and the impact of combination of different factors cannot be valued properly.

## **1.4 Personal considerations on valuation methods**

I consider Cash-flow discount models to be superior to the other models. More specifically, I regard APV as the best approach among all aforementioned models, as it goes further at identifying the value drivers, while it is possible to apply to companies whose financial structure is not constant.

For this thesis, I will evaluate Enagás through a SOTP, where EVs for Spain and Peru are reached, using FCFE discount models, while the activities in Mexico, Chile, Sweden and TransAdriatic Pipeline (TAP) are evaluated with multiples. The reason for such is that, for the latter group of countries, it was only possible for me to access very restricted financial information, which eliminated any possibility of using a DCF model. The application of the DCF models is possible due to the company having historically displayed a constant capital structure, being extremely reasonable to assume it will stay constant in the future. I will base my calculus in Fernández (2007) preference for leverage in book-terms rather than market values.

## **2 Industry Overview**

### **2.1 Natural gas**

#### **2.1.1 Introduction to Natural Gas**

Natural gas comes from organic matter, i.e., it comes from the remains of deceased animals and plants that died millions of years ago, which have built up in thick layers. With the passing of time, the sandy matter covering this organic material has solidified, trapping the later underground. With changes in pressure and heat, some of this organic matter transformed into oil, coal and natural gas. Natural gas is composed mainly by methane (around 97%) and nitrogen, ethane, CO<sub>2</sub>, H<sub>2</sub>O, butane, propane, mercaptanes and traces of heavier hydrocarbons, whose proportions are variable and dependent on the gas fields the natural gas is found in.

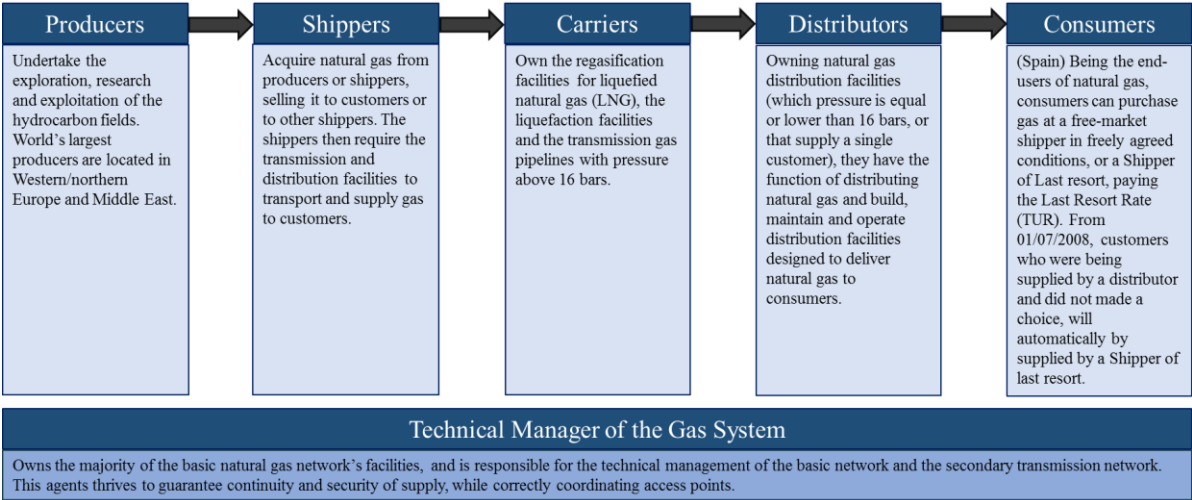
The extraction of NG is made at a global scale, given its variety of applications and hence, its economic interest. The first step to extract natural gas is the study of the structure and formation processes of the soil, done by geologists, through which they identify the locations more likely to contain gas. Nowadays, geologists include seismic surveys in this study, meaning they induce vibrations upon the Earth's surface to collect information about the soil.

After studying rock samples taken from selected areas, if the geologists find an area to be promising, the drilling begins. If NG is found, an infrastructure enabling the extraction of natural gas into pipelines is built. In many situations, the extraction fields are located offshore, in deep waters, making the process more difficult.

#### **2.1.2 Industry players: how gas transmission is done**

Enagás integrates a complex supply chain that enables the transmission of NG from producers to consumers. NG is a very sensitive commodity, in the sense that it needs specialized treatment, so that leaks do not occur and quality is preserved. Therefore, NG's transportation is a product of modern engineering and a very technical process. The scheme below describes the aforementioned supply chain.

**Exhibit 2 – Natural gas supply chain**



Legend:  
 Natural Gas flow

Source: Enagás webpage.

**2.1.2.1 Producers**

While NG can be found in several places across the globe, reserves are specially concentrated in Russia, Middle East and North America. As estimated for 01.01.2014 by the CIA, the 10 countries with the most NG reserves, in billion cubic meters are:

- Russia: 47,800;
- Iran: 33,800;
- Qatar: 25,070;
- Turkmenistan: 17,500;
- Unites States: 8,734;
- Saudi Arabia: 8,235;
- United Arab Emirates: 6,089;
- Venezuela: 5,562;
- Nigeria: 5,118;

- Algeria: 4,505.

The following image presents NG’s existing reserves, production and consumption in percentage, across the globe. While a country’s reserves are the amount of NG it contains in natural fields, production is the exploration of such fields and the subsequent extraction of NG. By comparing region’s percentage of reserves and production, we observe that the Middle East and Russia, that together contain nearly ¾ of the world’s existing reserves, explore their NG resources at a slower pace, assuring the sustainability of such reserves. On the opposite side of the spectrum is the US that, containing 5.3% of world’s reserves, produces 24.2% of total NG. For the world’s top producers, NG business represents significant proportions of their GDP.

**Exhibit 3 – Weights of NG reserves, production and consumption, by region**



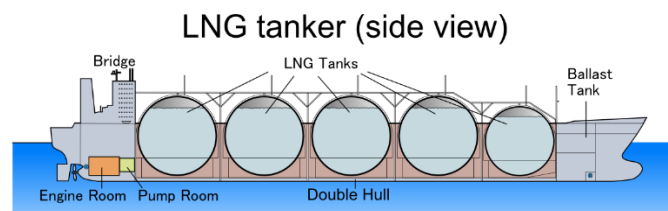
Source: Enagás webpage.

The image also illustrates that Europe OCDE has a significant slice of the World’s NG consumption which, along with the one from Central and South America, makes up to 23.1% of the World’s NG consumption, being highly relevant for this valuation, given that Enagás operates in these locations.

### 2.1.2.2 Shippers

Shippers buy NG from producers in order to sell it to either other shippers or to customers. They require the use of transportation and distribution facilities for the delivery of NG to buyers. Accordingly, shippers can transport NG in either liquefied or gaseous state. In order to liquefy NG, it must be put at  $-160^{\circ}\text{C}$ , in liquefaction plants. Liquefied Natural Gas (LNG) is then transported by specialized tank ships that carry LNG. This process is very technical and precise, as small mistakes can lead to serious consequences. LNG shippers normally have 4 to 6 tanks, with 3 submerged pumps each, for charge and discharge operations. As the coexistence of NG and oxygen leads to explosive atmospheric condition, the tanks must “*inerted*”, i.e., oxygen presence is taken to below 4%. After transported, LNG is pumped out of the tanks using cargo pumps, being that inert gas from the tanks is later replaced by natural air.

#### Exhibit 4 – Structure of a LNG tanker



*Source: Arcticgas webpage.*

When transported in gaseous state, it is done through high-pressure pipelines ( $> 16$  bar). The ownership of these pipelines varies within situations. In Spain, Enagás owns the intra-countries pipelines that are connected to its national grid.

### 2.1.2.3 Carriers

Carriers transport natural gas on either liquid or gaseous state. LNG is transported by specialized trucks, in specific cases as when, for example, end-consumers are not reached by the carrier’s infrastructures. However, most NG is transported in high-pressure pipelines, in gaseous state, after being treated in regasification plants. As Enagás is a carrier, I will not go further into explaining the activity of carriers, as the company overview gives a clear insight about this activity.

#### 2.1.2.4 Distributors

Distributors are the link between Carriers and Consumers, being that NG can be transmitted directly from Carriers to Consumers. The main distinction between Carriers and Distributors is that the latter cover small geographic areas and transport NG at low-pressure.

Either distributors integrate the supply chain or not, there needs to exist points where the high-pressure pipelines branch into low-pressure ones (<16 bar), these are called network connection points.

#### 2.1.2.5 Consumers

Like crude, NG is an energy commodity, being highly traded at a daily-basis. NG is used for many purposes. As such, it is used as fuel, to produce steel, glass, clothing, brick, paper and electricity. Furthermore, it is used as a raw material for a big variety of products, such as fertilizers, plastics and medicines. NG is also used for heating, heating water, kitchens, lighting, and so on.

Given its variety of applications, Enagás transports NG to a wide variety of users. CORES, together with the Ministry of Industry, Energy and Tourism, is responsible for the statistics contained in the National Statistical Plan. In the first table below, it is presented the consumption of NG in Spain, discriminated by type, for the past months of 2015. Conventional consumption takes the lion share of NG consumption, while electric generation is much less significant. However, unlike NG used for electric generation, the conventional use of NG, which is composed by consumption of private residences and SME, displays a seasonal pattern due to private residences consumption. Accordingly, the conventional use of NG is much larger during cold months, as it normally falls to near half, during summer.

The second table contains the consumption discriminated by the pressure at which the NG is carried, for Spain. While for groups I and II the consumption is quite regular across the year, for Group III there is a big variation, as consumption drops sharply from winter to summer. This happens because Group III' consumers are mainly residential ones, whose NG' usage for heating purposes is highly correlated with atmospheric temperature.

**Table 1 – NG consumption, by type**

Natural Gas consumption (GWh)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total 2015
Conventional	29 511	26 682	24 081	19 805	18 210	17 655	17 605	15 456	17 642	-	-	-	186 648
Domestic and SME													
Industrial													
Electric generation	5 306	4 247	4 088	4 303	4 068	4 461	7 823	5 290	4 957	-	-	-	44 546
LNG for direct consumption (included in Conventional Consumption)	842	744	798	665	700	836	890	725	858	-	-	-	7 057
<b>Total</b>	<b>34 819</b>	<b>30 929</b>	<b>25 170</b>	<b>24 108</b>	<b>22 278</b>	<b>22 116</b>	<b>25 428</b>	<b>20 747</b>	<b>22 599</b>	-	-	-	<b>231 193</b>

Source: Cores.

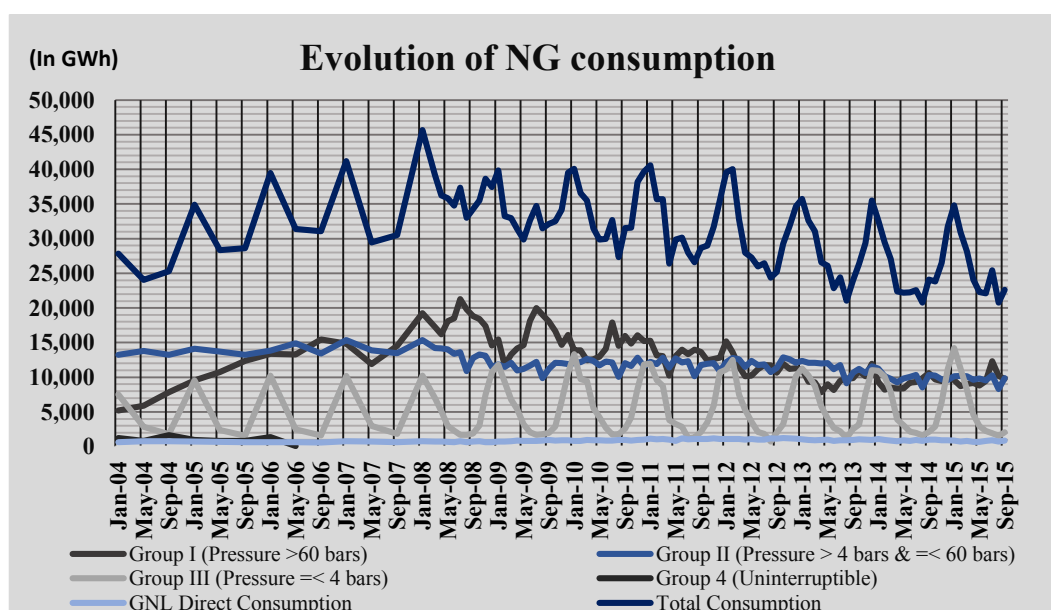
**Table 2 – NG consumption, by pressure group**

Natural Gas consumption by pressure group (GWh)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total 2015
Group I (pressure >60 bar)	9 596	8 720	9 020	9 168	8 804	9 459	12 330	10 179	9 775	-	-	-	87 050
Group II (Pressure >4 bar & =<60 bar)	10 162	10 205	10 157	9 652	9 812	9 554	10 302	8 291	9 880	-	-	-	88 016
Group III (Pressure =<4 bar)	14 218	11 216	8 195	4 624	2 962	2 266	1 906	1 552	2 086	-	-	-	49 071
LNG for direct consumption	842	744	798	665	700	836	890	725	858	-	-	-	7 057
<b>Total</b>	<b>34 819</b>	<b>30 929</b>	<b>25 170</b>	<b>24 108</b>	<b>22 278</b>	<b>22 116</b>	<b>25 428</b>	<b>20 747</b>	<b>22 599</b>	-	-	-	<b>231 193</b>

Source: Cores.

The Graph below illustrates the evolution of NG consumption since January 2004 to September 2015, in Spain. It reinforces the aforementioned points of the seasonality of consumption, which is driven by Group III that includes private consumers. Being very seasonal, consumption has been posting a standardized behaviour where the year average has grown until 2008 and has been decreasing ever since.

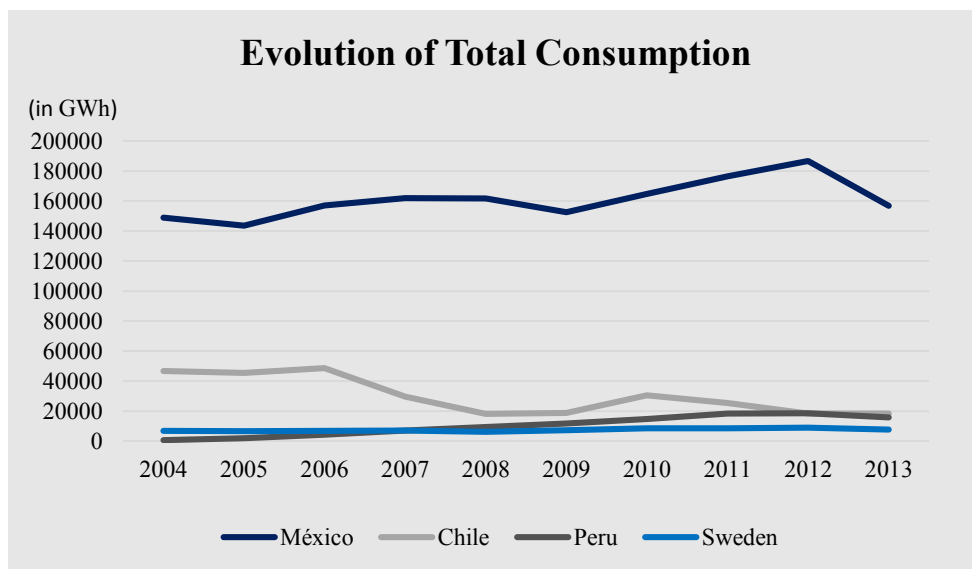
**Exhibit 5 – Evolution of NG consumption, in Spain, by consumer groups**



Source: Cores.

The following graph displays the evolution of NG consumption, from 2004 to 2013, for the countries Enagás currently operates in, excluding Spain. Mexico outstands from the remaining countries, as in 2013, its NG consumption was 3.76x the sum of the consumptions for the remaining countries. Note that, while the graph above was constructed with monthly values, the values for the graph below are presented in annual terms, ergo the seasonality of NG consumption is not noticed. Moreover, the NG consumption for these countries is made primarily by the industry, apart from Chile, where NG is primarily for non-energy use.

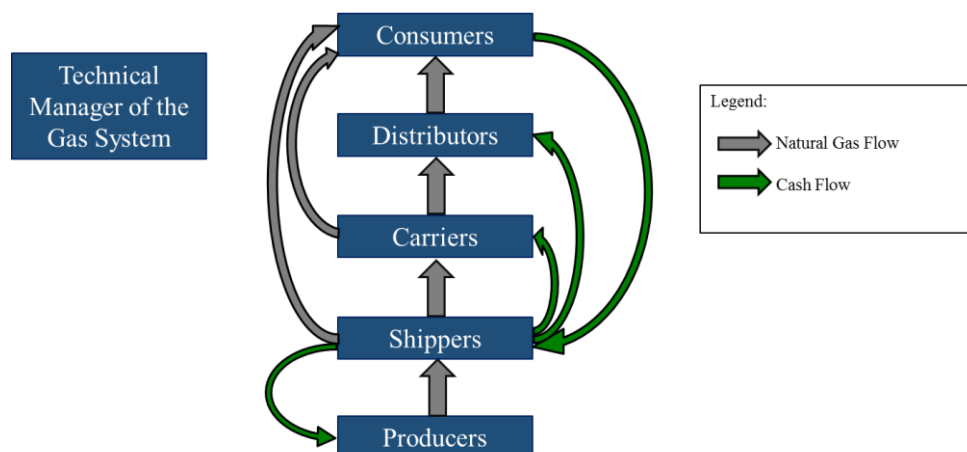
**Exhibit 6 – Evolution of total NG consumption**



Source: IEA.

### 2.1.2.6 Cash-Flow Scheme

**Exhibit 7 – Cash-Flow scheme for NG supply chain**



*Source: Own production.*

Producers are paid by Shippers, in exchange for the NG sold. Shippers are paid by Consumers and pay to Carriers and Distributors for their service. Consumers are able to pay through two different mechanisms. In the first, the most widely used, Consumers and Shippers freely agree on the natural gas prices. The second mechanism is called “Last Resort”, and is a tariff that can be paid by small consumers, in order to protect them. The tariff of Last Resort was established in July, 2009 and is a trimestral-paced-revised tariff available for consumers supplied NG at a pressure equal or below 4 bar and whose annual consumption is inferior to 50,000 kWh. Last Resort traders are: Last Resort EDP, SA; Endesa Energy XXI, SLU; SOUTH Gas Natural SDG, SA; Iberdrola Marketing of last resort, SAU and Gas Supply Madrid SUR, SL.

The remuneration scheme for Enagás is described in the company overview.

### 3 Company Overview

Enagás is a Spanish company founded in 1972, which performs the transmission of natural gas, accredited as an independent TSO by the European Union, while being the Technical Manager of the Spanish gas system. In addition to being the largest natural gas transmission company in Spain, Enagás is also present in México, Peru, Chile, and Sweden through participations in local infrastructures. Despite performing highly-regulated activities in an industry that is often state-owned, the State only has a 5% participation in Enagás’ equity, through Sociedad Estatal de Participaciones, while 90% of the outstanding shares are free-float. Enagás is listed in 10 significant stock indexes, including IBEX 35 and EURO STOXX.

**Table 3 – Enagás key financials**

Key Financials (€ Mn)	
Operating Income (31.12.2014)	1,206.192
EBITDA (31.12.2014)	589.617
Net income (31.12.2014)	406.533
Total Assets (30.09.2015)	7,837.700
Property, Plant and Equipment (30.09.2015)	5,317.900
Net Debt (30.09.2015)	4,153.000
Market capitalization (14.11.2015)	6,491.306
Shares Outstanding (number)	238,730,000

*Source:* Thomson-Reuters

### **3.1 Business description**

As aforementioned, Enagás has two main activities: natural gas transmission, in which Enagás receives NG from carriers and transports it to distributors and end-users; and the Technical Management of the System, meaning the company is entitled to the operation and technical management of the basic network and secondary transportation network for natural gas, in Spain. Enagás earns virtually all of its revenues from NG transmission activities, being that Technical Management activities are mentioned just for the sake of providing information about the activity of the company.

#### **3.1.1 Natural gas transmission (Enagás Transporte, S.A.U.)**

Enagás has most of its activity based in Spain, where it owns nearly all of the country's gas transmission facilities. In addition, it is present in Sweden, México, Peru and Chile, by having participations in NG Transmission companies or isolated Brownfield or Greenfield projects, such as regasification plants or pipelines. Below, I identify the outlines of Enagás' geographic presence.

##### **3.1.1.1 Spain**

Within its TSO functions, Enagás performs the transmission of natural gas throughout Spain. It is important to highlight that Enagás does not buy NG. Instead, it works as an intermediary between sellers and buyers, being remunerated for its role in NG transportation, i.e., for using its infrastructures to transport NG. the image below illustrates the strong presence of Enagás in Spain, as it covers all territory.

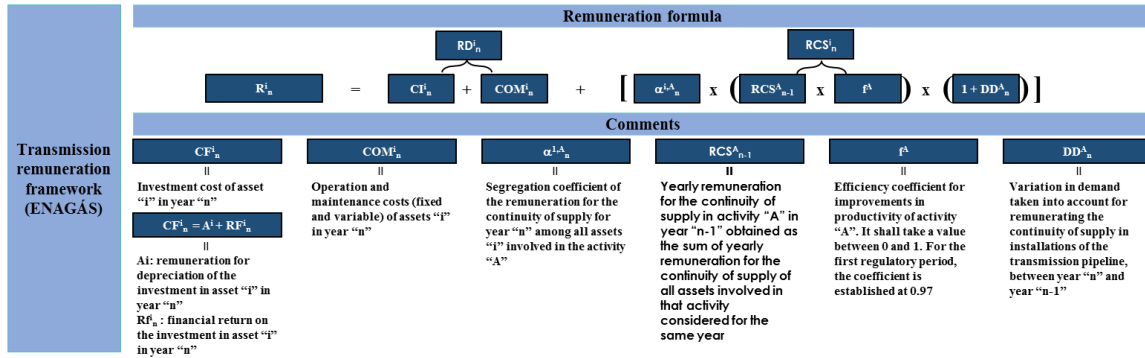
#### **Exhibit 8 – Map of Enagás' infrastructures, in Spain**



COM<sub>in</sub>: Operation and maintenance costs of each instalation “i” in year “n”;

Currently, the remuneration formula applied is the following:

### Equation 16 – Current RAB remuneration formula

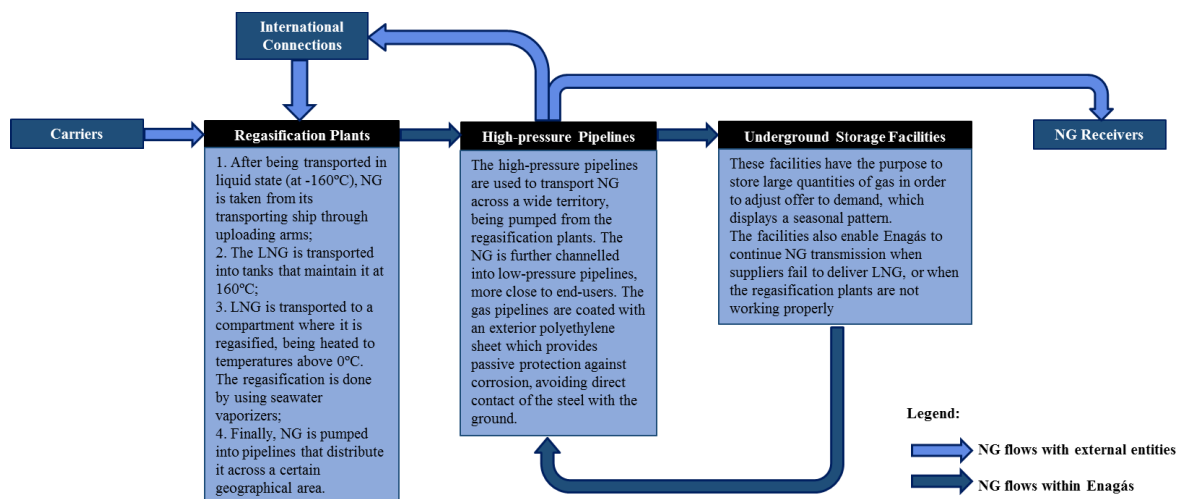


Source: Redexisgas’ April 2015 base prospectus.

This formula, being more complex, takes into account more dimensions than the previous formulas, which normalizes cash-flows. As it can be observed in the valuation of Spanish activities, through the application of this formula, FCFF’s become quite stable. This induced stability has been recognized by international rating agencies as S&P upgraded the company’s credit profile from BBB to A-. S&P factors this remuneration scheme and a clever internationalization to favorable markets in its decision.

As a carrier, Enagás possesses a wide set of infrastructures through which NG is received by shippers and transported to distributors in such way that safety and product quality are ensured. The scheme below illustrates, in a simplified manner, the aforementioned process.

### Exhibit 9– Scheme of NG flows, for Enagás



*Source: Enagás webpage and own production.*

Enagás' Regulatory Asset Base (RAB) is constituted by:

- 4 wholly-owned regasification facilities: Barcelona, Huelva, Cartagena and El Musel. 50% participations in BBG and TLA plants;
- Over 10,076 km of high pressure gas pipelines (up to 80 bar);
- The international connections of Badajoz, Tuy, Larrau, Irún, Tarifa and Almería;
- Underground storage facilities of Gaviota, Serrablo and Yela;
- 30 transport centres;
- 15 compression + transport centres.

The technical features of these assets can be consulted in the Annexes.

### **3.1.1.2 Mexico**

Enagás Transporte, S.A.U. owns a 40% stake in the Altamira regasification plant.

### **3.1.1.3 Chile**

Enagás detains a 51% participation in the joint venture Terminal de Valparaíso, which owns 40% of the Quintero LNG regasification plant that is strategically located close to the capital, Santiago de Chile.

### **3.1.1.4 Peru**

Enagás' strong presence in Peru makes it a major stakeholder in the country's NG transmission network. Enagás has a 24.34% stake in Transportadora de Gas del Perú (TgP), the country's largest NG transportation agent. Enagás also has a 729 km-long gas pipeline and a 557 km-long polyduct. The company has 30% of Compañía Operadora de Gas del Amazonas (Coga), responsible for the operation and maintenance of TgP's transmission system.

### **3.1.1.5 Sweden**

In March 2015, Enagás acquired a 50% stake in Swedegas, a company that owns and operates a 600 km-long grid, extending from Dragör, in Denmark to Stenungsund.

### **3.1.1.6 Projected investments**

#### **3.1.1.6.1 Trans Adriatic Pipeline (TAP) (Turkey, Greece, Albania and Italy)**

Enagás has a 16% participation in the Trans Adriatic Pipeline which is currently in its implementation phase, has its construction planned to begin in 2016 and is planned to start its operational phase in 2020. With 870 km, TAP will transmit LNG from Turkey to Italy, passing by Greece and Albania. Once built, TAP will open up the Southern Gas Corridor, enabling the delivery of Caspian gas to destinations throughout South Eastern, Central and Western Europe. Given the dimension of the TAP, which has an initial capacity of 10 billion cubic metres (bcm) of gas per year (approximately equivalent to the energy consumption of 7 million households, in Europe), once operating, it will represent an important source of income.

#### **3.1.1.6.2 Soto La Marina compressor station (Mexico)**

The company integrates the consortium awarded the contract to build an up-to-19-bcm-capacity compressor station, in Tamaulipas state, which will interconnect with the San Fernando-Cempoala gas pipeline to boost transmission capacity in the country.

#### **3.1.1.6.3 Morelos gas pipeline (Mexico)**

Enagás integrates the consortium awarded the contract to build a 172 km-long pipeline, that will carry NG from Tlaxcala to Morelos.

#### **3.1.1.6.4 Gasoduto Sur Peruano (Peru)**

Enagás detains 25% of the consortium awarded the contract to build and operate Gasoduto Sur Peruano, a 1,134 km-long gas pipeline in Peru. Not being disclosed when its operational phase will begin, GSP will have a transport capacity of 152.4 million cubic meters per day, at south and 457.2 million cubic meters per day until the connection point with TGP.

#### **3.1.1.6.4 Gothenburg Terminal (Sweden)**

Enagás is developing a bunkering/small scale LNG terminal in Gothenburg, classified as a Project of Common Interest (PCI) by the EU.

### **3.1.2 Technical Management of the System (Enagás GTS, S.A.U.)**

Since 2000, Enagás is responsible for the operation and technical management of the basic network and secondary transportation network for natural gas in Spain. It is its responsibility for ensuring the continuity and security of supply and the efficient coordination of access points, storage facilities, and transmission/distribution networks. This function is coordinated with Gas System agents, in an independent and transparent manner. In 2011, following the requirement to separate the activities of gas transmission and Technical System management into separate subsidiaries, approved by the Hydrocarbons Sector Act, Enagás created, in July 2012, Enagás GTS, S.A.U. and Enagás Transporte, S.A.U., to execute the technical management of the system and gas transmission, respectively.

## **4 Valuation**

Enagás operates as both a Natural Gas transmission company and a Technical manager of the NG supply chain, surveying and maintaining all NG transmission/distribution infrastructures, in Spain. In terms of revenues, technical management activities are practically irrelevant, being that, in 2014, its revenues represented 0.99% of all revenue from Regulated activities. Therefore, the lion share of the company's revenues comes from NG transmission in Spain, where the majority of its infrastructures (RAB) is located.

As mentioned before, the remuneration of NG transmission activity is done by taking into account the costs & investments the transmission companies incur in, as well as variations in NG demand and inflation. In the case of Enagás, the remuneration of its NG transmission activities in Spain and the other countries where it owns local NG transmission assets is done according to formulas stipulated by the local Governments. However, while for activities in Spain and Peru it is disclosed plenty of financial information both from the companies and regarding the local industries, for Enagás' assets in Chile, Mexico, Sweden and the Trans Adriatic Pipeline there is very limited information available. Therefore, while I prefer DCF models over other models, due to these circumstances, the only possible method left for me to evaluate activities in Chile, Mexico, Sweden and TAP was multiples.

It is also fundamental to mention that I am performing a valuation as of 31.12.2016, as I am setting the target price Enagás' shares can achieve in a one-year period. In this way, I am

estimating the upside potential for the investor that buys the shares today and sells them in one year from now.

#### **4.1 Sum of the Parts (SOTP)**

I have decided to evaluate Enagás by doing a SOTP model, using DCF models for operations in Spain and Peru, and multiples for the remaining operations. Adding to the aforementioned unavailability of information that leads to the impossibility of applying a DCF to the company as a whole, I believe it is best to perform two separate DCFs for Peru and Spain as, while the activities are parallel, there are differences: different macroeconomic environments, thus different risks and projections for the economies; different currencies, leading to the need of using different discount rates; similar but different remuneration schemes and profitability ratios that, if blended, would necessarily lead to inaccurate predictions.

From my own research, afterwards supported by the content of reports from Enagás, I concluded that the main drivers for NG consumption are a) GDP and b) atmospheric temperature. GDP influences both private NG consumption and consumption for electric generation: for end-users, better economic conditions lead to the capacity to consume more, while electric generation is driven by economic growth, through industrial production and electricity consumption by end-users. Weather has a huge influence on NG consumption. As such, because NG is used for heating houses and water, consumption is consistently higher in winter and lower during summer, making NG demand seasonal. As for valuation purposes, forecasts are being made on an annual basis, I will rule out this seasonality pattern, also because it is verified every year.

##### **4.1.1 Spain**

By the end of 2014, Spanish assets represented 90.34% of the totality of the company's RAB. During the current year of 2015, Enagás has made international investments, sticking to NG transmission. Despite this internationalization process, Spain continues to be the major source of revenue for the company. The valuation for activity in Spain was done as follows.

#### 4.1.1.1 Revenues Forecasts

As shown previously on this document, there is a specific formula for the calculation of revenues. The components of the revenue are: depreciations, maintenance and financial costs from RAB, remuneration for continuing supply, efficiency coefficient and variations in demand.

Starting with demand, for 2015, I took the growth verified in 2015 9M, in homologous terms, and assumed it would have the same value for the whole year (5%). Despite not using the FCFE from 2015 for the valuation, its value is useful for estimating following cash-flows. For 2016 and 2017, I used the projected 4% demand growth from the company's 2014 annual report. In the absence of forecasts for 2018, 2019 and 2020, I used a linear regression equation, using as independent variable the GDP annual growth rate and the evolution of demand as the dependent variable. Using this regression model, I estimate demand to grow 8.11%, 7.71% and 7.28% in 2018, 2019 and 2020, respectively. I chose this model, after performing multiple experiments with regressions between demand and other variables. From these experiments I concluded that GDP annual growth rate and average annual temperature evolution are the main indicators influencing demand (which is supported in Enagás' reports), with adj.  $R^2$  of 0.5166 and 0.4708, respectively, when performing single linear regressions. However, I am not using temperature for demand forecast for two reasons: a) there are no predictions for the average annual temperatures over the next years and; b) the change in percentage terms of the annual average temperature is residual: the average global temperature has risen 0.85°C, from 1880 to 2012.

For the RAB, I conservatively assumed that CAPEX will equal Depreciations & Amortizations. I did so because, through consultation of operational information, I verified that nearly all infrastructures still have a reasonable extra capacity, as they are not being used up to their full potential. Ergo, I assume investments will be made at the pace of depreciations, maintaining the value of the assets.

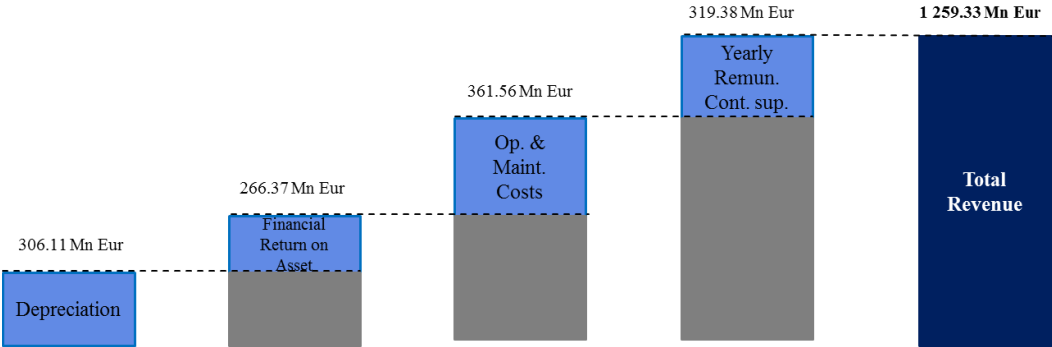
Regarding the financial return on the RAB, I used the WACC calculated for Spanish activity as the interest rate: as Annex XI of law 18/2014 does not disclose what rate to use, I think the most reasonable decision is to use Enagás' cost of capital, as it represents its opportunity cost, i.e., the financial return required for Enagás activity.

For Operation & Maintenance costs, I used “staff costs” and “other operating costs”, and I assumed they would vary by 5%<sup>1</sup> of the variation in NG demand. The reason for such decision is that I believe that higher flows of Natural Gas wear out infrastructures more intensely and thus operation and maintenance costs of said infrastructures should be linked to the level of demand. Moreover, as disclosed in the notes of Enagás’ annual reports, not every component of the costs has a direct link to demand, hence using the “5%”. Furthermore, as legally established, I multiply those costs by 1.15.<sup>2</sup>

I assumed the segregation and efficiency coefficients to stay at their current levels of 1 and 0.97, respectively. By last, I assumed the yearly remuneration for the continuing of supply to be constant every year, as there is no detailing about it in the law 18/2014.

In 2015, the revenue coming from NG transmission has the following composition:

**Exhibit 10 – Forecasted composition of TSO revenue, for 2015**



Source: Own calculations.

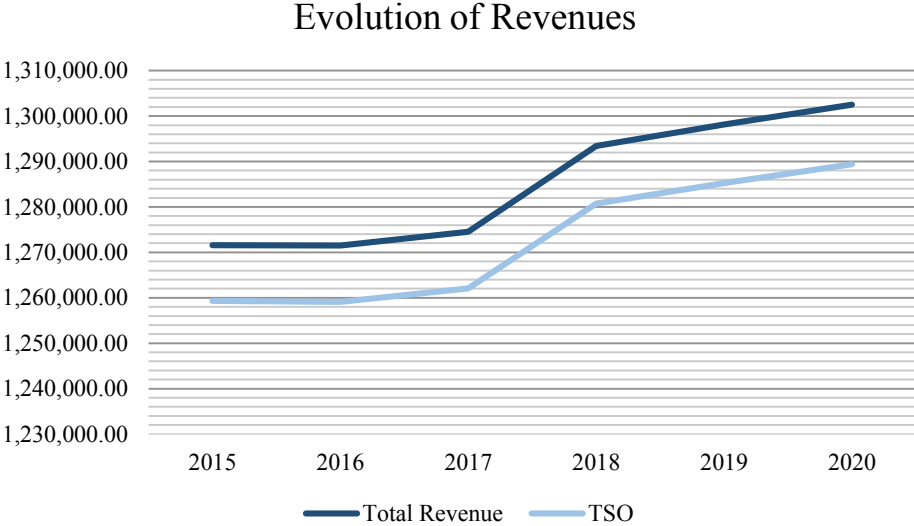
For the explicit period, revenues increase slightly. As the only variable component of the revenue are the “operation & maintenance costs”, the increase in revenues is driven by the increase in these costs. The figure above shows that compensation for these costs is the main component of TSO revenues.

For revenues from the Technical Management of the system, that are residual when comparing to TSO revenues, I assumed them to vary 20% of the variations in demand, as the

<sup>1</sup> I am using 5% as a result of intuition and not from empirical observation.  
<sup>2</sup> Annex XI of Law 18/2014 foresees different quocients according to the age of the assets in questions. As I am considering the assets as a whole, I use the lowest quocient, assuming assets are not exceeding usefull life in more than 5 years.

intensity of NG flows is directly related to a higher use of the NG transport infrastructures (both distribution and transmission). For “other revenues”, I assumed them to have the same proportion to TSO revenues as they had in 2014.

**Exhibit 11 – Forecasted Revenues, until 2020**



Source: Own calculations.

As illustrated by the graph above, revenues pick up their pace starting in 2017, given the higher forecasts for demand, which requires incurring in more costs, for Enagás.

**4.1.1.2 Costs**

As aforementioned, I assumed costs to vary in 10% of variations in demand.

**4.1.1.3 Working capital**

I computed a Working Capital map for the explicit period. I verified that its components had small standard deviations, when calculated as percentage of revenues, for 2013 and 2014. Furthermore, I decided to exclude from the Working Capital map, elements that are not liquidated in the short-term, but Enagás considered as components of Working Capital.

#### 4.1.1.4 Tax rate

In Spain, for 2015, the corporate tax rate is 28% while from 2016 onwards it will be 25%.

#### 4.1.1.5 Continuing value

While for the explicit period, the average annual growth rate of the cash-flows is approximately 0.5%, I am using a perpetual annual growth rate of 0.05%. The reason for this decision is that, while demand is forecasted to increase at a moderately high pace for the explicit period, the Spanish market does not have the capacity to grow much more, especially when considering Spanish population has been decreasing since 2012. I also consider that, in the future, renewable energies will eventually outsize Oil and Natural Gas, affecting negatively Natural Gas demand.

#### 4.1.1.6 WACC

For the computation of WACC, I used the book values of Equity and Debt. Even though that market values are accredited as a better fit for WACC calculation, I think it is not reasonable to use current market values for my own calculation of the market value, whose do not match exactly. With this in mind, I am using a Net Debt/(Net Debt + Equity) of 64%, which is the average for this ratio for the last 4 years, having fluctuated less than 2%. As the company discloses its capital structure for the company as a whole, I also use this ratio for computing WACC for operations in Peru.

Regarding the cost of Equity, for the risk-free rate I chose the YTM from 10-year German Bunds. The market risk-premium is computed by subtracting the mentioned risk-free to the average annual return on Euro Stoxx 50, over the last 10 years. I chose to use returns computed with the same maturity as the risk-free, while I use Stoxx 50, as it is composed by companies across Europe. Being that I leveraged a Beta provided by Damodaran for European NG companies, I think it is more sensate to use an index representative of Europe. In addition, I added a country risk premium, taken from Damodaran's 2015 data base, multiplied by the company's leveraged beta. Literature suggests using a beta that relates the company percentage of sales to other countries to the average of this percentage for the companies from main stock

index the company operates in. Retrieving the required data for such ratio would be very time-consuming if not impossible. Therefore, I use the company's beta.

For the cost of Debt, whose calculations ended on 20/11/2015, I picked the outstanding debt at that date. For the Bonds, whatever their type, I used their YTM as their cost. For the two loans, I used the contracted interest rates. For the company's cost of debt, I computed the weighted average of the cost for each security.

With these calculations, I got to a WACC of 5.02%.

#### 4.1.1.7 Enterprise Value

I reached an EV of 10.77 billion Euro. While this valuation is slightly above valuations done by investment banks in their equity researches, my explanations for this divergence are the following:

- My estimations for the growth of demand are above consensus. I personally believe that Enagás and the generality of analysts are underestimating the growth of demand, as they assume the company will grow at the same pace it is growing in 2015. That may be unrealistic, as 2015 is being an exceptionally hot year, which is reportedly affecting demand negatively;
- In contrast with Equity researches and the historical data provided by the company, I assume the company to invest the same amount of depreciations, maintaining the carrying amount of its RAB. The reasons for such decision have been mentioned.

**Table 4 – EV calculation, for Spain**

(Values in thousand euros and in constant prices)	2015	2016	2017	2018	2019	2020
<b>Total Revenue</b>	<b>1,271,605.89</b>	<b>1,269,329.20</b>	<b>1,270,152.77</b>	<b>1,284,555.03</b>	<b>1,284,925.19</b>	<b>1,285,101.49</b>
TSO	1,259,329.34	1,256,954.44	1,257,679.01	1,271,878.98	1,272,053.65	1,272,042.58
Technical management of the system	12,276.55	12,374.76	12,473.76	12,676.05	12,871.54	13,058.90
Other Revenues	22,307.95	22,265.88	22,278.71	22,530.25	22,533.35	22,533.15
Operating costs	-314,400.00	-315,028.80	-315,658.86	-316,938.62	-318,160.62	-319,318.40
<b>EBITDA</b>	<b>979,513.84</b>	<b>976,566.28</b>	<b>976,772.62</b>	<b>990,146.66</b>	<b>989,297.92</b>	<b>988,316.24</b>
Amortizations and Depreciations	-306,111.71	-306,111.71	-306,111.71	-306,111.71	-306,111.71	-306,111.71
<b>EBIT</b>	<b>673,402.12</b>	<b>670,454.57</b>	<b>670,660.91</b>	<b>684,034.95</b>	<b>683,186.21</b>	<b>682,204.53</b>
<b>NOPLAT</b>	<b>484,849.53</b>	<b>502,840.93</b>	<b>502,995.68</b>	<b>513,026.21</b>	<b>512,389.66</b>	<b>511,653.39</b>
Amortizations and Depreciations	306,111.71	306,111.71	306,111.71	306,111.71	306,111.71	306,111.71
CAPEX	-306,111.71	-306,111.71	-306,111.71	-306,111.71	-306,111.71	-306,111.71
Var. WC	-109,377.99	676.97	-244.88	-4,282.47	-110.07	-52.42
<b>FCFF</b>	<b>375,471.54</b>	<b>503,517.89</b>	<b>502,750.80</b>	<b>508,743.74</b>	<b>512,279.59</b>	<b>511,600.98</b>
Terminal Value						10,296,827.12
Discounted	357,520.39	503,517.89	478,714.47	461,260.92	442,260.78	8,885,005.47
<b>EV</b>	<b>10,770,759.53</b>					

Source: Own calculations.

### 4.1.2 Peru

The second main source of revenue for Enagás is its 24.34% participation in Transportadora de Gas del Peru (TGP). TGP is the country’s main NG transporter as it transports most of Peru’s NG and condensates. TGP is similar to Enagás and to other NG transportation companies in numerous aspects, apart from the remuneration scheme, as TGP is remunerated on a fixed rate.

**Table 5 – Home network tariff**

Home Network Tariff (TARP)	USD/mm3
Base	39.9381
Regulated	39.9381

Source: TGP webpage.

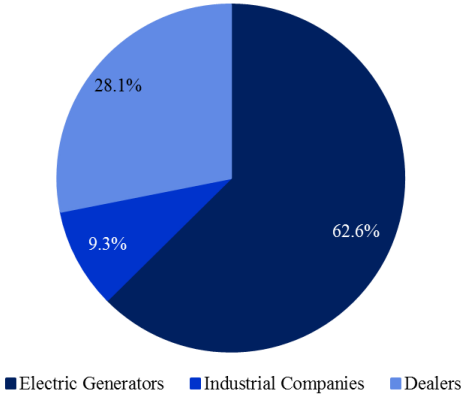
Accordingly, TGP’s revenues come from the render of services to the final consumers of the NG transportation system, being that its revenues are product of the tariff presented above by the amount of NG carried. Therefore, the single driver of TGP’s revenues is NG demand.

TGP’s costumers fall into three categories: a) electrical generators; b) dealers, that serve regulated users (consumption < 30 000 m3/day) and independent users and; c) industrial companies, that include big companies from diverse activities, from oil refineries to ceramic producers. The graph below shows the weights of these customers on TGP, in 2013<sup>3</sup>.

<sup>3</sup> The most recent report dates from 2013.

**Exhibit 12 – NG demand, by consumer type**

NG transport by sector, in 2013



Source: TGP webpage and own calculations.

Electric generators are clearly the major consumers of NG. Accordingly, NG demand in Peru is strongly dependent on electricity consumption.

**Table 6 – Macroeconomic Data, for Peru**

	2010	2011	2012	2013	2014
Real GDP annual growth rate	8.5%	6.5%	6.0%	5.8%	2.4%
Consumption (annual variation)	8.2%	5.8%	6.4%	5.5%	4.5%
Investment (annual variation)	23.1%	6.0%	16.2%	7.6%	-2.0%
Manufacturing (annual variation)	10.8%	8.6%	1.5%	5.7%	-3.3%

Source: Focus Economics’ database.

The table above contains the evolution of some macroeconomic indicators, from Peru. There is a clear slowdown in these variables, being that Real GDP has clearly decelerated its growth. Accordingly, the other variables from the table, having decelerating and been posting even negative trends in the cases of investment and manufacturing, contribute to the slower pace of GDP growth. The IMF and other institutions expect real GDP to grow at 4.5%/year on the long-term.

However, those estimates may be too optimistic, as the increase in working-age population is clearly losing strength, fixed investment rate decreases to 25% of GDP for the long-term. Simultaneously, real capital stock is decreasing its growth pace. In addition, the Government’s “Productive Diversification Plan” (PDP), that points to the recovery of winning

industries, raises doubts on its success, as countless of similar plans have failed in the past. Bearing this in mind, I make conservative assumptions on the growth of revenues.

Having started in 2000, TGP signed a 30-year contract that can be extended for periods of 10 years, being the contract unable to exceed 60 years. As the activity provides solid and stable cash-flows, without the occurrence of anything abnormal, I assume that TGP will operate until 2060, taking full advantage of the aforementioned extensions. The company will then be entitled to be paid by the Peruvian Government in the maximum amount of the accounting value of the concession assets. I assume those assets to have their current value and TGP to be paid in the full value of those assets.

Regarding the projections for TGP's cash-flows, my assumptions are the following:

#### **4.1.2.1 Revenues**

Due to the current macroeconomic conditions, I think real GDP shouldn't grow as much as 4.5% on the long-term. Therefore, I assume revenues to grow at a moderate-to-slow pace, growing more in 2017 and 2018, after the projected completion of the Camisea project, which will enable the satisfaction of more demand. This project, which is the largest of its kind in Peru, transports NG from Camisea (a jungle region of Cusco), to Lima and Ica and also for export.

#### **4.1.2.1 Other projections**

While for other components of the cash-flows, I assume them to maintain their historical performances, for CAPEX I am taking into account the investment in the Camisea project that will be complete in 2016. For its calculation, I take the amount invested in 2015 and assume the respective 2016 investment to be the same. From 2017 on, I foresee CAPEX to match up with Amortizations and Depreciations, in the absence of other projects in sight.

This valuation gave the value of 2.8 billion USD, from which Enagás is entitled to 690.9 million USD (632.0 million Euro<sup>4</sup>), according to its participation in the company. It is important to state that the company has chosen USD as both functional and presentation-base currency.

#### **Table 7 – EV calculation, for Peru**

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<sup>4</sup> Using 1.0914 as the USD/EUR exchange rate.

(Values in thousand USD and in constant prices)	2015	2016	2017	2018	2019	2020
<b>Revenue</b>	<b>548,629.44</b>	<b>554,115.73</b>	<b>565,198.05</b>	<b>573,676.02</b>	<b>579,412.78</b>	<b>582,309.84</b>
NG Transportation Services	361,884.78	365,503.63	372,813.70	378,405.91	382,189.96	384,100.91
NG Liquids Transportation Services	186,744.66	188,612.11	192,384.35	195,270.11	197,222.82	198,208.93
Other Revenues	4,579.46	4,625.26	4,717.76	4,788.53	4,836.42	4,860.60
Operating costs	-245,742.02	-248,199.44	-253,163.43	-256,960.89	-259,530.49	-260,828.15
<b>EBITDA</b>	<b>307,466.88</b>	<b>310,541.55</b>	<b>316,752.38</b>	<b>321,503.67</b>	<b>324,718.70</b>	<b>326,342.30</b>
Amortizations and Depreciations	-78,448.58	-79,233.06	-80,817.72	-82,029.99	-82,850.29	-83,264.54
<b>EBIT</b>	<b>229,018.30</b>	<b>231,308.49</b>	<b>235,934.66</b>	<b>239,473.68</b>	<b>241,868.41</b>	<b>243,077.76</b>
<b>NOPLAT</b>	<b>160,312.81</b>	<b>161,915.94</b>	<b>165,154.26</b>	<b>167,631.57</b>	<b>169,307.89</b>	<b>170,154.43</b>
Amortizations and Depreciations	78,448.58	79,233.06	80,817.72	82,029.99	82,850.29	83,264.54
CAPEX	-459,665.91	-460,450.39	-80,817.72	-82,029.99	-82,850.29	-83,264.54
Var. WC	0.00	0.00	0.00	0.00	0.00	0.00
<b>FCFF</b>	<b>-220,904.52</b>	<b>-219,301.39</b>	<b>165,154.26</b>	<b>167,631.57</b>	<b>169,307.89</b>	<b>170,154.43</b>
Terminal Value						2,850,745.51
<b>Discounted FCFF and TV</b>	<b>-209,061.99</b>	<b>-219,301.39</b>	<b>156,300.46</b>	<b>150,140.13</b>	<b>143,512.14</b>	<b>2,423,361.75</b>
Payment to receive by disposal of assets		109,485.32				
<b>EV</b>	<b>2,763,498.40</b>					

Source: Own calculations.

### 4.1.3 Altamira Regasification Plant, LNG Quintero Regasification Plant and Swedegas

My initial idea was to perform DCF models for all Enagás' activities. However, for Enagás' participations in Altamira Regasification Plant (Mexico), LNG Quintero Regasification Plant (Chile) and Swedegas (Sweden), there is very limited information available, both operational and financial. Facing this condition, I have decided to perform a multiples' valuation for Swedegas, Altamira regasification plant and LNG Quintero regasification plant. Despite not being as theoretically backed up as DCF, I deem multiples valuation as the only viable option for this case.

In the choice of the peer group, for operations in Mexico and Chile, I started by selecting listed NG transmission companies from the US because a) it is essential for them to be listed, to know at what multiples they are trading at and b) there are not sufficient NG transport companies in Mexico nor Chile to use as peer group. For Swedegas, I used NG transport companies from diverse countries. For Altamira and LNG Quintero I was only able to select one fairly comparable company, whose multiples were used as basis for valuation. On the other hand, for Swedegas, I was able so select two companies.

I prefer to use EV/EBITDA multiple instead of EV/revenues, because it expresses the valuation of the company comparing to its operational performance, i.e., it takes into account the efficiency of the company, while leaving depreciations & amortizations aside, which are easier to manipulate in accounting. Given the information I gathered, EV/EBITDA can only be

applied to Swedegas, and so I use EV/revenues for Altamira and LNG Quintero Regasification Plants.

The Enterprise Values I accomplished using the multiples methodology were the following:

- Swedegas: 94.93 million Euro; with an EV/EBITDA of 6.45x;
- Altamira regasification plant: 152.18 million Euro; with an EV/revenue of 6.63x;
- LNG Quintero regasification plant: 143.68 million Euro; with an EV/revenue of 4.22x.

#### **4.1.4 Trans Adriatic Pipeline and Morelos Gas pipeline**

Enagás has a 16% stake in the company undertaking the development of the Trans Adriatic Pipeline (TAP), which is expected to start operating in 2020. The infrastructure consists of an 871 km long pipeline that aims to transport LNG from the Middle East and Caspian region to deliver North-South flows from the strategically planned LNG terminal (or other sources).

Morelos Gas pipeline is also a project, as its operation has not started yet. It will consist in a 172 km-long pipeline that will carry NG from Tlaxcala to Morelos.

For these two projects, given the lack of information and data to use as basis to make an evaluation, I am using the valuation made by Societe Generale's Equity Research from 25 August 2015. While I would have preferred to evaluate them myself, I will stick to these valuations, especially when taking into consideration that together, they only represent 1.14% of the company's EV.

#### **4.1.5 Total Enterprise Value and target share price**

Adding the previously mentioned valuations altogether, the EV for the whole company is 11.87 billion Euros.

#### **Table 8 – Targeted Price for Enagás**

as of 31.12.2016 (values in billion Euros)

<b>Total Enterprise Value</b>	<b>11.870</b>
Net Debt	-4.514
Market Value of preferred stock	0.000
Provisions	-0.169
Minorities	-0.016
<b>Market Value of Equity</b>	<b>7.170</b>
Shares outstanding (number)	238,730,000
<b>Targeted Share Price (EUR)</b>	<b>30.035</b>

Source: Own calculations.

Net Debt is calculated as maintaining a constant percentage of Net Debt/(Shareholders' Equity + Net Debt), while considering "cash & cash equivalents" will remain at its current amount. The calculations for Provisions and Minorities can be consulted in the Balance Sheet, in the Annexes.

With these calculations, I got to a share price of 30.035 Euro. As of 18/12/2015, the closing price for Enagás' shares is 26.64 Euro, having fallen 2.31% since yesterday (17/12/2015). Therefore, I am valuing the shares 12.74% higher than their current value. I believe the main reason for this difference lies on my demand forecasts for activity in Spain being more optimistic than consensus.

As a conclusion, based on this valuation, I suggest a "holding" strategy, as I see a potential for the company's shares to increase value.

#### 4.1.6 Sensitivity Analysis

Table 9 – Possible market values of Equity, from different scenarios

(Mn Euros)	WACC Spain								
	-10%	-7.50%	-5.00%	-2.50%	Base case	2.50%	5.0%	7.5%	10.0%
10%	8,417.44	8,105.15	7,809.47	7,529.11	<b>7,262.91</b>	7,009.82	6,768.90	6,539.29	6,320.21
7.50%	8,394.27	8,081.97	7,786.29	7,505.93	<b>7,239.73</b>	6,986.64	6,745.72	6,516.11	6,297.04
5%	8,371.09	8,058.80	7,763.12	7,482.76	<b>7,216.56</b>	6,963.47	6,722.55	6,492.94	6,273.86
2.50%	8,347.92	8,035.63	7,739.94	7,459.58	<b>7,193.38</b>	6,940.29	6,699.37	6,469.76	6,250.69
Base case	<b>8,405.53</b>	<b>8,012.45</b>	<b>7,716.77</b>	<b>7,436.41</b>	<b>7,170.21</b>	<b>6,917.12</b>	<b>6,676.20</b>	<b>6,446.59</b>	<b>6,227.51</b>
-2.50%	8,301.57	7,989.28	7,693.60	7,413.24	<b>7,147.03</b>	6,893.95	6,653.03	6,423.42	6,204.34
-5%	8,278.40	7,966.10	7,670.42	7,390.06	<b>7,123.86</b>	6,870.77	6,629.85	6,400.24	6,181.16
-7.50%	8,255.22	7,942.93	7,647.25	7,366.89	<b>7,100.69</b>	6,847.60	6,606.68	6,377.07	6,157.99
-10%	8,232.05	7,919.75	7,624.07	7,343.71	<b>7,077.51</b>	6,824.42	6,583.50	6,353.89	6,134.82

Source: Own calculations.

The table above presents the results of the sensitivity analysis that I performed for the USD/EUR exchange rate and the WACC for Spain. I believe these two variables can change during the next year, especially as a result of the Monetary Policy announcements made by the Fed and the ECB this Month (December, 2015). Accordingly, the Fed announced a rate hike for 2016, which analysts believe to stay below 100 basis points. Meanwhile the ECB announced the extension of its Quantitative Easing until March 2017, plus a cut of its deposit rate to -0.3%, already in December. Consequently, the USD is expect to gain strength, which will induce the acquisition of assets quoted in this currency. Furthermore, exports of European companies to US companies are expected to increase.

According to these projections, I recommend paying special attention to the upper-left part of the table, as I believe the future value of the company is in there.

#### **4.1.7 Comparison to Societe General's Equity Research**

I have chosen to compare my valuation to Societe General's valuation, dating 25 August 2015. Even though it was done 4 months ago, I chose it because: unlike the majority of Equity Researches, it presents the valuation divided by company/subsidiary and; more recent Equity Researches do not display as detailed information as Societe General's one.

The share price at 24/08/2015 was 23.5 Euros, while at 31/12/2015, the closing price was 26.00 Euros, which makes the recommendation strategies have different basis. However, being that I will focus on the target price, that is certainly not a constraint. While SG's target price is 26.4 Euros, mine is 30.035 Euros, meaning our values diverge in 3.635 Euros, or, SG's target price is 12.1% lower than mine. Furthermore, please take into account that, as both our valuations are for 12M from the moment of valuation, SG's valuation is for 25 August 2016, while mine is for 31 December of 2016. Nevertheless, both valuations are comparable, as there are no relevant events scheduled for the period between January-August 2016 that could affect the share price. I will now identify the reasons for the different results of our valuations.

**Table 10 – Comparison of Societe Generale’ forecasts to mine**

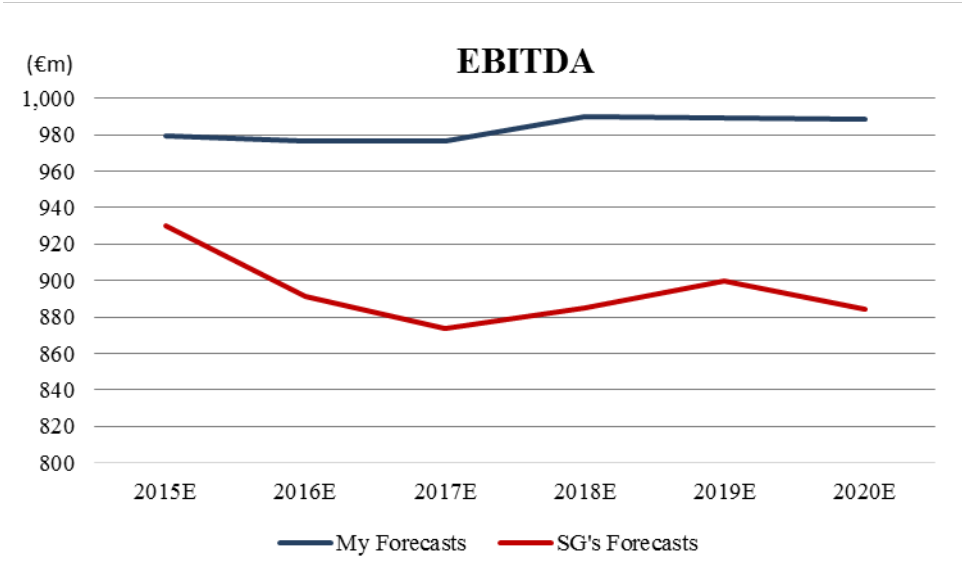
	2015E	2016E	2017E	2018E	2019E	2020E
<b>Revenues (€m)</b>						
My Forecasts	1,272	1,269	1,270	-	-	-
SG's Forecasts	1,229	1,196	1,185	-	-	-
Difference (% of my estimate)	-3.35%	-5.78%	-6.70%	-	-	-
<b>EBITDA (€m)</b>						
My Forecasts	980	977	977	990	989	988
SG's Forecasts	930	891	874	885	900	884
Difference (% of my estimate)	-5.05%	-8.76%	-10.52%	-10.62%	-9.03%	-10.55%
<b>EBITDA Margin</b>						
My Forecasts	77.03%	76.94%	76.90%	-	-	-
SG's Forecasts	75.67%	74.50%	73.76%	-	-	-
Difference (% of my estimate)	-1.76%	-3.17%	-4.09%	-	-	-
<b>Working Capital investment (€m)</b>						
My Forecasts	-109.38	0.68	-0.24	-4.28	-0.11	-0.05
SG's Forecasts	1.00	8.00	3.00	-9.00	-5.00	3.00
Difference (% of my estimate)	100.91%	1081.74%	1325.07%	-110.16%	-4442.66%	5823.04%
<b>CAPEX for Spain (€m)</b>						
My Forecasts	306	306	306	306	-	-
SG's Forecasts	200	230	230	135	-	-
Difference (% of my estimate)	-34.66%	-24.86%	-24.86%	-55.90%	-	-
<b>Book value per share (€m)</b>						
My Forecasts	10.90	10.97	-	-	-	-
SG's Forecasts	9.70	10.10	-	-	-	-
Difference (% of my estimate)	-11.01%	-7.89%	-	-	-	-
<b>Net Debt/EBITDA</b>						
My Forecasts	4.62	4.62	-	-	-	-
SG's Forecasts	4.40	4.60	-	-	-	-
Difference (% of my estimate)	-4.72%	-0.49%	-	-	-	-
<b>WACC</b>						
	Spain	Peru (LatAm)				
My Forecasts	5.02%	5.66%	-	-	-	-
SG's Forecasts	4.00%	8.00%	-	-	-	-
Difference (% of my estimate)	-20.33%	41.23%	-	-	-	-

*Source: Societe Generale’s 25/08/2015 Equity Research and own calculations.*

As aforementioned, Spanish revenues represent the lion share of Enagás revenues. I and SG have slightly different views of this dimension. Curiously enough, SG forecasts revenues until 2017, while it has forecasts for EBITDA until 2020. My forecasts for revenue for 2015, 2016 and 2017 are 3.35%, 5.78% and 6.70% above SG’s forecasts, respectively. I believe that divergence comes from different projections for demand, D&A and CAPEX. Accordingly, my forecasts for demand are slightly more optimistic than consensus. Also, I expect CAPEX to cover depreciations, while SG expects higher levels of CAPEX, at least until 2017.

Our forecasts diverge more for EBITDA. As illustrated in the graph below, I expect EBITDA to move close to 1 billion Euro during the explicit period. On the other hand, SG's see's EBITDA on a downward trend, leading our estimates for 2020 to diverge by 10.55%. Again, as SG does not justify these values, I point the same reasons for the difference in revenues.

**Exhibit 13 – Mine and Societe Generale’s forecast for EBITDA**



*Source: Societe Generale’s 25/08/2015 Equity Research and own calculations.*

In addition, while I forecast a stable EBITDA margin, SG expects it to decrease. It is reasonable as SG expects revenues to decrease but there are costs that are fixed. Not withdrawing the little weight WC changes have on FCFF, I and SG have very different forecasted figures for them. As previously mentioned in this work, I used the 2013-2014 average weights WC map elements had on revenues, as their standard deviations were considerably low. With no plans announced by Enagás on this matter, I see my forecasts to be more reliable.

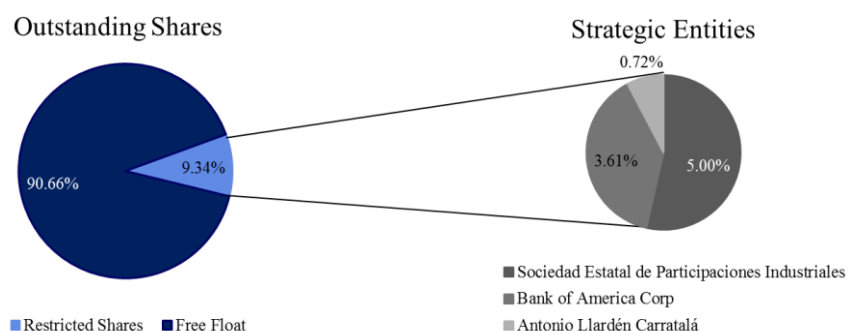
Regarding WACC, one of valuation’s most important inputs, there is also a disparity. SG uses a 4.00% WACC for activities in Spain, 20.33% smaller than my 5.02% WACC for the same assets. For Peru, my WACC of 5.66% is 41.23% lower than SG’s 8.00%. I based my calculations for WACC on articles with strong academic support, leaving my comfortable with the results I attained. In addition, the fact of SG not disclosing their calculations for WACC, adding to these not having decimal places, leaves me quite sceptical regarding SG’s

calculations. Important to mention that, if I used SG's WACC for my valuation of TGP (Peru), I would reach a similar value for Enagás' stake as SG did.

In conclusion, I stick to my valuation. I honestly think SG is undervaluing Enagás, not only on revenues, but also on EBITDA margin, leading to the FCF used as basis for the calculation of the continuing value being smaller. However, as I aforementioned, I am using SG's valuations of TAP and Morelos Gas pipeline, given the unavailability of information for these projects.

## 5 Appendix

### Appendix 1 – Shareholding Structure



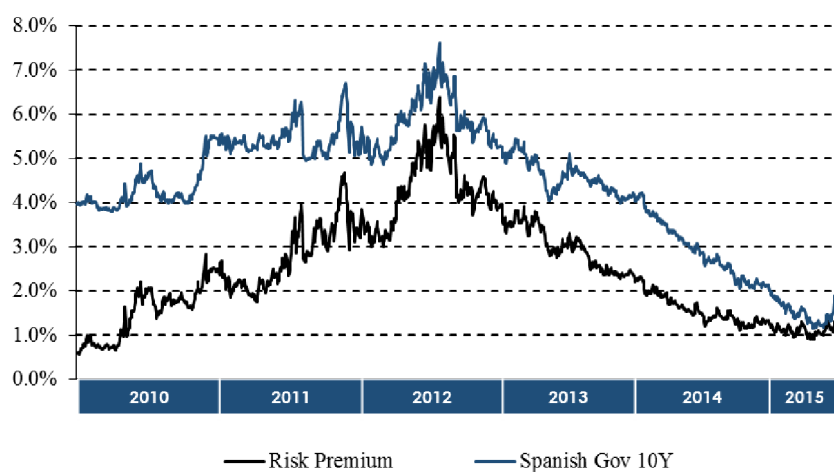
Source: Thomson-Reuters.

### Appendix 2 – Valuations from Equity Researches

Date	Entity	Enterprise Value (Mn EUR)	Targeted Share Price (EUR)
23/07/2015	Banco Sabadell	10,257	27.63
29/06/2015	Banco BPI	11,112	30.35
21/07/2015	Beka Finance	10,232	32.00
22/05/2015	FinLABO	-	27.35
06/07/2015	HSBC Bank	11,114	20.00
21/07/2015	J.P. Morgan	-	27.70
05/08/2015	Morgan Stanley	-	30.00
25/08/2015	Societe Generale	10,540	26.4
20/10/2015	J.P. Morgan	-	26.76
	<b>Average</b>		<b>27.57</b>

Source: Thomson-Reuters & Bloomberg.

### Appendix 3 – Comparison of the Spanish Yield to the German Yield



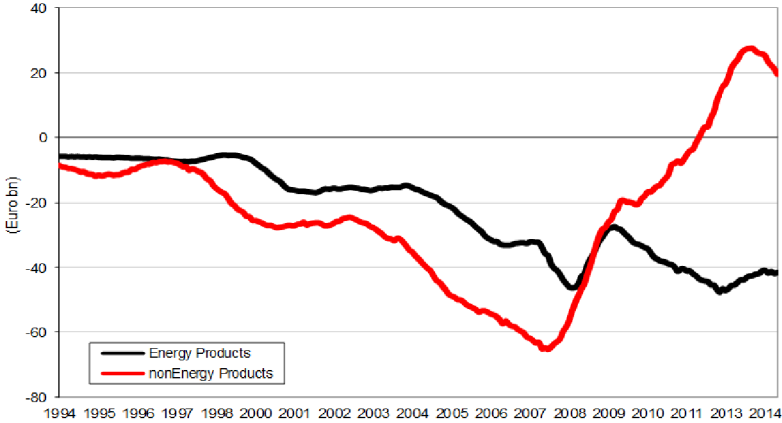
Source: Bloomberg.

**Appendix 4 – Major indicators of Spain**

Major indicators of Spain	
Total population (as of 01/07/2015)	46.423.064
GDP at market prices (in Mn €) (2014)	1,058,469
GDP per capita at market prices (2014)	22,792.18
Public Debt as percentage of GDP (2014)	97.7
Credit rating (S&P, Moody's and Fitch)	BBB; Baa2; BBB+
Unemployment in thousands and % (quarter 2/2015)	5,149 / 22.37%
Geographical area (km2)	505,955
Currency used	Euro
Government	Constitutional Monarchy

Source: World Bank, CNBC, INE and BoS.

**Appendix 5 – Trade Balance, in € bn (1994-2014)**



Source: Economy Ministry.

**Appendix 6 – Other tasks performed by Enagás, under its Technical Management of the System role**

- Issues the instructions required for the correct operation and transmission of the natural gas system;
- Establishes and controls the actions for the system reliability, in addition to action plans to adopt in the event supply failure;
- Delivers operating instructions to transmission facilities;

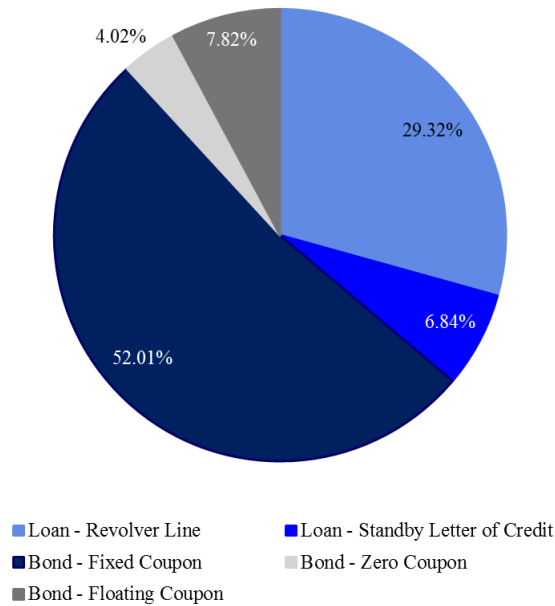
- Proposes to the Ministry of Economy suggestions related with the development of the Basic Network and the implementation of emergency plans;
- Guarantees that the company owners of the basic and the secondary transmission networks run their facilities in order to guarantee gas supply in adequate conditions;
- Performs the delivery programs established by the regulations;
- Manages the inputs and outputs of natural gas;
- Calculates and applies the daily balance of each subject that uses the gas network;
- Executes the decisions adopted by the Government;
- Collaborates with the Ministry of Industry, Tourism and Trade in the evaluation and follow-up of the annual and multiannual investment plans presented by the gas facilities' owners;
- Supervises the correct execution of the measures taken by the Government in emergency situations;
- Provides the Strategic Reserves of Petroleum Products Corporation information;
- Ensures the proper functioning of the gas market;
- Assumes the functions provided for the transport network manager;
- Acquires and sells in the organized gas market.

*Source: Enagás webpage.*

## **Appendix 7 – Cost of Debt**

Structure of the Company's Debt instruments at 20/11/2015, date when I stopped collecting data for the cost of Debt:

### Structure of Debt



**Cost of Debt 1.88%**

Source: Thomson-Reuters.

### Appendix 7 – Cost of Equity

Risk-free Rate	Rate	Security used	Currency
Spain	0.48%	German 10-year bund	EUR
Peru	2.21%	US 10-year Treasury Bonds	USD

Market Return	Rate	To apply to
S&P 500 average annual return of last 10 years	7.08%	Peru
Euro Stoxx 50 average annual return of last 10 years	2.93%	Spain

Country Risk Premium From Damodaran's Excel dated 01/01/2015

Spain	2.85%
Peru	1.80%

Company Beta	Unlevered Beta	D/E	Tax Rate	Beta
Peru	0.81	1.730	27%	1.83
Spain	1.01	1.730	27%	2.29

$$\beta_{levered} = \beta_{unlevered} \left[ 1 + (1 - tax) \frac{D}{E} \right]$$

Cost of Equity

Peru	14.43%
Spain	12.64%

WACC

Spain	5.02%
Peru	5.66%

Source: Damodaran papers, Thomson-Reuters and own calculations.

## Appendix 8 – Technical Features of the RAB, in Spain Regasification plants (Spain)

	Barcelona	Huelva	Cartagena	El Musel	BBG	Sagunto
Number of LNG tanks	6	5	5	2	3	4
Tank capacity	760,000 m3 LNG	619,500 m3 LNG	587,000 m3 LNG	300,000 m3 LNG	450,000 m3 LNG	600,000 m3 LNG
	5,206 GWh	4,244 GWh	4,021 GWh	n.a.	2,055 GWh	n.a.
	60,546 Mn3 (n)	49,357.7 Mn3 (n)	46,764.2 Mn3 (n)	n.a.	23,889.6 Mn3 (n)	n.a.
Emission capacity	1,950,000 m3 (n)/h	1,350,000 m3 (n)/h	1,350,000 m3 (n)/h	800,000 m3 (n)/h	800,000 m3 (n)/h	1,000,000 m3 (n)/h
	544.3 GWh/day	376.8 GWh/day	376.8 GWh/day	n.a.	223.02 GWh/day	n.a.
Min. and max. docking capacity	80,000 m3 LNG	29,500 m3 LNG	40,000 m3 LNG	n.a.	n.a.	30,000 m3 LNG
	266,000 m3 LNG	173,400 m3 LNG	266,000 m3 LNG	266,000 m3 LNG	270,000 m3 LNG	266,000 m3 LNG
LNG trucks loading	15 GWh/day	15 GWh/day	15 GWh/day	n.a.	4.5 GWh/day	n.a.
	(50 trucks/day)	(50 trucks/day)	(50 trucks/day)	n.a.	(15 trucks/day)	(40 trucks/day)
LNG ship unloading	Small vessel ~ 3,000 m3 LNG/h	Small vessel ~ 3,000 m3 LNG/h	Small vessel ~ 3,000 m3 LNG/h	n.a.	n.a.	Small vessel ~3,000 m3 LNG/h
	Medium vessel ~ 8,000 m3 LNG/h	Medium vessel ~ 8,000 m3 LNG/h	Medium vessel ~ 8,000 m3 LNG/h	n.a.	n.a.	n.a.
	Large vessel ~ 10 to 12,000 m3 LNG/h	Large vessel ~ 10 to 12,000 m3 LNG/h	Large vessel ~ 10 to 12,000 m3 LNG/h	n.a.	n.a.	n.a.
Pressure	Min.: 30 bar	Min.: 30 bar	Min.: 30 bar	n.a.	n.a.	n.a.
	Max.: 72 bar	Max.: 72 bar	Max.: 72 bar	n.a.	n.a.	n.a.

Source: Enagás webpage.

## High-pressure Gas Pipelines (Spain)

Pipeline	Section	Start Date	Diameter (inches)	Design Pressure	Length(Km)
Al Ándalus	Tarifa-Córdoba	1996-2008	48"-36"-22"-16"-12"-10"-6"	80-155	274.49
	Córdoba-Jaén-Granada	1996-2001	16"-12"-10"	80	177.10
	Puente Genil-Málaga	2001-2006	20"-16"-8"	80	111.40
	Granada-Motril	2001	10"	80	76.37
	Málaga-Estepona	2002-2005	16"-10"	80	80.69
	Branches	-	-	-	164.03
	<b>TOTAL</b>				<b>884.08</b>
Algete-Yela	Algete-Yela	2011	26"	80	88.69
	<b>TOTAL</b>				<b>88.69</b>
Almería-Lorca-Chinchilla	Almería-Lorca	2009	42"	80	127.45
	Conexión Lorca	2009	20"	80	40.21
	Lorca-Chinchilla	2009	42"	80	168.03
	<b>TOTAL</b>				<b>335.69</b>
Balears	Denia-Sant Antoni de Portmany (Ibiza)	2009	20"	220-225	123.50
	S. Antoni de Portmany (Ibiza)-S. Juan de Dios (Mallorca)	2009	20"	220	145.80
	Montesa-Denia	2008-2009	24"	80	65.45
	<b>TOTAL</b>				<b>334.75</b>
Barcelona-Bilbao-Valencia	Barcelona Plant - Banyeres	1979-2005	24"	72	69.09
	Duplication Barcelona - Banyeres	2008	36"	80	71.80
	Banyeres - Reus - Tivissa	1979-1980	24"	72	89.63
	Duplication Banyeres-Reus-Tivissa	2005	26"	72	90.18
	Martorell-Figueres	2012	36"	80	93.93
	Serinya-Figueres	2009	10"	59	22.83
	Reversible pipeline to Besós	2009	26"	80	23.14

	Sea-line Barcelona Port-Besós	1974-2009	20"	45-80	13.10
	Castor Branch	-	30"	72	11.91
	Tivissa-Paterna	1980-2003	26"	72	225.85
	Duplication Tivissa-Paterna	2011-2012	40"	80	162.48
	Tivissa-Castelnou	1979-2005	30"-26"	72	91.28
	Duplication Tivissa-Castelnou	2010	26"	80	90.89
	Castelnou-Villar de Arnedo	1979-2005	30"-26"	72	202.47
	Villar de Arnedo-Haro	1979-2005	30"-26"	72	75.91
	Haro-Vergara	1980-2006	30"	72	87.83
	Vergara-Arrigorriaga	1984-2002	24"	72	49.33
	Vergara-Irún	1984-1990	16"	72	89.00
	Arrigorriaga-Barakaldo-Santurce	1987-1988	16"	72	22.38
	Duplication Vergara-Irún	2007-2010	26"-24"-16"	72-80	91.93
	Arrigorriaga-Santurce Extension	2002	30"	72	24.90
	Santurce-Ziérbana	2006	30"-8"	72	6.02
	Bermeo-Lemona	1986-2003	16"	72	32.47
	Lemona-Haro	2009	26"-20"	80	93.21
	Lemona-Borua	2004	16"	72	5.40
	Castejón	2002	20"-12"	80	13.01
	Branches	-	-	-	267.28
<b>TOTAL</b>				<b>2.117.25</b>	
<b>Noroeste - Cantábrico</b>	Tuy-Villalba	1998-2001	20"-14"-8"	80	212.83
	Pontevedra-Orense	1998	10"	72-80	57.00
	Villalba-Llanera	1998	20"	80	182.71
	Llanera-Villapresente	1988-2003	12"	72	157.60
	Villapresente-Burgos	1988-2003	16"	72	140.40
	Siero-Villaviciosa	2011	10"	59	20.40
	Corbera-Tamón	2010	16"	80	5.30
	Soto de Ribera	2008	12"	80	1.73
	Branches	-	-	-	127.93
	<b>TOTAL</b>				<b>905.90</b>

<b>Córdoba- Badajoz</b>	Córdoba - Almendralejo	1996-2002	32"	80	251.18
	<b>TOTAL</b>				<b>251.18</b>
<b>Eje Levante</b>	Paterna-Montesa	1995-1996	20"	72	89.83
	Duplication Paterna-Montesa	2001	24"	72	91.77
	Montesa-Orihuela	1997	30"	72	114.20
	Orihuela-Cartagena	1997-2005	30"-10"	72	72.14
	Cartagena-Lorca	2002-2009	20"-10"	72-80	61.55
	Orihuela-Murcia	-	30"	72	25.60
	Totana-Murcia	2005	10"	72	53.33
	Castellón-Onda-Teruel	2006	20"	80	9.67
	Branches	-	-	-	22.65
	<b>TOTAL</b>				<b>540.74</b>
<b>Eje Transversal Alcázar-Montesa</b>	Alcázar de S. Juan- Villarrobledo	2008	36"	80	83.93
	Villarrobledo-Algete	2008	36"	80	73.00
	Albatece-Montesa	2008	36"	80	108.80
	<b>TOTAL</b>				<b>265.73</b>
<b>Haro-Burgos- Madrid</b>	Haro-Villamayor	1986-1987	26"	72	113.55
	Villamayor-Algete	1987-1990	20"-16"-12"	72	181.75
	Zamora-Aranda	1990-1998	20"	72-80	165.68
	Aranda-Soria	2001-2009	12"-10"-6"	72	125.95
	Lerma-Palencia-Valladolid	1987-2003	12"-8"-6"-4"	72-80	96.26
	Sto. Tome del Puerto- Palazuelos de Eresma	1998	8"	72	51.10
	Collado Hermoso-Mojados	2003	12"	72	15.73
	Soria-Agreda	2006	12"	59	54.93
	Branches	-	-	-	87.63
	<b>TOTAL</b>				<b>892.58</b>
<b>Huelva-Alcázar- Madrid</b>	Huelva-Sevilla	2004-2005	32"	80	88.45
	Sevilla-Córdoba	2004-2005	32"	80	156.84
	Córdoba-Alcazar de San Juan	2004	32"	80	255.33
	Alcázar de San Juan-Zarza de Tajo	2003-2004	32"	80	74.85
	Zarza de Tajo-Cuenca	2002-2003	12"-8"	80	109.88
	Zarza de Tajo-Getaje	2003-2004	32"	80	62.85

	Madrid-Algete-Getafe Semiring and duplication	1987-2003	16"-26"	72	78.31
	Rivas-Loeches-Alcalá	2001-2007	20"-12"-8"	72	46.61
	Southwest Semiring of Madrid (Algete-Villalba)	2000-2008	26"-20"-16"	72-80	141.50
	<b>TOTAL</b>				<b>1.014.62</b>
<b>Huelva-Sevilla- Madrid</b>	Huelva-Sevilla	1988-2004	10"-16"-8"-6"-4"	72	87.75
	Sevilla-Córdoba (Las Matillas)	1991-2005	26"	72	127.66
	Córdoba-Río Guadalmer	-	26"	72	83.71
	Almodóvar-Urda	-	26"	72	135.65
	Urda-Pinto	-	26"	72	93.72
	Pinto-Getafe	-	26"	72	9.88
	Branches	-	-	-	202.87
	<b>TOTAL</b>				<b>741.24</b>
<b>Ruta de la Plata</b>	Almendralejo-Cáceres	1999	26"	80	86.68
	Cáceres-Salamanca	1999	26"	80	192.31
	Salamanca-Zamora	1998	26"	80	66.87
	Zamora-Benavente-León	1998	20"	80	123.00
	León-Oviedo	1998-2000	20"	72-80	128.32
	Villamañán-Ponferrada	2001	16"	80	83.10
	La Robla-Guardo	2004	16"-12"	59	74.49
	Variantes y ramales varios	-	-	-	10.66
	<b>TOTAL</b>				<b>765.43</b>
<b>Valle del Ebro</b>	Serrablo-Zaragoza	1983	20"	35-72	246.97
	Castelnou-Tamarite	2005	20"	72	107.69
	Larrau-Villar de Arnedo	1990-2007	26"-14"-8"	72-80	144.58
	Calahorra-Pamplona	1987-1990	8"	72	62.87
	Branches	-	-	-	125.80
	<b>TOTAL</b>				<b>687.91</b>
<b>Yela-Villar de Arnedo</b>	Villar de Arnedo-Almazán	2012	30"	80	139.70
	Almazán-Yela	2012	30"	80	110.70
	<b>TOTAL</b>				<b>250.40</b>
	Zarza de Tajo-Yela	2013	30"	80	106.85

Zarza de Tajo- Yela	TOTAL				106.85
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Source: Enagás webpage.

### International Connections (Spain)

	Maximum pressure		Minimum pressure
	Entry point	Exit point	
Tarifa – Cádiz	80	80	40
Almería – Medgaz	80	80	40
Badajoz – Campo Maior	84	80	40
Tuy – Valença do Minho	80	80	40
Larrau – Alçay	72	72	40
Irún – Biriadou	72	72	40

Source: Enagás webpage.

### Underground Storage Facilities (Spain)

Serrablo	Aurín	Jaca	Total
Working Gas	160 million m3 (n)	520 million m3 (n)	680 million m3 (n)
Cushion Gas	135 million m3 (n)	285 million m3 (n)	420 million m3 (n)
<b>Total</b>	<b>295 million m3 (n)</b>	<b>815 million m3 (n)</b>	<b>1,100 million m3 (n)</b>
Maximum Injection	1.4 million m3 (n)/day	2.5 million m3 (n)/day	(1) 3.9 million m3 (n)/day
Maximum Withdrawal	2.5 million m3 (n)/day	4.3 million m3 (n)/day	6.8 million m3 (n)/day

Source: Enagás webpage.

## Transport Centres (Spain)

North Transmission Unit	South Transmission Unit	East Transmission Unit
Valladolid	Sevilla	Zaragoza
Corese	Huelva	Lumbier
León	Cádiz	Bañeras
Burgos	Córdoba	Hostalric
Soria	Almodóvar	Tivissa
Segovia	Jaén	Caspe
Cantabria	Málaga	Sabiñánigo
Asturias	Granada	Paterna
Villar de Arnedo	Almería	Castellón
Coruña	Almendralejo	Murcia
Ribadeo	Plasencia	Chinchilla
Pontevedra	Toledo	Crevillente
Vitoria	Cuenca	Montesa
Durango	Alcázar de San Juan	Mallorca
Guipúzcoa	San Fernando	-
-	Yela	-

Source: Enagás webpage.

## Compression Centres (Spain)

Compressor station	Compressors	Total installed capacity (kW)	Authorised flow (km <sup>3</sup> (n)/h)
Alcázar de San Juan	2+1	45,870	1,300
Algete	1+1	8,216	130
Almendralejo	4+1	21,817	680
Bañeras	4+1	27,101	560
Chinchilla	2+1	45,870	1,300
Córdoba	4+1	57,605	1,600
Crevillente	1+1	22,400	611
Denia	2+1	14,760	260
Haro	1+1	22,370	550
Montesa	2+1	33,555	800
Navarra	1+1	37,176	590
Paterna	3+1	21,310	600
Puertollano	2+1	10,514	450
Sevilla	2+1	43,620	1,140
Tivissa	2+1	33,498	486
Villar de Arnedo	2+1	36,300	502
Zamora	2+1	12,630	375
Zaragoza	2+1	14,040	375

Source: Enagás webpage.

## Regasification Plants (Mexico)

	TLA Altamira
Number of LNG tanks	2
Tank capacity	300,000 m3 LNG
	2,055 GWh
	23,889.6 Mn3 (n)
Emission capacity	800,000 m3 (n)/h
	223.02 GWh/day
Min. and max. docking capacity	70,000 m3 LNG
	217,400 m3 LNG

Source: Enagás webpage.

## Regasification Plants (Chile)

	GNL Quintero
Number of LNG tanks	3
Tank capacity	334,000 m3 LNG
	2,287.9 GWh
	26,608.3 Mn3 (n)
Emission capacity	625,000 m3 (n)/h
	174.45 GWh/day
Min. and max. docking capacity	120,000 m3 LNG
	180,000 m3 LNG
LNG trucks loading	8.72 GWh/day
	(50 trucks/day)

Source: Enagás webpage.

## NG Pipeline (Peru)

	NG Pipeline
Length (km)	730
N° of pressure regulation stations	2
N° block valves	29
N° launching facilities and internal inspection tools receivers	8
Transportation carrying capacity (MMDCF – million cubic feet per day)	655

Source: Enagás webpage.

## LNG Pipeline (Peru)

	LNG Pipeline
Length (km)	560
N° pumping stations	4
N° pressure reduction stations	3
N° block valves (to isolate the system in case of leak)	19
N° facilities for inspection tools	7
Transport capacity (BDP)	130000

Source: Enagás webpage.

## Ayacucho Compressor Station (Peru)

	Ayacucho Compressor Station
Rated Power (HP)	72000
Rated Power (HP) per turbo-compressor (4)	18000

Source: Enagás webpage.

## LNG (Peru)

	Peru LNG
Nominal capacity (million tons of LNG/year)	4.4
Storage tank capacity (cubic meters of LNG) (2)	130000

*Source: Enagás webpage.*

## NG pipelines (Sweden)

	Gas grid
Length (km)	600
N° metering and control stations	40
Gas pressure (bar)	80
Pipeline diameter (mm)	600; 500; 400

*Source: Enagás webpage.*

## Gas storage facility (Sweden)

	Skallen gas storage facility
Storage capacity (million Nm <sup>3</sup> )	10
Working capacity (bar)	2000
Depth (m)	115
Pipeline diameter (mm)	600; 500; 400
Working gas capacity/total capacity (%)	90
Maximum withdrawal capacity (million Nm <sup>3</sup> /day)	0.9
Normal withdrawal (million Nm <sup>3</sup> /day)	0.3

*Source: Enagás webpage.*

## Appendix 9 – Multiples valuation: Altamira Regasification Plant

Altamira Regasification plant			2014	2013
<b>Financial Data (thousands of USD)</b>				
Revenue			62725	64115
Net income			14930	14199
Assets			356791	326887
Equity			134818	116780
<b>Ratios</b>				
Revenue growth			-2.17%	
NI margin			23.80%	22.15%
ROA			4.18%	4.34%
ROE			11.07%	12.16%

Valuation parameters	
Revenue 2014	62725
NI margin	11.62%
ROA	4.26%
ROE	11.62%

Identifier	Company Name	GICS Sub-Industry Name	Revenue (FY0, EUR)	Revenue - Mean Estimate (FY1, EUR)	Revenue - SmartEstimate Growth (This Yr/Last Yr)	Net Profit Margin (FY0)	ROA (FY0)	ROE - Mean (FY1)	Price/Sales (FY1)	EV/Sales (Daily Time Series Ratio)
FCRM.L	Fulcrum Utility Services Ltd	Gas Utilities	46,586,763.21	-	-	8.3%	12.0%	-	-	1.06
NFG	National Fuel Gas Co	Gas Utilities	1,559,947,386.62	1,830,999,206.60	12.5%	-21.5%	-5.6%	17.3%	1.9%	2.95
NJR	New Jersey Resources Corp	Gas Utilities	2,446,289,547.99	2,753,109,630.40	7.1%	6.6%	5.2%	12.4%	-	1.22
NWN	Northwest Natural Gas Co	Gas Utilities	623,324,686.05	681,134,119.20	2.5%	7.8%	1.9%	7.7%	-	2.94
STR	Questar Corp	Gas Utilities	980,985,555.00	1,071,882,403.20	4.0%	19.0%	5.5%	17.8%	-	4.22
WGL	WGL Holdings Inc	Gas Utilities	1,165,924,679.88	2,601,336,048.99	3.7%	4.9%	2.6%	11.8%	1.1%	1.60
			62,725,000.00			22.97%	4.26%	11.62%		

Enterprise Value (Mn USD)	264.75
EV for Enagás (Mn USD)	105.90
EV for Enagás (Mn EUR)	96.93

Source: Thomson-Reuters and own calculations.

## Appendix 10 – Multiples valuation: LNG Quintero Regasification Plant

LNG Quintero Regasification plant			2014	2013
<b>Financial Data (thousands of USD)</b>				
Revenue			154966	152536
Net income			23369	37324
Assets			945104	903982
Equity			103173	33102
<b>Ratios</b>				
Revenue growth			1.59%	
NI margin			15.08%	24.47%
ROA			2.47%	4.13%
ROE			22.65%	112.75%

Valuation parameters	
Revenue 2014	154966000
NI margin	19.77%
ROA	3.30%
ROE	67.70%

Identifier	Company Name	GICS Sub-Industry Name	Revenue (FY0, EUR)	Revenue - Mean Estimate (FY1, EUR)	Revenue - SmartEstimate Growth (This Yr/Last Yr)	Net Profit Margin, (%) (FY0)	ROA (FY0)	ROE - Mean (FY1)	EV/Sales (Daily Time Series Ratio)
FCRM.L	Fulcrum Utility Services Ltd	Gas Utilities	46,586,763	-	-	8.3%	12.0%	-	1.06
NFG	National Fuel Gas Co	Gas Utilities	1,559,947,387	1,830,999,207	12.5%	-21.5%	-5.6%	17.3%	2.95
NJR	New Jersey Resources Corp	Gas Utilities	2,446,289,548	2,753,109,630	7.1%	6.6%	5.2%	12.4%	1.22
NWN	Northwest Natural Gas Co	Gas Utilities	623,324,686	681,134,119	2.5%	7.8%	1.9%	7.7%	2.94
STR	Questar Corp	Gas Utilities	980,985,555	1,071,882,403	4.0%	19.0%	5.5%	17.8%	4.22
WGL	WGL Holdings Inc	Gas Utilities	1,165,924,680	2,601,336,049	3.7%	4.9%	2.6%	11.8%	1.60
			154,966,000			19.77%	3.30%	67.70%	

Enterprise Value (Mn USD)	654.09
EV for Enagás (Mn USD)	156.98
EV for Enagás (Mn Eur)	143.68

Source: Thomson-Reuters and own calculations.

## Appendix 11 – Multiples valuation: Swedegas

Swedegas	2014	2013	2012
<b>Financial Data (thousands of EUR)</b>			
Revenue	42652	45172	42471
EBITDA	29456	31738	30431
EBT	20832	22871	21191
Assets	202258	208487	217160
Equity Capital	157581	159315	155713
<b>Ratios</b>			
Revenue growth	-5.58%	6.36%	
ROA	10.40%	11.10%	10.00%
ROE	13.20%	14.40%	13.60%

<b>Valuation parameters</b>	
Revenue 2014	42652000
NI margin	49.77%
ROA	10.50%
ROE	13.73%

Identifier	Company Name	GICS Sub-Industry Name	Revenue (FY0, EUR)	Revenue - Mean Estimate (FY1, EUR)	Revenue - SmartEstimate Growth (This Yr/Last Yr)	Net Profit Margin, (%) (FY0)	ROA (FY0)	ROE - Mean (FY1)	EV/Sales (Daily Time Series Ratio)	EV/EBITDA (Daily Time Series Ratio)
GAIL.L	GAIL (India) Ltd	Gas Utilities	9,061,733,156	6,290,519,324	-30.7%	5.2%	4.5%	6.5%	-	-
ACAG.MI	Acsn Agam SpA	Gas Utilities	199,856,000	-	-	2.4%	1.3%	-	1.29	6.77
SRG.MI	Snam SpA	Gas Utilities	3,881,000,000	3,627,814,500	2.2%	30.9%	4.9%	16.1%	7.59	10.85
RUBF.PA	Rubis SCA	Gas Utilities	2,790,232,000	2,916,903,220	5.3%	4.2%	5.3%	10.9%	1.28	12.27
ASCL.MI	Ascopiave SpA	Gas Utilities	585,300,000	621,200,000	-3.1%	6.1%	4.6%	9.2%	1.09	8.57
FCRM.L	Fulcrum Utility Services Ltd	Gas Utilities	46,586,763	-	-	8.3%	12.0%	-	1.07	9.66
GASMC	Gas Natural SDG SA	Gas Utilities	24,742,000,000	26,690,768,980	7.1%	5.9%	3.5%	10.0%	1.46	7.85
ROSNGBX	SGNR SA	Oil & Gas Expl. & Prod.	1,002,704,983	988,653,923	-2.6%	31.4%	13.2%	13.2%	1.92	3.23
			42,652,000			49.767%	10.50%	13.73%		6.45 Average

<b>Enterprise Value (Mn EUR)</b>	<b>189.85</b>
<b>EV for Enagás (Mn EUR)</b>	<b>94.93</b>

Source: Thomson-Reuters and own calculations.

## Appendix 10 – Financial Overview

Financials	2013	2014	2015E	2016E
<b>Balance Sheet</b>				
Net Fixed Assets/Assets	81.36%	70.99%	66.46%	66.41%
Net Debt/Assets	52.16%	53.51%	55.52%	55.37%
Net Debt/(Net Debt+Equity)	63.20%	64.61%	65.21%	65.02%
Net Debt/Assets	52.16%	53.51%	55.52%	55.37%
Cash/Current Assets	32.10%	52.06%	39.18%	38.94%
Current Financial Liabilities/Total Financial Liabilities	12.04%	20.16%	20.16%	20.16%
Debt/Total Liabilities	85.82%	84.24%	86.11%	86.10%
<b>Income Statement</b>				
Revenues Annual Growth	4.48%	-2.17%	5.42%	-0.18%
EBITDA Margin	80.77%	77.90%	77.03%	76.94%
Operating Margin	52.70%	48.88%	52.96%	52.82%
Net Income Margin	32.70%	33.70%	36.40%	38.11%
Interest Coverage Ratio	522.26%	466.59%	699.66%	738.21%
<b>Mixed</b>				
Net Debt/EBITDA	368.96%	439.18%	461.79%	463.19%
EPS	1.69	1.71	1.94	2.03
ROA	5.72%	5.27%	5.68%	5.93%
ROE	18.85%	17.99%	19.18%	19.91%
ROIC	7.83%	8.11%	7.49%	7.76%

Source: Enagás annual reports and own calculations.

## Appendix 13 – Historical Balance Sheet

Balance Sheet	(Values in Thousands of Euros)	Notes	30.09.2015	31.12.2014	31.12.2013	31.12.2012	31.12.2011	31.12.2010
<b>Assets</b>								
<b>Non-Current Assets</b>			<b>6,994,700</b>	<b>6,652,652</b>	<b>5,999,808</b>	<b>5,844,723</b>	<b>5,722,581</b>	<b>5,228,603</b>
Intangible Assets	5		-	77,769	77,348	53,474	54,815	36,629
Goodwill				17,521	17,521	0	0	0
Other Intangible Assets				60,248	59,827	53,474	0	0
Investment Properties	7		169,200	25,080	0	0	0	0
Property, Plant and Equipment	6		5,317,900	5,336,848	5,593,384	5,485,699	5,580,070	5,123,748
Equity-accounted Investments	8 and 32		1,072,800	740,636	254,633	248,254	0	0
Other non-current Financial Assets	8		361,200	399,906	16,884	29,738	58,291	32,812
Deferred Tax Assets	21		73,600	72,413	57,559	27,558	29,405	35,414
<b>Current Assets</b>			<b>843,000</b>	<b>1,059,207</b>	<b>1,043,690</b>	<b>2,078,435</b>	<b>1,994,818</b>	<b>1,600,533</b>
Inventories	9		16,900	15,686	15,138	13,776	13,785	5,328
Trade and Other Receivables	8 and 10		405,200	484,469	687,765	594,438	545,024	366,483
Other Current Financial Assets	8		4,000	3,220	2,997	2,227	6,609	108,042
Other Current Assets			3,500	4,383	2,777	2,120	2,077	33,629
Cash and Cash Equivalents	11		413,400	551,449	335,013	1,465,874	1,427,323	1,087,051
<b>Total Assets</b>			<b>7,837,700</b>	<b>7,711,859</b>	<b>7,043,498</b>	<b>7,923,158</b>	<b>7,717,399</b>	<b>6,829,136</b>
<b>Equity + Liabilities</b>								
<b>Equity</b>	Notes		<b>2,401,101</b>	<b>2,260,316</b>	<b>2,139,375</b>	<b>2,004,784</b>	<b>1,861,596</b>	<b>1,736,245</b>
<b>Capital and Reserves</b>	2		<b>2,345,001</b>	<b>2,218,514</b>	<b>2,118,427</b>	<b>2,014,878</b>	<b>1,867,377</b>	<b>1,738,836</b>
Share Capital			358,101	358,101	358,101	358,101	358,101	358,101
Reserves			1,674,200	1,578,022	1,477,226	1,379,447	1,235,591	1,121,739
Profit for the Year			312,700	406,533	403,183	379,508	364,643	333,481
Interim Dividend			0	-124,142	-120,083	-102,178	-90,958	-74,485
<b>Adjustments Due to Changes in Value</b>	2		<b>41,900</b>	<b>27,555</b>	<b>7,042</b>	<b>-10,094</b>	<b>-5,781</b>	<b>-2,591</b>
<b>Non-controlling Interests (External Partners)</b>	2		<b>14,200</b>	<b>14,147</b>	<b>13,906</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Non-current Liabilities</b>			<b>4,621,800</b>	<b>4,272,494</b>	<b>4,174,130</b>	<b>5,083,532</b>	<b>3,878,061</b>	<b>4,006,240</b>
Provisions	4		168,600	163,340	169,699	167,734	91,555	34,352
Non-current Financial Liabilities	15		4,092,600	3,735,091	3,526,351	4,432,388	3,323,065	3,678,134
Payables to Related Parties			-	11	5	16	657	0
Deferred Tax Liabilities	21		308,600	318,001	400,788	408,854	386,795	214,664
Other Non-current Liabilities	16		52,000	56,051	77,287	74,540	75,989	79,090
<b>Current Liabilities</b>			<b>799,200</b>	<b>1,179,049</b>	<b>729,993</b>	<b>834,842</b>	<b>1,977,742</b>	<b>1,086,651</b>
Current Financial Liabilities	15		473,800	943,241	482,861	553,641	1,606,544	730,847
Trade and Other Payables	15 and 17		325,400	235,808	247,132	281,201	366,452	346,653
Other Current Liabilities			15,400	0	0	0	4,746	9,151
<b>Total Liabilities</b>			<b>5,421,000</b>	<b>5,451,543</b>	<b>4,904,123</b>	<b>7,923,158</b>	<b>5,855,803</b>	<b>5,092,891</b>
<b>Total Equity + Liabilities</b>			<b>7,822,101</b>	<b>7,711,859</b>	<b>7,043,498</b>	<b>9,927,942</b>	<b>7,717,399</b>	<b>6,829,136</b>

Source: Enagás annual reports and own calculations.

## Appendix 14 – Historical Income Statement

Income Statement	(Values in Thousands of Euros)	notes	31.12.2014	31.12.2013	31.12.2012	31.12.2011	31.12.2010
<b>Revenue</b>		22	<b>1,206,192</b>	<b>1,232,982</b>	<b>1,180,059</b>	<b>1,118,443</b>	<b>981,735</b>
Revenue from Regulated Activities			1,185,103	1,214,981	1,140,355	1,096,280	965,995
Revenue from Unregulated Activities			21,089	18,001	39,704	22,163	15,740
Other Operating Income		22	20,989	28,877	18,349	18,590	18,830
Staff Costs		23	-84,695	-82,280	-78,987	-66,958	-67,194
Other Operating Costs		23	-202,803	-183,745	-185,114	-202,281	-151,926
<b>EBITDA</b>			<b>939,683</b>	<b>995,834</b>	<b>934,307</b>	<b>867,794</b>	<b>781,445</b>
Depreciations and Amortisation		5 and 6	-314,900	-328,967	-315,875	-299,598	-249,898
Impairment Losses and Gains on Disposal of Fixed Assets		6 and 7	-35,166	-17,135	15	17,751	-659
<b>EBIT (Operating Profit)</b>			<b>589,617</b>	<b>649,732</b>	<b>618,447</b>	<b>585,947</b>	<b>530,888</b>
Financial and Similar Income		24	12,087	24,176	37,970	33,974	19,713
Financial and Similar Costs		24	-126,366	-124,408	-110,998	-99,259	-78,314
Exchange Differences (net)		24	8,542	-4,707	-3,657	-333	0
Change in Fair Value of Financial Instruments		24	231	1,074	0	0	0
<b>Net Financial Loss</b>			<b>-105,506</b>	<b>-103,865</b>	<b>-76,685</b>	<b>-65,618</b>	<b>-58,601</b>
Gain (Loss) from Equity Accounted Investments		32	11,160	14,879	969	0	0
<b>Profit before Taxes from Continuing Operations</b>			<b>495,271</b>	<b>560,746</b>	<b>542,731</b>	<b>520,329</b>	<b>472,287</b>
Income tax		21	-87,627	-156,490	-163,223	-155,686	-138,806
<b>Profit for the Year from Continuing Operations</b>			<b>407,644</b>	<b>404,256</b>	<b>379,508</b>	<b>364,643</b>	<b>333,481</b>
<b>Loss Attributable to Non-Controlling Interests</b>		12	<b>-1,111</b>	<b>-1,073</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Profit Attributable to the Parent Company</b>			<b>406,533</b>	<b>403,183</b>	<b>379,508</b>	<b>364,643</b>	<b>333,481</b>
Attributable to:							
Parent Company			406,533	403,183	379,508	364,643	333,481
Net Earnings per Share		13	1.70	1.69	1.59	1.53	1.40
Net Earnings per Diluted Share		13	1.70	1.69	1.59	1.53	1.40

Source: Enagás annual reports and own calculations.

## Appendix 15 – Historical Statement of Comprehensive Income and Expenses

Statement of Rec. Income and Expenses	(Values in Thousands of Euros)	31.12.2014	31.12.2013	31.12.2012	31.12.2011	31.12.2010
<b>Consolidated Profit for the Year</b>		<b>407,644</b>	<b>404,256</b>	<b>379,508</b>	<b>364,643</b>	<b>333,481</b>
<b>Income and Expense Recognized in Equity:</b>		<b>17,241</b>	<b>2,084</b>	<b>-12,716</b>	<b>-9,999</b>	<b>-2,794</b>
Items that may be reclassified to profit and loss						
<b>Fully Consolidated Companies</b>		<b>-48,854</b>	<b>3,123</b>	<b>-12,716</b>	<b>-9,999</b>	<b>-2,794</b>
Cash-flow Hedges		-7,944	2,846	-23,945	-14,271	-3,992
Transaction Differences		-42,973	1,131	3,585	0	0
Tax Effect		2,063	-854	7,644	4,272	1,198
<b>Equity-Accounted Companies</b>		<b>66,095</b>	<b>-1,039</b>	<b>0</b>	<b>0</b>	<b>0</b>
Cash-flow Hedges		-12,705	8,285	0	0	0
Transaction Differences		75,579	-8,099	0	0	0
Tax Effect		3,221	-1,225	0	0	0
<b>Transfers to the Income Statement</b>		<b>3,272</b>	<b>15,052</b>	<b>8,403</b>	<b>6,809</b>	<b>12,377</b>
<b>Fully Consolidated Companies</b>		<b>7,277</b>	<b>8,773</b>	<b>8,403</b>	<b>6,809</b>	<b>12,377</b>
Cash-flow Hedges		10,391	12,533	12,005	9,727	17,682
Tax Effect		-3,114	-3,760	-3,602	-2,918	-5,305
<b>Equity-Accounted Companies</b>		<b>-4,005</b>	<b>6,279</b>	<b>0</b>	<b>0</b>	<b>0</b>
Cash-flow Hedges		-5,148	7,873	0	0	0
Tax Effect		1,143	-1,594	0	0	0
<b>Total Recognized Income and Expense</b>		<b>428,157</b>	<b>421,392</b>	<b>375,195</b>	<b>361,453</b>	<b>343,064</b>
Attributed to Non-Controlling Interests		1,111	1,073	0	0	0
Attributed to the Parent Company		427,046	420,319	375,195	361,453	343,064

Source: Enagás annual reports and own calculations.

## Appendix 16 – Historical Statement of Changes in Equity

Changes in Equity (Values in Thousands of Euros)	Capital	Share Premium and Reserves	Profit for the Year	Interim Dividend	Adjustments due to Changes in Value	Non-Controlling Interests	Total Equity
<b>Balance at Beginning of 2011</b>	<b>358,101</b>	<b>1,121,739</b>	<b>333,481</b>	<b>-74,485</b>	<b>-2,591</b>	<b>0</b>	<b>1,736,245</b>
<b>Total Recognized Income and Expense</b>	<b>0</b>	<b>0</b>	<b>364,643</b>	<b>0</b>	<b>-3,190</b>	<b>0</b>	<b>361,453</b>
<b>Transactions with Share holders</b>	<b>0</b>	<b>0</b>	<b>-125,604</b>	<b>-90,958</b>	<b>0</b>	<b>0</b>	<b>-216,562</b>
Distribution of Dividends	0	0	-125,604	-90,958	0	0	-216,562
Increases/(Decreases) due to Business Combinations	0	0	0	0	0	0	0
<b>Other Changes in Equity</b>	<b>0</b>	<b>113,852</b>	<b>-207,877</b>	<b>74,485</b>	<b>0</b>	<b>0</b>	<b>-19,540</b>
Transactions Between Equity Items	0	0	-207,877	0	0	0	-207,877
Other Variations	0	113,852	0	74,485	0	0	188,337
<b>Balance at End of 2011</b>	<b>358,101</b>	<b>1,235,591</b>	<b>364,643</b>	<b>-90,958</b>	<b>-5,781</b>	<b>0</b>	<b>1,861,596</b>
<b>Balance at Beginning of 2012</b>	<b>358,101</b>	<b>1,235,591</b>	<b>364,643</b>	<b>-90,958</b>	<b>-5,781</b>	<b>0</b>	<b>1,861,596</b>
<b>Total Recognized Income and Expense</b>	<b>0</b>	<b>0</b>	<b>379,508</b>	<b>0</b>	<b>-4,313</b>	<b>0</b>	<b>375,195</b>
<b>Transactions with Share holders</b>	<b>0</b>	<b>0</b>	<b>-146,060</b>	<b>-102,178</b>	<b>0</b>	<b>0</b>	<b>-248,238</b>
Distribution of Dividends	0	0	-146,060	-102,178	0	0	-248,238
Increases/(Decreases) due to Business Combinations	0	0	0	0	0	0	0
<b>Other Changes in Equity</b>	<b>0</b>	<b>143,856</b>	<b>-218,583</b>	<b>90,958</b>	<b>0</b>	<b>0</b>	<b>16,231</b>
Transactions Between Equity Items	0	0	-218,583	0	0	0	-218,583
Other Variations	0	143,856	0	90,958	0	0	234,814
<b>Balance at End of 2012</b>	<b>358,101</b>	<b>1,379,447</b>	<b>379,508</b>	<b>-102,178</b>	<b>-10,094</b>	<b>0</b>	<b>2,004,784</b>
<b>Balance at Beginning of 2013</b>	<b>358,101</b>	<b>1,379,447</b>	<b>379,508</b>	<b>-102,178</b>	<b>-10,094</b>	<b>0</b>	<b>2,004,784</b>
<b>Total Recognized Income and Expense</b>	<b>0</b>	<b>0</b>	<b>403,183</b>	<b>0</b>	<b>17,136</b>	<b>1,073</b>	<b>421,392</b>
<b>Transactions with Share holders</b>	<b>0</b>	<b>0</b>	<b>-163,478</b>	<b>-120,083</b>	<b>0</b>	<b>12,833</b>	<b>-270,728</b>
Distribution of Dividends	0	0	-163,478	-120,083	0	12,833	-270,728
Increases/(Decreases) due to Business Combinations	0	0	0	0	0	0	0
<b>Other Changes in Equity</b>	<b>0</b>	<b>97,779</b>	<b>-216,030</b>	<b>102,178</b>	<b>0</b>	<b>0</b>	<b>-16,073</b>
Transactions Between Equity Items	0	0	-216,030	0	0	0	-216,030
Other Variations	0	97,779	0	102,178	0	0	199,957
<b>Balance at End of 2013</b>	<b>358,101</b>	<b>1,477,226</b>	<b>403,183</b>	<b>-120,083</b>	<b>7,042</b>	<b>13,906</b>	<b>2,139,375</b>
<b>Balance at Beginning of 2014</b>	<b>358,101</b>	<b>1,477,226</b>	<b>403,183</b>	<b>-120,083</b>	<b>7,042</b>	<b>13,906</b>	<b>2,139,375</b>
<b>Total Recognized Income and Expense</b>	<b>0</b>	<b>0</b>	<b>406,533</b>	<b>0</b>	<b>20,513</b>	<b>1,111</b>	<b>428,157</b>
<b>Transactions with Share holders</b>	<b>0</b>	<b>0</b>	<b>-182,304</b>	<b>-124,142</b>	<b>0</b>	<b>-770</b>	<b>-307,216</b>
Distribution of Dividends	0	0	-182,304	-124,142	0	-770	-307,216
<b>Other Changes in Equity</b>	<b>0</b>	<b>100,796</b>	<b>-220,879</b>	<b>120,083</b>	<b>0</b>	<b>0</b>	<b>0</b>
Transfers Between Equity Items	0	0	-220,879	0	0	0	-220,879
Other Variations	0	100,796	0	120,083	0	0	220,879
<b>Balance at End of 2014</b>	<b>0</b>	<b>1,578,022</b>	<b>406,533</b>	<b>-124,142</b>	<b>27,555</b>	<b>14,247</b>	<b>2,260,316</b>

Source: Enagás annual reports and own calculations.

## Appendix 17 – Historical Working Capital map

Working Capital Map (In thousands of euros)	31.12.2010	31.12.2011	31.12.2012	31.12.2013	31.12.2014
<b>Needs</b>	-40,686	-185,431	-62,493	-95,384	-100,589
Inventories	1,131	347	-44	882	-548
Trade and other receivables	-41,817	-185,778	-62,449	-96,266	-100,041
<b>Sources</b>	18,728	14,543	-73,033	-19,443	22,374
Trade and other payables	18,728	14,543	-73,033	-19,443	22,374
<b>Other Assets and Liabilities</b>	-3,277	-4,689	-308	-5,547	-2,383
Other Current Assets and Liabilities	-3,277	-4,689	-308	-979	-1,282
Other Non-Current Assets and Liabilities	0	0	0	-4,568	-1,101
<b>Change in Working Capital</b>	-25,235	-175,577	-135,834	-120,374	-80,598

Source: Enagás annual reports and own calculations.

## Appendix 18 – Forecasted Working Capital map

Working Capital Map (values in thousands of Euros)	31.12.2020E	31.12.2019E	31.12.2018E	31.12.2017E	31.12.2016E	31.12.2015E	30.09.2015	31.12.2014	31.12.2013
<b>(Changes)</b>									
<b>Needs</b>	-632,745	-632,659	-632,476	-625,385	-624,980	-626,101	-422,100	-500,155	-702,903
Inventories	-16,245	-16,243	-16,238	-16,056	-16,046	-16,074	-16,900	-15,686	-15,138
Trade and other receivables	-616,500	-616,416	-616,238	-609,329	-608,934	-610,026	-405,200	-484,469	-687,765
<b>Sources</b>	250,625	250,590	250,518	247,709	247,549	247,993	337,300	231,425	244,355
Trade and other payables	254,407	254,372	254,298	251,447	251,284	251,735	325,400	235,808	247,132
Other Current Assets and Liabilities	-3,782	-3,782	-3,780	-3,738	-3,736	-3,742	11,900	-4,383	-2,777
<b>Working Capital</b>	-382,121	-382,068	-381,958	-377,676	-377,431	-378,108	-84,800	-268,730	-458,548
<b>Change in WC</b>	-52	-110	-4,282	-245	677	-109,378	183,930	189,818	-

Source: Enagás annual reports and own calculations.

## Appendix 19 – Forecasted Balance Sheet

Balance Sheet	(Values in Thousands of Euros)	Notes	31.12.2016E	31.12.2015E	30.09.2015	31.12.2014	31.12.2013
<b>Assets</b>							
<b>Non-Current Assets</b>			<b>7,091,417</b>	<b>7,091,417</b>	<b>6,994,700</b>	<b>6,652,652</b>	<b>5,999,808</b>
Net Fixed Assets			5,414,617	5,414,617	5,317,900	5,414,617	5,730,559
Investment Properties	7		169,200	169,200	169,200	25,080	0
Equity-accounted Investments	8 and 32		1,072,800	1,072,800	1,072,800	740,636	254,633
Other non-current Financial Assets	8		361,200	361,200	361,200	399,906	16,884
Deferred Tax Assets	21		73,600	73,600	73,600	72,413	57,559
<b>Current Assets</b>			<b>1,061,515</b>	<b>1,055,158</b>	<b>843,000</b>	<b>1,059,207</b>	<b>1,043,690</b>
Inventories	9		16,046	16,074	16,900	15,686	15,138
Trade and Other Receivables	8 ird : 0		608,934	610,026	405,200	484,469	687,765
Other Current Financial Assets	8		4,000	4,000	4,000	3,220	2,997
Other Current Assets			19,136	11,658	3,500	4,383	2,777
Cash and Cash Equivalents	11		413,400	413,400	413,400	551,449	335,013
<b>Total Assets</b>			<b>8,152,932</b>	<b>8,146,575</b>	<b>7,837,700</b>	<b>7,711,859</b>	<b>7,043,498</b>
<b>Equity + Liabilities</b>							
<b>Equity</b>		Notes	31.12.2016	31.12.2015	30.09.2015	31.12.2014	31.12.2013
<b>Equity</b>			<b>2,429,203</b>	<b>2,413,526</b>	<b>2,401,101</b>	<b>2,260,316</b>	<b>2,139,375</b>
<b>Capital and Reserves</b>		2	<b>2,370,897</b>	<b>2,356,350</b>	<b>2,345,001</b>	<b>2,218,514</b>	<b>2,118,427</b>
Share Capital			358,101	358,101	358,101	358,101	358,101
Reserves			1,674,200	1,674,200	1,674,200	1,578,022	1,477,226
Profit for the Year			483,709	462,927	312,700	406,533	403,183
Interim Dividend			-145,113	-138,878	0	-124,142	-120,083
<b>Adjustments Due to Changes in Value</b>		2	41,900	41,900	41,900	27,555	7,042
<b>Non-controlling Interests (External Partners)</b>		2	16,405	15,276	14,200	14,147	13,906
<b>Non-current Liabilities</b>			<b>4,463,498</b>	<b>4,470,579</b>	<b>4,621,800</b>	<b>4,272,494</b>	<b>4,174,130</b>
Provisions	4		168,600	168,600	168,600	163,340	169,699
Non-current Financial Liabilities	15		3,934,298	3,941,379	4,092,600	3,735,091	3,526,351
Payables to Related Parties			-	-	-	11	5
Deferred Tax Liabilities	21		308,600	308,600	308,600	318,001	400,788
Other Non-current Liabilities	16		52,000	52,000	52,000	56,051	77,287
<b>Current Liabilities</b>			<b>1,260,232</b>	<b>1,262,471</b>	<b>814,600</b>	<b>1,179,049</b>	<b>729,993</b>
Current Financial Liabilities	15		993,548	995,336	473,800	943,241	482,861
Trade and Other Payables	15 ird : 1?		251,284	251,735	325,400	235,808	247,132
Other Current Liabilities			15,400	15,400	15,400	0	0
<b>Total Liabilities</b>			<b>5,723,730</b>	<b>5,733,049</b>	<b>5,436,400</b>	<b>5,451,543</b>	<b>4,904,123</b>
<b>Total Equity + Liabilities</b>			<b>8,152,932</b>	<b>8,146,575</b>	<b>7,837,501</b>	<b>7,711,859</b>	<b>7,043,498</b>

Source: Enagás annual reports and own calculations.

## Appendix 20 – Forecasted Income Statement

<b>Income Statement</b>	(Values in Thousands of Euros)	<b>notes</b>	<b>31.12.2016E</b>	<b>31.12.2015E</b>
<b>Revenue</b>		<b>22</b>	<b>1,269,329.20</b>	<b>1,271,605.89</b>
TSO			1,256,954.44	1,259,329.34
Technical Management of the System			12,374.76	12,276.55
Other Revenues		22	22,265.88	22,307.95
Operating Costs		23	-315,028.80	-314,400.00
<b>EBITDA</b>			<b>976,566.28</b>	<b>979,513.84</b>
Depreciations and Amortisation		5 and 6	-306,111.71	-306,111.71
Impairment Losses and Gains on Disposal of Fixed Assets		6 and 7	0	0
<b>EBIT (Operating Profit)</b>			<b>670,454.57</b>	<b>673,402.12</b>
Financial and Similar Income		24	22,270	23,601
Financial and Similar Costs		24	-90,821	-96,247
Exchange Differences (net)		24	0	0
Change in Fair Value of Financial Instruments		24	0	0
<b>Net Financial Loss</b>			<b>-68,551</b>	<b>-72,646</b>
Gain (Loss) from Equity Accounted Investments		32	43,042	42,198
<b>Profit before Taxes from Continuing Operations</b>			<b>644,945</b>	<b>642,954</b>
Income tax		21	-161236.3163	-180027.0486
<b>Profit for the Year from Continuing Operations</b>			<b>483,709</b>	<b>462,927</b>
<b>Loss Attributable to Non-Controlling Interests</b>		<b>12</b>	<b>1,129</b>	<b>1,129</b>

Source: Enagás annual reports and own calculations.

### Brief Comments on the projected Financial Statements

#### - Working Capital map

In order to do the forecasts I computed the average weight of each WC component in relation to Revenues for 2013 and 2014. The standard deviations for each item were below 0.4%, except for “Trade and Other Receivables”, which has a standard deviation of 11.04%. While not being as pleased for the 11.04% as I was with the other standard deviations, I proceeded to forecast the Working Capital map through the aforementioned method. Accordingly, the significant investment in WC for 2015 has to do with a considerable increase in “Trade and Other Receivables”. Hereinafter, the Working Capital needs normalize.

#### - Income Statement

This financial statement is projected for 2015 and 2016. Until the Operating Profit, the values are taken from the projected FCF map. The “Financial and Similar Costs” are the interest paid on the company’s outstanding debt, using 1.88% (cost of Debt) as interest rate. I calculated the “Financial and Similar Income” using the average percentage they had on “Financial and Similar Costs” during the last 5 years.

The gains from Equity accounted investments are the sum of the Net Income of the companies Enagás has participations in that, through the Equity Method and the Proportional Consolidation Method, Enagás is entitled to. The corporate tax rates are 28% and 25%, for 2015 and 2016, respectively.

#### - Balance Sheet

Like for the Income Statement, I forecasted the Balance Sheet for 2015 and 2016, and not until 2020. In my view, projecting the balance sheet for several years is a far-fetched act, as the evolution of the BS components is the result of numerous decisions taken by the company. Consequently, doing this, I would have to make numerous assumptions that are unlikely to be verified in reality.

My major concern with the Balance sheet was to ensure that the company was able to meet its targeted debt ratio of  $\text{Net Debt}/(\text{Net Debt} + \text{Equity})$  of 64%. However, given the increase in Working Capital needs verified in 2015, the company requires more financing than initially expected. By raising Debt, the Net Debt ratios attained for 2015 and 2016 were 65.2% and 65%, respectively. For these values I have to comments: a) I expect the ratio to slide to 64% in the medium-term and b) I see this temporary difference as insignificant for WACC purposes.

I assume that Enagás will pay 30% of its Net Profit as dividends, as it has paid, on average, in the recent years. The Non-controlling interest comes from the 10% participation “Ente Vasco de la Energia” has in “Enagás Transporte del Norte”.

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