MASTER OF SCIENCE IN
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MASTERS FINAL WORK
PROJECT

EQUITY RESEARCH: REN- REDES ENERGÉTICAS NACIONAIS, S.G.P.S., S.A.

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Abstract

This study contains the valuation and the respective estimation of REN´s intrinsic share value for 04/01/2016.

Our Equity Research is a continuation of the implementation process of a new presentation format for this kind of project, combining the rules and style of ISEG´s Master Final Project and the CFA Institute (Pinto, Henry, Robison, and Stowe, 2010) recommendations.

REN's choice comes from my personal interest in the energy sector and from its complex system, from production to the final consumer, being that REN is in the mid-term of this path, through the transportation of electricity and natural gas.

The price target was reached by using the most appropriate method in terms of absolute valuation, the Discounted Cash Flow (DCF) Approach.

With a price target of 3.10€ and an upside potential of 9.83% relatively to the share price at 04/01/2016 (2.82€), the final recommendation for REN stands for **Neutral**.

Keywords: REN- Redes Energéticas Nacionais, S.G.P.S., S.A.; Regulation; ERSE; DCF Valuation.

Resumo

Este estudo contém a avaliação e a respetiva estimativa do valor intrínseco da ação da REN para 04/01/2016.

O nosso Relatório de Avaliação é uma continuação do processo de implementação de um novo formato de apresentação para este tipo de projeto, agregando as regras e estilo do Trabalho Final do Programa de Mestrado do ISEG e as recomendações do CFA Institute (Pinto, Henry, Robison, and Stowe, 2010).

A escolha da REN provém do meu interesse pessoal no setor energético e do seu complexo sistema, desde da produção ao consumidor final, sendo que a REN encontra-se a meio termo deste trajeto, através do transporte de eletricidade e gás natural.

O preço-alvo foi alcançado usando o método mais apropriado em termos de avaliação absoluta, o método dos Fluxos de Caixa Descontados (DCF).

Com um preço-alvo de 3.10€ e um potencial de valorização de 9.83% em relação ao preço da ação em 04/01/2016 (2.82€), a recomendação final para a REN é **Neutro**.

Palavras-Chave: REN- Redes Energéticas Nacionais, S.G.P.S., S.A.; Regulação; ERSE; Método DCF.

Acknowledgements

Index

Appendix

List of Figures

List of Tables

Research Snapshot

REN- Redes Energéticas Nacionais, S.G.P.S., S.A. (REN) is a Portuguese company that has two main areas of activity: electricity and natural gas. Besides these main areas, REN has companies like RENTELECOM, ENONDAS, REN Trading, REN Serviços and REN FINANCE BV.

Table 1- REN´s Key Information

REN´s Key Information							
Ticker Reuters	RENE.LS	Industry	Energy	High	2.90€	Listed	Euronext Lisbon
Ticker Bloomberg	RENE PL	Share Capital	€534 Million	Low	2.38€	IPO Date	09/07/2007
Website	http://www.ren.pt/	Nº Shares	534 Million	Price at 04/01/2015	2.82€	Price Target	3.10€

Source: Company Data and HA Analysis

Figure 1- Historical Share Price
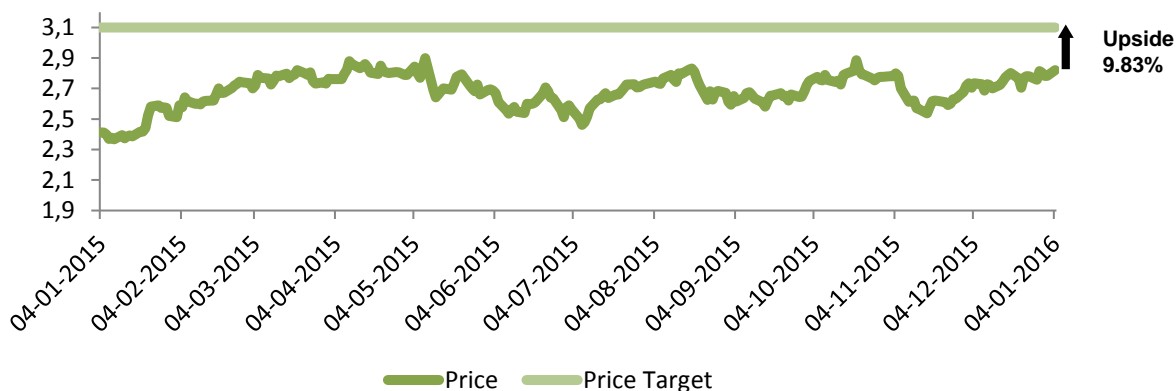
Source: Bloomberg and HA Analysis

With a price target of **3.10€** and using an **investment grade and risk classification matrix** in Table 2, based on the BPI´s system of classification, our recommendation stands for **Neutral.**

The price target was achieved by executing the **Discount Cash Flow Valuation Method (DCF)** for a forecast period between 2016F to 2021F. With this price target we concluded that REN, relatively to the **price at 04/01/2016 of 2.82€**, was **undervalued** with an **upside potential of 9.83%**.

Besides this method, we used the **Multiples Approach Valuation** as a support to the DCF Valuation (Table 3).

In terms of risk assessment, we determined that REN had a **low risk of investment** due to the fact that the company does not have any competitors and because the main risk, that has a high probability of occurring and a high impact, is the **ERSE regulation**.

From our forecast, it is expected that REN´s profitability will decreased in the first year comparing it to 2015 (Table 4), from an EBITDA of €490 Million in 2015 to €454 Million in 2016F. The next years will be marked by a recovery in terms of profitability due to an increase in the revenues and a reduction in the costs. At the same time, REN´s debt will decrease and the dividend policy will maintain, with 0.17€ per share.

Table 2- Investment Grade and Risk Classification Matrix

	Low Risk	Medium Risk	High Risk
Buy	>15%	>20%	>30%
Neutral	>5% and <15%	>10% and <20%	>15% and <30%
Reduce	>-10% and <5%	>-10% and <10%	>-10% and <30%
Sell	<-10%	<-10%	<-10%

Source: BPI Rating Scheme

Table 3- Forecast Multiples Approach

	Price	Potential
EV/EBITDA	3.12 €	10.61%
P/E	2.10 €	-25.39%
P/B	4.39 €	55.78%
Average	3.21 €	13.67%
DCF valuation	3.10 €	9.83%

Source: HA Analysis

Table 4- Financial Highlights (€Millions)

	2012	2013	2014	2015	2016F	2017F	2018F	2019F	2020F	2021F
Total Revenues	811	789	756	819	717	724	730	681	688	697
EBITDA	512	522	505	490	454	467	476	475	486	499
EBIT	314	320	303	280	251	266	277	277	292	308
Net Profit	124	121	113	116	77	88	98	99	113	130
Dividend per Share	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17

Source: Company Data and HA Analysis

Business Description

REN´S Introduction

REN-Redes Energéticas Nacionais S.G.P.S., S.A. (REN), Figure 2, is a Portuguese listed company in which the main activity is the management of the energy **National Transmission Grid (NTG)**, with presence in the areas of electricity and natural gas in Portugal, taking pride on being one of the few operators in Europe with these characteristics.

One of the most important aspects in REN is the fact that the company is **regulated**. This regulation comes from the fact that REN is a **monopoly** in the Portugal energy sector (in terms of the NTG), managing the **concessions**, appendix 19, provided by the Portuguese State. The regulation of the energy sector is in charge of the **Energy Services Regulatory Authority (ERSE)** and by the **Portuguese Competition Authority and Directorate General for Energy and Geology (DGEG).**

History

REN was incorporated on 18/08/1994 under the name of REN – Rede Eléctrica Nacional, S.A. as a result of the spin-off of a business unit of **EDP – Energias de Portugal, S.A.** (**EDP**). In November 2000, the Portuguese State acquired a 70% stake in REN from EDP as part of the liberalisation of the domestic energy market, which required the legal separation of electricity transmission, distribution and generation companies. Until September 2006, REN's core business was the operation and technical management of the NTG in Portugal, acting also as a sole purchaser of electricity, through the long-term **Power Purchase Agreements (PPAs)** executed between 1993 and 1996 with the hydro and thermal electricity generation plants in mainland Portugal.

In September 2006, REN acquired certain assets, from **GALP Energia, S.A. (GALP)**, and companies relating to the transportation and underground storage of natural gas and the **Liquefied Natural Gas** (**LNG**) terminal and regasification facility in Sines from Transgás.

On 05/01/2007, REN reorganize the group, becoming a holding company that operates electricity and gas businesses through its subsidiaries and management of the concessions, changing its name to **REN – Redes Energéticas Nacionais, S.G.P.S., S.A. (REN)**.

Main Activities

The two major activities provided by REN are the electricity transmission in high voltage and overall technical management of the **National Electric System** (**NES**) and the transportation of natural gas at high pressure and overall technical management of the **National Natural Gas System** (**NNGS**), ensuring the reception, storage and regasification of LNG and underground storage of natural gas.

Operations

Electricity

In the electrical operations, the transmission of extra high voltage electricity (150, 220 and 400 kV) of the NTG, in that **REN Rede Eléctrica** (a company wholly owned by REN), holds the service concession public for 50 years, until 2057. The concession includes the planning, construction, operation and maintenance of the NTG and also covers planning and overall technical management of the NES to ensure the harmonized functioning of its infrastructures, service continuity and a secure electricity supply.

REN Rede Elétrica has an electricity complex transmission system, Figure 3, which is based in four pillars (generation, distribution, markets and supply and consumption), Appendix 10, and also respects a transmission´s grid value chain, Appendix 11.

Figure 3- Electricity Complex System
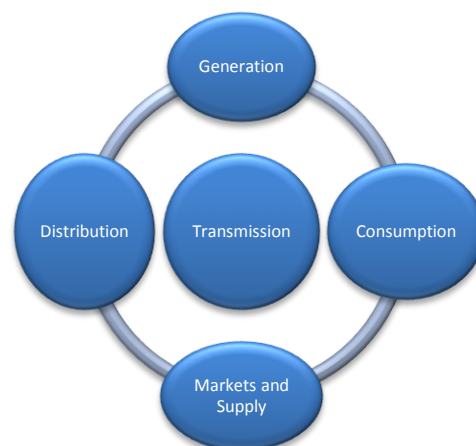
Source: Company Data and HA Analysis

Natural Gas

All the natural gas used in Portugal comes from third countries. A part is received by high-pressure pipeline located in Spain and the other by sea, in the form of **LNG.**

Figure 4- Natural Gas Complex System

In terms of the corporate structure role in the natural gas activities, **REN Gasodutos** operates the NNGS, which receives the natural gas at the Spanish border, as it leaves storage facilities (**REN Armazenagem**) or the regasification terminal, in Sines, where the reception, storage and regasification of the LNG is made (**REN Atlântico**) and then it is delivered to the distributors or high-pressure end users. REN Gasodutos holds the concession for the high-pressure transport of natural gas, which includes overall technical management of the NNGS, through which it coordinates the operation of natural gas distribution and transport infrastructures, ensuring the continuity and security of supply. It is important to note that these activities are also based in a complex transmission system (Figure 4 and Appendix 12) and a transmission´s grid value chain, Appendix 13.

Source: Company Data and HA Analysis

RENTELECOM

RENTELECOM was created in 2002, starting with providing internal services and with leveraging the existing surplus of network capacity in the electricity and gas backbones, but is nowadays an alternative in the wholesale and corporate markets.

In terms of positioning, RENTELECOM positions itself on the utilities and telecommunications operators segments, with know-how in solutions for utilities and for telecommunications operators and information technology integrators.

Its business sectors are divided by lease and maintenance of dark fibers, renting spaces and telecommunication infrastructures, housing, leased lines and information technology services.

REN FINANCE BV

REN FINANCE BV works as a special purpose vehicle, meaning that its objective is to issue debt and notes for the parent company, REN.

REN Trading

Company created in 2007, **REN Trading** has the main purpose of purchase, sale, import and export of electricity and the purchase and selling of power system services as part of the management of the long-term PPAs**.** The main goal is to maximize profits resulting from the sale of energy and system services on the market and the minimization of costs of the PPAs, according to ERSE, Decree 11210/2008 published in Diário da República.

ENONDAS

Created in 2010, **ENONDAS** came to exist due to a public concession given by the Portuguese State with the objective of generating wave energy in a Pilot Zone. The public concession is for 45 years and it includes authorization for the installation of infrastructure and connection to the public grid. With this in mind, the company created a Pilot Zone Development Plan (Appendix 14).

REN Serviços

The main purpose for the creation of **REN Serviços** is to identify and establish business corporation agreements with foreign companies for the electricity or natural gas service infrastructures and the provision of engineering services using REN resources. The investment in foreign companies is a process that is still in the early stage of implementation.
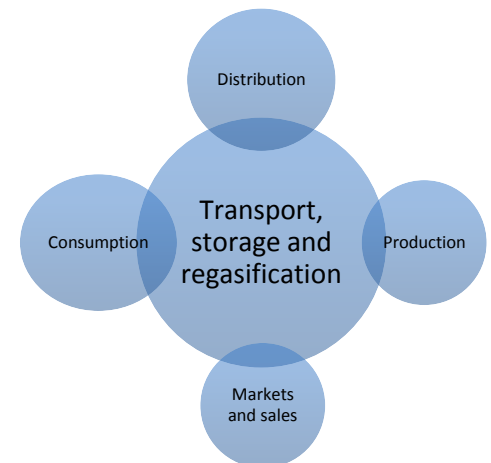
Company Strategies

Diversification and business growth through investment in international projects: REN has accumulated experience in the analysis of various markets, opportunities for research, implementation of investment projects and establishing contacts with potential international partners. This strategy comes from REN´s intention of innovating, reinforcing its engineering competitiveness by developing mergers projects and acquisitions as well as Greenfield projects in the segments of electricity transmission and gas. These possible projects are being evaluated in **Latin America** and **Africa** regions.

Ongoing commitment to managing the transmission infrastructures of electricity and natural gas in Portugal: Management improvement of the **NTG infrastructures** that require the highest level of safety and operational efficiency (Appendix 18). From the management of energy systems, whether of high voltage transmission or natural gas in the components that are in concession.

Looking for opportunities to growth and expand the activity appropriate to the conservative risk profile and financial capacity: This strategy involves working with the Portuguese State, to seek sustainability and rational investments, maintaining the quality of infrastructure and new project developments to satisfy Portugal needs in the energy sector. The investments made in 2015 by REN in Portugal can be seen in Appendix 21.

Management characterized by great discipline and financial control: with this in mind, REN already proposed to allocate the 2015 net profit (€116 Million), Table 5.

The dividends provided by REN to its shareholders has overall maintained the same (0.171 €), Figure 5.

Table 5- Proposed Allocations of the 2015 Net Profit (€Millions)

Legal Reserves	4.2
Dividends	91.3
Retained Earnings	14.8
Distribution to Employees and Subsadiaries	2.4

Source: Company Data and HA Analysis

Figure 5- Dividends per Share
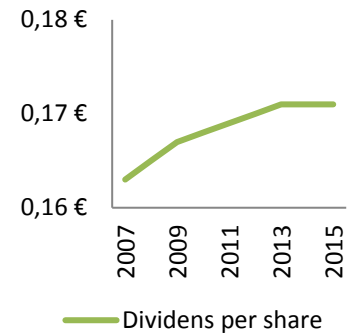
Source: Company Data and HA Analysis

Management and Corporate Governance & Social Responsibility

Corporate Governance

REN´s **corporate governance**, Figure 6 and Appendix 15, is constituted by nine elements, being the most important:

- **General Shareholders Meeting**- consisting of the following members, elected for office corresponding to a three-year-period in the General Shareholders Meeting, Pedro Maia (Chairman of the General Shareholders Meeting Board) and Francisco Santos Costa (Vice-Chairman of the General Shareholders Meeting Board), Appendix 15a.
- **Board of Directors-** composed by 13 members, being that the CEO of the company is Rodrigo Costa, Appendix 15b. These members are also elected in the General Shareholders Meeting.
- **Executive Committee-** the Board of Directors approved to constitute an Executive Committee for the 2015-2017 periods, consisting in three members, Appendix 15c.
- **Audit Committee**- constituted by three independent members, performing its duties of supervision and control of the management activity with autonomy and independence, Appendix 15d.
- **Statutory Auditor-** Deloitte & Associados, SROC S.A. and is also the company´s **External Auditor**
- **Remuneration Committee-** composed by three independent members, with functions like the identification and clarification of the criteria for determining the remuneration to be paid to members of the corporate bodies**,** information about the maximum potential on an individual basis to be paid to members of corporate bodies of REN and identifying the circumstances in which these maximum amounts may be payable, Appendix 15e.

Social Responsibility

In terms of social responsibility, REN has created three fundamental pillars, which are, **internal health promotion**, **involvement and satisfaction of interested parties** and **environmental protection**.

- **Internal Health Promotion-** this is concentrated in given to their employees, Table 6 and Table 7 the best conditions, providing them a work environment in which they can show their attributes, contributing to their personal growth and for the proper functioning of the organization. This is made by ensuring diversity and equal opportunities, and that all their high standards of hygiene, health and safety are met. With this in mind, REN started creating initiatives like **NÓS Program** (30 initiatives, 189 participants under the three axes that make up the balance, equality and inclusion) and **REN Run Club.**
- **Involvement and Satisfaction of Interested Parties**- this pillar focus on the local communities, which means that REN tries to promote an inclusive culture that encourages the involvement of all stakeholders and to give communities an active role, listening to concerns and recommendations, encouraging and rewarding good initiatives, and creating a positive impact on the Portuguese population. This is made with initiatives like **Prémio Agir da REN** (creating solutions to social problems), **Prémio REN** (scientific nature award that distinguishes the best master's thesis in the field of energy) and **Share Program** (corporate volunteer program).
- **Environmental Protection**- REN is committed to be an active agent in environmental protection, implementing reforestation policies, advocating the rational use of natural resources and pollution prevention, supporting the development of renewable energy and playing an active role in preventing climate change. This is made by partnerships with **LIFE Elia for Southern Europe** (contributing to the sharing of best practices for the preservation of

Figure 6- REN´s Corporate Governance
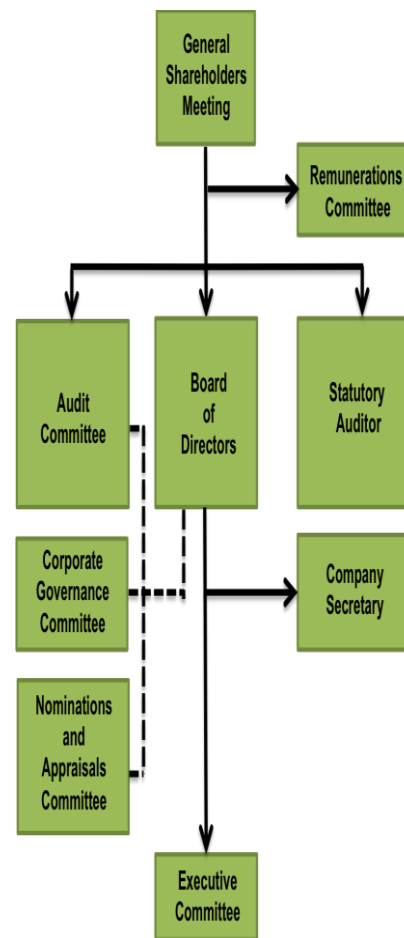
Source: Company Data and HA Analysis

Table 6- Number of Employees

Number of Employees		
Year	2014	2015
Employees with and without term	640	620
Professional trainees	1	-
Total	641	620

Source: Company Data and HA Analysis

Table 7- Employees Gender

Employees Gender		
Year	2014	2015
Male	492	470
Female	149	150

Source: Company Data and HA Analysis

Corporate structure

REN´s corporate structure, as seen in Figure 7, shows that the company controls all of their eleven companies by 100%, with the exception of **R&D NESTER**, which is a partnership with **STATE GRID** for development and investigation (I&D) in the energy sector. Besides this, all the other companies are fully controlled by **REN**.

It is also relevant to affirm that, relatively to partnerships, REN also has one with **RED ELÉCTRICA CORPORACIÓN** and **ENAGÁS**.

In the wake of the agreement between Portugal and Spain on the matter of establishing an Iberian market for electricity, REN holds 40% in the capital of **OMIP (Iberian Market Operator (Portugal), SGPS, SA)** (which in turn holds 50% of the share capital of OMIP, **Management Company Regulated Market, SGMR, SA** (which in turn holds 50% of **OMI CLEAR - Society of Energy Markets Compensation, SGCCCC, SA** and 50% of **OMI - Polo Español SA (OMEL)**).

REN also has 10% in **CORESO, S.A.** 7.5% in **Hidroeléctrica of Cahora Bassa, S.A.**, 1% in **Red Eléctrica Corporación, S.A.** and 8% in **Medgrid SAS**.

Shareholder Structure

The shareholder structure (Appendix 17), at 31/12/2015, had a share capital of 534,000,000€ with a nominal value of 1€ representing 534,000,000 common stocks, with no special rights to their holders.

When addressing REN´s shareholder structure it is important to have in mind, that the company went through two phases of re-privatization (both in 2014) due to the fulfillment of the objectives set out in **Economic and Financial Assistance Program** and the **Fundamental Law on Privatization** to foster the diversification of the shareholder structure and liquidity of the shares.

There is 38% of **free float** and 0.7% **own shares.** Due to restrictions on the ownership of shares, in legal terms, no entity, in Portugal or abroad, may hold, directly or indirectly, more than 25% of the share capital of REN, which is applied to the two main private shareholders, **State Grid of China** (25%) and **Oman Oil** (15%).

The exact number of shares of each entity and of the Board of Directors is given on Appendix 16.

Figure 7- REN´s Corporate Structure
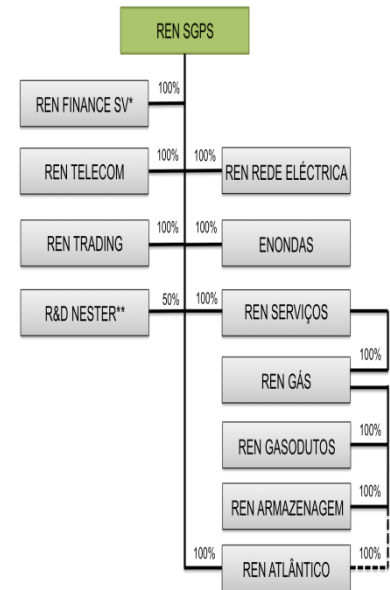
Source: Company Data and HA Analysis

Industry Overview

Global Economic Outlook

Since the energy sector in Portugal depends on third parties, it´s is important to have an idea of the Global GDP growth and its forecast for the following years (Figure 8). The global economic outlook is **favorable**. From 2014 to 2015 there was a decrease in terms of the GDP growth (-0.32%), but it´s expected to growth in the following years, based on the IMF forecasting.

Figure 9 shows the GDP growth in the advanced and developing economies, giving a deeper analysis of the global economic outlook.

In the case of the **advanced economies**, from 2014 to 2015 there was a small improvement in terms of the GDP growth (+0.05%) due to the economic growth in the European Union (1.44% in 2014 to 1.99% in 2015). IMF expects that the GDP growth will maintain constant in the following years, between 1.85% and 1.95% until 2021.

Outside the European Union, in USA there was a very small negative growth (-0.002%) from 2014 to 2015 but it´s expected, by IMF, to maintain constant in the following years.

Developing economies are characterized by a negative growth from 2014 to 2015 (-0.62%), due to a stagnation in Latin America, especially Brazil (which is in a recession) and from a slowdown in the economic growth in some Asian countries. Nevertheless, the IMF expects an improvement in these emerging economies for the following years.

China Economic Outlook

China is an important player to REN due to the fact that one of their biggest private shareholders is State Grid of China and, in terms of financing, Chinese entities play a big role in funding REN.

In Figure 10, there is a clear tendency of decrease for the GDP growth in China (7.30% in 2014 to 6% in 2021, according to IMF forecast), which can create speculation of a bad future performance of China economy (less investment, less bank loans, for example). The inflation on the other hand has an increasing tendency until 2021, according to IMF forecast.

The China economic outlook may present a **moderate** risk to REN.

Eurozone

The Eurozone has a very important role in REN´s activity due to the fact that, being REN a company with headquarters and activity in Portugal and being that Portugal is a member of the Eurozone, the policies created by entities like the **European Central Bank (ECB)** and the economic performance of Eurozone members are important because REN distributes energy (electricity and natural gas) from third countries (the natural gas comes from Spain and the NTG for the electricity is connected with the European Transport Grid that is connected to the Spanish Transport Grid).

In terms of GDP growth and inflation in the Eurozone (Figure11) between 2014 and 2015 there was a significant growth in the GDP (+0.75%, being that the IMF expects it to maintain overall constant for the following years) and a deflation rate of 0.40%, being that the IMF expects a significant rise of the inflation rate for the following years, especially after the ECB decided to implement expansionist monetary policies alongside with a better access to credit and low interest rates for the foreseeable future for the banks. These types of measures are expected to increase the investment and lower the unemployment rate in the Eurozone (Figure12).

Relative to the reference interest rate for ECB (**Euribor**), it has been characterized by a downward trend from 2014 to 2015. The 3-month Euribor went from +0.76% to -0.13%, the 6-month Euribor went from 0.18% (2014) to -0.04% (2015) and 12-month Euribor from 0.33% to 0.06%. This is happening due to the actions of the ECB as mention before.

Figure 8- Global GDP Growth

Source: IMF, World Economic Outlook Database and HA Analysis

Figure 9- GDP Growth for Advanced and Developing Economies
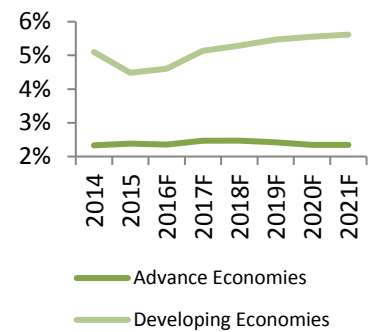
Source: IMF, World Economic Outlook Database and HA Analysis

Figure 10- China´s GDP Growth and Inflation
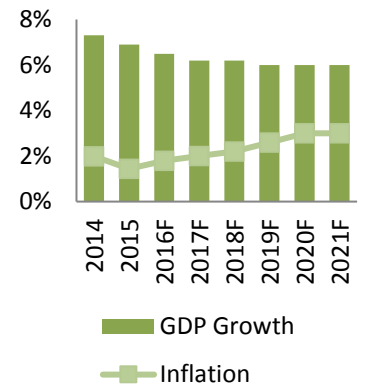
Source: IMF, World Economic Outlook Database and HA Analysis

The economic outlook in the Eurozone gives an idea of a **favorable** environment to REN.

Portugal economic outlook

REN´s activity is based and regulated in Portugal, meaning that the economic performance of the country impacts in a substantial way the positioning of the company in the Portuguese energy market.

Figure 13 shows that the GDP had a rise of +0.56% from 2014 to 2015 due to, especially, a rise in the exports of goods and services (+0.66%) in Portugal from 2014 to 2015. The IMF expects a reduction of the GDP growth for the following years. Relatively to the inflation rate it seems to follow the trend of the inflation rate in the Eurozone (Figure 11), meaning that from 2014 to 2015 and for the following years (IMF forecast), because of ECB measures to stimulate the Eurozone economies, it´s expected, overall, to increase as well.

In terms of investments and unemployment rate in Portugal (Figure14), the investment in Portugal tends to have its ups and downs (IMF forecast), but the unemployment rate follows the decreasing trend in the Eurozone.

The general government net debt, in terms of percentage of GDP, in 2014 was 120.03% and IMF expects that, for 2015 and the following years, to maintain between 120% and 119% of the Portugal GDP.

The Portugal economic outlook appears to be **favorable** to REN.

Energy sector outlook

In a global level, there are early signs of a new era for energy worldwide because of aspects like (1) the sharp drop in oil prices that was accompanied by the prices of other fossil fuels in many countries; (2) more than half of the new production capacity installed in 2014 worldwide, respects renewable technologies; (3) more regulatory binding to energy efficiency worldwide and (4) other aspects that are changing the energy sector in the world.

The **International Energy Agency (IEA)**, in a scenario of new policies, shares their vision of the evolution in the energy market until 2040. The IEA expects: (1) an increasing demand of natural gas, derived by a growth of development economies, (2) a continuous rise on the demand of the electricity, continuing the impact of the numerous environmental problems, but with an increasing use of renewable energy sources, especially in the European Union, where IEA expects a growth of 50% in the renewable energy usage until 2040.

In Portugal, the **electricity consumption** (Table 9), has been oscillating since 2011, but from 2014 to 2015, the electricity consumption increased by 0.2 TWh, showing a recovery and a stabilization of the consumption in Portugal that can be explain by the improvement of the country economy, which means that the energy consumption is correlated to Portugal economic health.

The production of renewable energy for electricity, between 2014 and 2015, didn´t follow the trend establish in Europe and in the advanced economies, Figure 15.

In terms of **natural gas consumption in Portugal** (Table 8), the consumption is the sum from the usage in the conventional market and the electric market, which, from 2011 to 2014 suffered a fall in the consumption but with a recovery in 2015 of 15.3% relatively to the 2014 consumption, pointing to the fact that the natural gas consumption in Portugal is also correlated to the economic health of the country.

The increasing energy consumption in Portugal gives a **favorable** environment to the company.
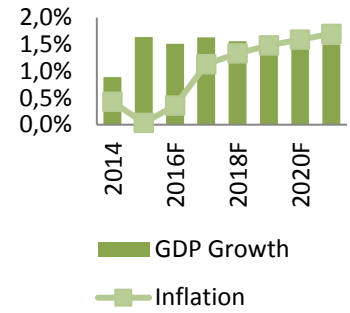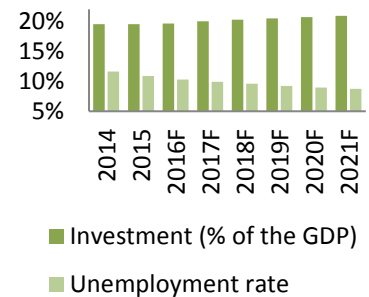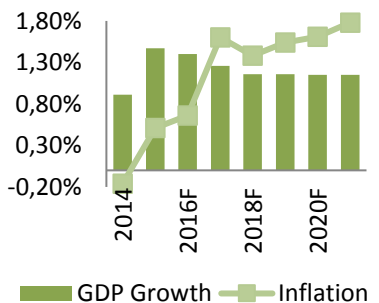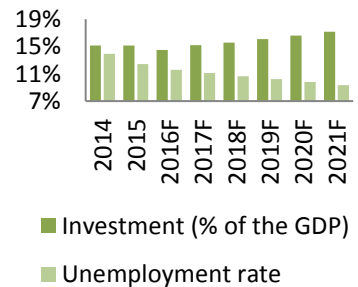
Table 8- Portugal Natural Gas Consumption

Year	conventional Market (TWh)	Electric Market (TWh)	Total Consumption (TWh)
2011	36.2	21.3	57.5
2012	38.3	11.9	50.2
2013	44.5	3.4	47.9
2014	42.1	3.2	45.3
2015	41.2	11.0	52.2

Source: Company Data and HA Analysis

Table 9- Portugal Electricity Consumption

Year	Consumption (TWh)
2011	50.5
2012	49.1
2013	49.2
2014	48.8
2015	49.0

Source: Company Data and HA Analysis

Regulatory environment

As mention before, REN is a **monopoly** due to the fact that the company has concessions given to them for the two major activities (transmission of electricity and natural gas).

The company obtains close to 100% of its revenues from the electricity and natural gas distribution and\or supply companies that are charged according to the tariffs set annually by the independent regulator (**ERSE**). REN is not exposed to electricity/gas volumes or commodity prices, as its revenues depend entirely on regulatory parameters **reviewed every 3 years**, meaning that the revenues should be titled **allowed revenues** (Appendix 20). One of the main parameters of the allowed revenues is the **ROR** or the **Rate of Return on RAB**, a variable rate (different for electricity and gas) that is set yearly by ERSE and that is indexed to the average Portuguese sovereign 10-year bond yields (OT's). This ROR is then multiplied with the **RAB (Regulated Asset Base).** RAB is based on the value of the concession assets plus premiums attributed by the regulator, Table 10.

REN depends on the allowed revenues establish by ERSE, representing a **higher risk** to the company environment due to the fact that the company is totally reliant on the parameters created by the regulator every 3 years.

Figure 15- Renewable and Non-Renewable Electricity Production

■ Renewable ■ Non-Renewable ■ Import balance

Source: Company Data and HA Analysis

Table 10- RAB (€Millions)

Average RAB	2011	2012	2013	2014	2015
Electricity	1,806.1	1,973.6	2,069.1	2,128.0	2,149.4
Land	334.8	321.2	307.6	294.3	281.2
Gas	1,044.9	1,086.9	1,114.1	1107.0	1,155.2
Total	3,185.8	3,381.6	3,490.8	3,529.2	3,585.8

Source: Company Data and HA Analysis

Debt and Financing

In terms of **debt**, 2015 was marked by a decreased of the **cost of debt**, **from 4.7% (2014) to 4.1% in 2015.** This reduction came from the continuous improvement of the macroeconomic situation in the country and the improvement of REN´s profile risk, for example, a better risk valuation from Standard & Poors, from BB+ to BBB-. In Table 11, we can see REN´s Rating from the 3 major Rating Agencies.

The net debt, from 2014 to 2015, had an increase of +1.2% (29.3€M). The Table 12 shows the items from the gross debt value to the net debt value in 2014 and 2015.

In terms of **financing,** the company is already funded beyond 2016. The major actions taken by REN in 2015 were: (1) an international bond issue of €300 Million with a maturity of 10 years; (2) prepaid two bank loans, totaling €175 Million, whose counterparts were ICBC (Industrial and Commercial Bank of China) and the CBD (China Development Bank), consequently, under credit lines of which effected the financing was extinguished; (3) celebration of a revolving credit facility of €120 Million with ICBC and a maturity of 5 years; (4) it was signed with the EIB (European Investment Bank) a new long-term financing to the amount of €80 Million and (5) renegotiated three commercial paper programs totaling €650 Million.
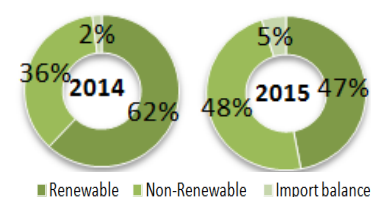
Table 11- REN´s Rating

Rating	Long term	Short term	Outlook
Moody's	Baa3	-	Stable
Standard & Poor's	BBB-	BB+	Positive
Fitch	BBB	F3	Stable

Source: Company Data and HA Analysis

The financing sources can be seen in Table 14.

The environment surrounding REN´s debt and financing may impose a **moderate risk** to the company.

Peer Group

This point will stand out when analyzing the **Multiples Approach**, but the main aspect of this topic is the fact that REN **doesn´t have any competitors** in their activity in Portugal due to the fact that REN operates under **concessions** granted to them, making the company a monopoly in their activity.

From a multiple perspective it is difficult to find a truly comparable peer group due to the fact that **none of the European players have an exactly comparable regulation** and **most of the peers are focused on one sector** (electricity, gas or water). The peer players that are going to be used are **REE** (Red Eléctrica Corporación SA), **TERNA**, **EVN Group** and **IREN**.

The process of the peer group selection is explained in Appendix 9.

REE

REE is a Spanish company that operates in the high-voltage electricity grid in Spain, with 42,008KM of lines. This company is the closest comparable company to REN due to the fact that it operates in the same single Iberian market with a similar regulatory framework, for example, REE is remunerated on a Net RAB system.

TERNA

TERNA is an Italian company that operates the electricity high-voltage grid in the country with over 63,500Km. The company is remunerated under a Net RAB system.

EVN Group

EVN is an Austrian company founded in 1922 that produces and transports electricity as the main activity. Beside this, the company also operates in natural gas supply, water treatment and waste management.

EVN operates in a large scale, operating in Austria, but also Germany, Bulgaria, Macedonia and Croatia.

IREN

IREN is an Italian company that operates in the sector of electricity and natural gas (production, in the electricity sector, distribution and sale), management of integrated water services and thermal energy for district heating.

Competitive Position

For the REN´s competitive position, a **SWOT analysis** (Table 13) is important, due to the fact that this analysis can give an idea of REN´s position in the market.

Table 13- SWOT Analysis

Strengths	Weaknesses
- No competitors -The concessions have a long maturity -Well funded beyond 2016 -Stable dividend policy, making it attractive for potential investors -A large and diversified RAB	-complete dependence on the regulatory parameters establish by ERSE in terms of the allowed revenues -large dependence on capital from Chinese investors (loans and shareholders)
Opportunities	**Threats**
-Plans for Internationalization -Increasing energy consumption in Portugal	-new regulatory parameters every 3 years -possible crisis erupting in China or European Union (Brexit)

Source: HA Analysis

Table 12- Gross Debt Breakdown (€Millions)

	2014	2015
Gross Debt	2,604.5	2,542.0
minus hedging swaps	17.9	12.8
minus cash and cash equivalents	114.3	63.7
minus finacial pledge	99.4	-
minus others	-63.3	-
Net Debt	2,436.2	2,465.5

Source: Company Data and HA Analysis

Table 14- REN´s Financing Sources (€Millions)

	2014	2015
Bonds	1,354.2	1,535.7
Bank Borowings	859	618.5
Commercial Paper	377	365
Bank Overdrafts	1.7	0.1
Leasing	3.3	3.1
Sub-Total	2,595.2	2,522.4
Accrued Interest	25.8	29.9
Prepaid Interest	- 16.6	-10.2
Total	2,604.5	2,542.0

Source: Company Data and HA Analysis

Investment Summary

With a price target of **3.10€**, an **upside potential** of **9.83%** relatively to the price at 04/01/2016 (**2.82€**) and a **Low Risk** assessment (*please refer to the Business Snapshot section and Table 2*), our recommendation stands for **Neutral**.

In terms of valuation methodology, we used the **DCF Valuation Method** to obtain the price target.

Besides this method, we used the **Multiples Valuation Approach.** By selecting a peer group, we used this method to support and consolidate the position define in the DCF Valuation.

REN was characterized by an overall stable stock performance in 2015, with the price achieving a maximum value of 2.90 € in 08/05/2015 and a minimum value of 2.38€ in 09/01/2015.

In terms of dividend policy, REN tries to deliver a dividend per share of 0.171€ every year to its shareholders, dispending from its resources an approximated value of €91.32 Million.

REN´s **main objective** is to provide a public service more efficient, safer and a competitive energy system that ensures access to energy for all, at the lowest possible cost.

It has two main activities areas: the electricity and the natural gas, managing the **NES** and **NNGS** for each activity respectively. Besides these two main areas of activity, REN has other businesses like **RENTELECOM** and **ENONDAS**, for example, but in a smaller scale (Figure16).

Figure 16-REN´s Revenues by Weight (2015)

Source: Company Data and HA Analysis

REN is a pure regulated player, meaning that its activity in supervise by a third party, which in the case of the energy market, the supervisor is **ERSE.**

ERSE is an independent entity, with the main objective of protecting the consumer's interests regarding prices, service quality and access to information in terms of the energy market (electricity and natural gas).

ERSE establishes parameters for the base of calculation of REN´s revenues (allowed revenues) and decides if approves or not the investment plans (CAPEX) presented by REN.

This leads us to the main divers of REN´s growth. Due to the big role that the regulator has on REN, the **biggest driver of the company, in our consideration, is the ERSE regulation**. This driver conditions REN in terms of revenues, for example in establishing the ROR and RAB (where the value of return on RAB arrives from, which in the main driver in terms of revenues), the recovery of depreciation, the construction revenues and costs and in terms of the CAPEX approval.

In terms of the **risk to price target,** REN´s main vulnerability is its biggest driver, meaning that ERSE regulation has a big role in the risk assessment. This risk covers the fact that, depending from the parameters defined by the regulator, REN´s profitability can be damaged.

Besides this main risk, REN has others that have a small impact or a low probability of happening, which lead us to believe that REN is a **low risk** company. Another fact that endorses this low risk assessment is due to the lack of competitors that REN has because of the concessions and their duration conceded by the Portuguese State to the company.

Valuation

REN´s **Balance Sheet** and **Profit and Loss statement (P&L)**, for the historical and forecast period, can be seen in Appendix 1 and Appendix 2, respectively.

Valuation methods

In terms of absolute valuation, the method used was the **Discounted Cash Flow (DCF)**, using the forecast **Free Cash Flow to the Firm (FCFF)**, being the forecast period from 2016F to 2021F. This let us see how REN´s capital structure is going to vary during the forecast period and how it´s going to affect the evolution of the **Weighted Average Cost of Capital (WACC)**, allowing us to reach the most reliable enterprise value and price target for the valuation of the company.

Although REN has a stable dividend policy, we assumed that the DCF would fit better as a valuation method for reaching a price target.

In terms of relative valuation, we used the **Multiples Approach**, using the peers presented in the peer group, *please refer to the Industry Overview section*. Using this approach we reached a price target derived from the multiples chosen, providing a support and complement to the DCF valuation.

Like it was mention before, REN has two major areas of activity (electricity and natural gas), which represent almost 100% of the company total revenues (Figure 17). We decided that it was imperial and necessary to separate the total revenues and costs between three parts: electricity, natural gas and others. We were obligated to do this due to the fact that REN is a **regulated company** by **ERSE** and its revenues arrive from different parameters for each regulated activity, especially for the electricity and gas, meaning that the regulator establishes the way that REN is remunerated, as explained before.

Historical Financial Analysis

The historical period of REN´s analysis covers the years since 2012 to 2015.

The total revenues (Figure 18), from 2012(€811 Million) to 2013(€789 Million) decreased and also for 2014 (€756 Million), but increased in 2015 (€819 Million). This happened due to the biggest driver in REN´s performance, the change in the regulation by ERSE. The Figure 19 shows the most important rubrics of the total revenues, the return on RAB (depends on the ROR and RAB), recovery of depreciation, revenues of OPEX and constructions revenues. All of these sources of revenues are affected by the action of the regulator.

Return on RAB- Rate Return on RAB\ROR

The ROR can be considered the biggest driver of REN´s revenues sources. As mention before the ROR is indexed to the average Portuguese sovereign 10-year bond yields (OT's) and then multiplied by the **RAB**, giving the amount for **return on RAB**, having different base rates for the electricity and gas (Table 15), establish by ERSE. The Figure 20 shows the different return on RAB in the two areas. The reduction that occurred from 2012 to 2015 on the return on RAB is explained by the decreasing tendency in the base of ROR and the decreasing yields in the 10-year Portuguese bonds.

Table 15- ROR Base

Base ROR	2012	2013	2014	2015
Electricity	9.55%	8,06%	7.76%	6%
Gas	8%	8%	7.46%	7.33%

Source: Company Data and HA Analysis

Figure 17- % of Total Revenue by Area of Activity
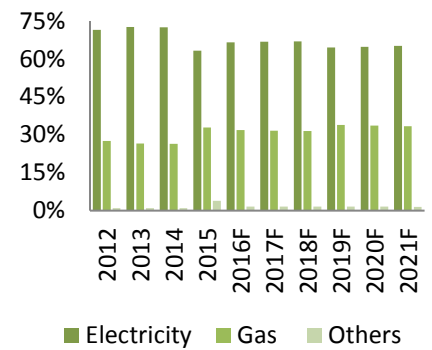
Source: Company Data and HA Analysis

Figure 18- REN´s Total Revenue 2012-2015 (€Millions)
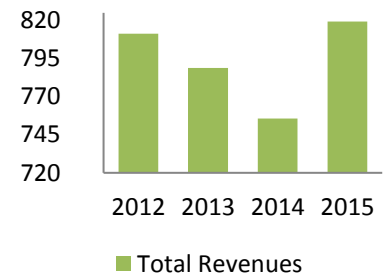
Source: Company Data and HA Analysis

Figure 19- Sources of Total Revenue (€ Millions)
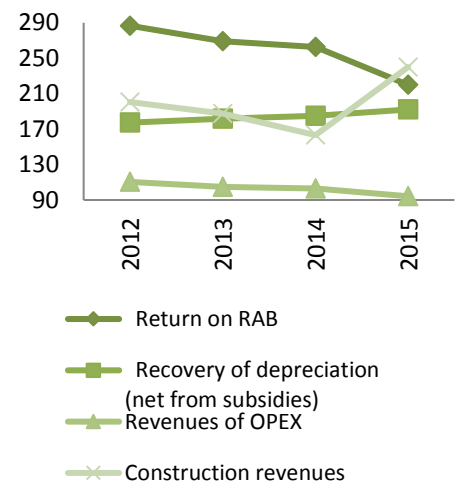
Source: Company Data and HA Analysis

OPEX and Revenues of OPEX

The OPEX is structure by the personal costs, external supplies and services and other operational costs. It had a clear decreasing tendency due to the process of optimization OPEX efficiency by REN. This optimization affects the revenues of OPEX because it is correlated to the OPEX, decreasing it from 2012 to 2015.

Construction Costs and Construction Revenues

The construction costs had a tendency to decrease from 2012 to 2014, with a value of €173 Million in 2012 to €143 Million in 2014. In 2015 the contrary occur, with a cost of €223 Million (+€80 Million) in 2015. **The construction costs and construction revenues are correlated to the CAPEX**, as it is showed in Figure 21. In terms of the construction costs, the growth in 2015 had a bigger impact in the Gas activity, with a value of €89 Million in 2015 (2014 was €22 Million) and the Electricity activity with a value of €133 Million in 2015 (in 2014 was €121 Million).

Being that the construction revenues are also correlated to the CAPEX explains the exponential growth from 2014 (€163 Million) to 2015 (€240 Million).

Profit and Loss (P&L)

Overall, from 2012 to 2015, the **Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA)** and **Net Profit** showed a decreasing trend (Figure 22), primarily due to (1) the changes in the regulatory environment by ERSE, which affects the company revenues (allowed revenues); (2) by the decreasing cost of debt in Portugal (10-year bond yields), which affected the ROR used for the return on RAB, and (3) the changes in CAPEX for each year.

The fact that, since 2014, REN is obligated to pay an Extraordinary Contribution of the Energy Sector (about €25 Million) decreased the net profit even more. From 2014 to 2015 this was not noted because of the capital gain from the sale of REN´s Enagás stake (+€20.1 Million).

Figure 20- Return on RAB by Area (€Millions)
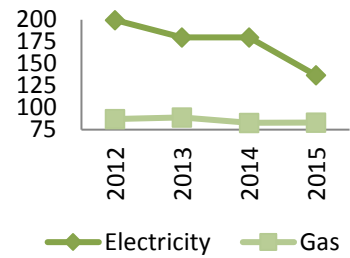
Source: Company Data and HA Analysis

Figure 21- Construction Costs, Revenues and CAPEX (€Millions)

Source: Company Data and HA Analysis

Figure 22- Earnings per Year (€Millions)

Source: Company Data and HA Analysis

Net Debt

The **debt structure** and **financing sources** have already been analyzed from 2014 to 2015, *please refer to the Industry Overview section*. But from 2012 and 2015, the Table 16 shows, in more detail the gross to net debt and the respective financing sources of REN.

REN´s main financing sources thought 2012 to 2015 were bank borrowings and the issuance of bonds, representing 84.74% of the total gross debt in 2015 (60.41% bonds and 24.33% bank borrowings).

Relatively to the net debt, it is reached by taking out, primarily, the cash and cash equivalents and the hedging swaps.

13

Table 16- Net Debt 2012-2015 (€ Millions)

Gross Debt	2012	2013	2014	2015
Bonds	343	1,594.4	1,354.3	1,535.7
Bank Loans	1,621.7	855.2	859	618.5
Commercial Paper	736.2	230	377	365
Bank Overdrafts	-	0.9	1.7	0.1
Leasing	1.4	2.4	3.3	3.1
Sub-Total	2,702.3	2,682.9	2,595.2	2,522.4
Accrued Interest	18.8	24.8	25.8	29.9
Prepaid Interest	-15.2	-27.2	-16.6	-10.2
Total	2,705.9	2,680.5	2,604.5	2,542.0
minus hedging swaps	15.1	-12	17.9	12.8
minus cash and cash equivalents	61.2	168	114.3	63.7
minus financial pledge	117.2	108.3	99.4	-
minus others	-	13.8	-63.3	-
Net Debt	2,512.4	2,402.4	2,436.2	2,465.5

Source: Company Data and HA Analysis

Forecast Analyses

For the forecast analyses, the historical performance data from 2012 to 2015 and the regulatory parameters were used to reach the forecast from 2016 to 2021. Since REN seems to follow a trend in specific parameters in the revenues, costs, assets, liabilities, equity and others, the analyses of the historical data seems appropriate to understand and to reach REN´s forecast values and, of course, the usage of the regulatory parameters are imperial as well, being the most important driver of the company, especially in the P&L (revenues and costs).

The **assumptions** for the **Balance Sheet** and **P&L** are in Appendix 5 and Appendix 6, respectively.

Total Revenues

The total revenues (Figure 23), were achieved by doing the sum of the electricity, gas and others.

Electricity Revenues

The electricity revenues were obtain by doing the sum of the revenues sources: the **revenues from assets, OPEX revenues, constructions revenues and other revenues** (Table 17).

Table 17- Electricity Revenues Sources (€Millions)

	2016F	2017F	2018F	2019F	2020F	2021F
Revenues from Assets	290	297.7	305.7	305.5	313.7	322.1
Revenues of OPEX	55	51.4	48	44.9	42	39.2
Construction Revenues	124.7	124.7	124.7	76.3	76.3	76.3
Other Revenues	3.3	4.5	3	4.1	3.2	4.3

Source: HA Analysis

The **revenues from assets** are compose from the sum of **return on RAB**, **hydro land remuneration, lease revenues from hydro protection zone, remuneration of fully depreciated assets, recovery of depreciation (net from subsidies)** and **subsidies amortization.**

The **return on RAB** is one of the most significant sources of revenue in the company. As explained before, its value depends on the **RAB**, Table 18 (composed with electricity, gas and land RAB) and by the **ROR** (with different base rates, establish by ERSE for the electricity and gas) which is indexed to the **average Portuguese**

Figure 23- Total Revenues Forecast (€Millions)

Total Revenues
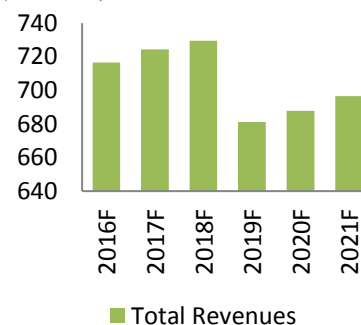
Source: HA Analysis

sovereign 10-year bond yields. By doing the multiplication of these two parameters, it gives us the value of the return on RAB (Figure 24). The assumptions for the values of the RAB were based in a **Compound Annual Growth Rate (CAGR)** using the historical values from 2012 to 2015, in the case of electricity 2.89% and for the ROR it was assumed that the value is going to reach the minimal percentage base (establish by ERSE in 2015), decreasing for both the electricity and gas (Figure 25). This assumption is supported by the fact that we assumed that the cost of debt in Portugal will decrease in the forecast period (due to the improvement of the country economic environment), diminishing the average 10-year bond yields and forcing the ROR to achieved the floor base value, which we assumed that is going to maintain equal to the 2015 percentage value (6%) until 2018F and in 2019F will decrease to minimum value (5.65%).

The **hydro land remuneration** has a similar mechanism to the Return on RAB, were the value of the **land RAB** is multiplied by a percentage value (0.1%), establish by ERSE.

Table 18- Forecast RAB (€Millions)

	2016F	2017F	2018F	2019F	2020F	2021F
Eletricity	2,211.4	2,275.3	2,341.1	2,408.7	2,478.3	2,550
Gas	1,178.9	1,203.1	1,227.8	1,253	1,278.7	1,304.9
Land	269	257.3	246.2	235.5	225.3	215.5
Total	3,659.3	3,735.8	3,815.1	3,897.2	3,982.3	4,070.4

Source: HA Analysis

Gas Revenues

The gas revenues are composed by the sum of **revenues from assets, revenues of OPEX, construction revenues** and **other revenues** (Table 19).

Table 19- Gas Revenue Sources (€Millions)

	2016F	2017F	2018F	2019F	2020F	2021F
Revenues from Assets	143.4	146.4	149.3	152.3	155.4	158.5
Revenues of OPEX	34.5	33.6	32.7	31.9	31	30.2
Construction Revenues	50.1	50.1	50.1	50.9	50.9	50.9
Other Revenues	3.9	4.5	4.7	4.2	4.4	4.4

Source: HA Analysis

The **revenues from assets** are compose from the sum of the **return on RAB, tariff smoothing effect (natural gas), recovery of depreciation (net from subsidies)** and **subsidies amortization.**

The **return on RAB** (Figure 26) on gas has the same mechanism of the electricity, where the difference comes from the values of **RAB** (with a CAGR of 2.05% from historical data analysis) and **ROR** (7.33%, assumption based on the minimal rate for the ROR, Figure 25).

Revenues of OPEX & Construction Revenues

For the **revenues of OPEX** we assumed the same mechanism for both electricity and gas, using a CAGR from a historical analysis (-6.53% for electricity and -2.59% for gas), being that the Revenues of OPEX follows the trend respecting the OPEX costs (Figure 27).

Relatively to the **construction revenues** the mechanism for the forecast is also the same for the electricity and gas, but since the construction revenues and costs are correlated to the amount of **CAPEX**, it was assumed that for the forecast period the construction revenues would change by the same percentage value of the CAPEX in a given year (Figure 28).

Figure 24- Electricity Return on RAB (€Millions)
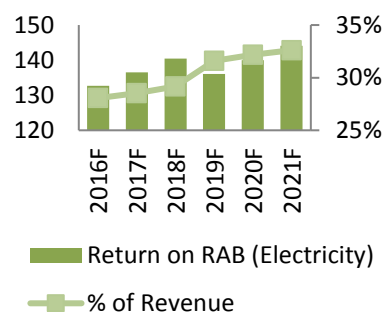
Source: HA Analysis

Figure 25- Forecast ROR
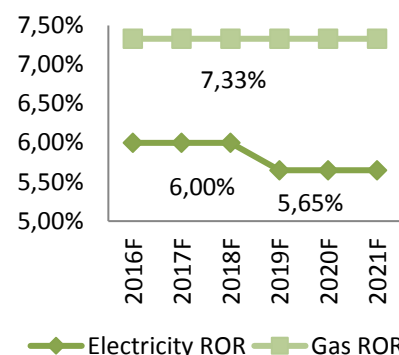
Source: Company Data and HA Analysis

Figure 26- Gas Return on RAB (€Millions)
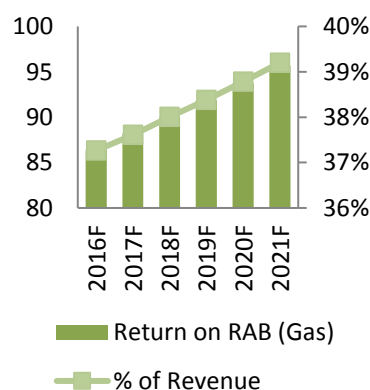
Source: HA Analysis

OPEX & Construction Costs

For the **OPEX** we assumed the same mechanism for the electricity, gas and for the other companies. Having in consideration the focus of REN´s plan in the efficiency and optimization of OPEX, which had already been started to be implemented in the company, we assumed, for the forecast period, a CAGR of -4.05% for electricity, -3.36% for gas and -7.58% for the other companies.

For the **construction costs,** as for the **construction revenues** (as explained before) it was assumed that it would change by the same percentage value of the **CAPEX**, since they are correlated.

Figure 27- Forecast of OPEX and OPEX Revenues (€Millions)

Source: HA Analysis

CAPEX

REN´s **CAPEX** plan takes into account the company´s financial sustainability and tries to maximize its optimization by investing in the improvement of their infrastructures. The CAPEX is allocated to the **fixed assets** of the company (the **intangible assets** and the **property, plant and equipment)**, being divided in the areas of electricity, gas and others. For the forecast period we assumed that the CAPEX would decrease by the amount expected by REN strategy (€175 Million from 2016F to 2018F) and assuming that from 2019F to 2021F would be €127.4 Million (same percentage amount, -27.20%, from 2015 to 2016F), Table 20.

Table 20- CAPEX (€Millions)

CAPEX (€Millions)	2012	2013	2014	2015	2016F	2017F	2018F	2019F	2020F	2021F
Electricity	155.5	157.6	137.4	148.2	124.6	124.6	124.6	76.2	76.2	76.2
Gas	45.0	29.9	25.8	91.8	50	50	50	50.8	50.8	50.8
Other	0.5	0.4	0.1	0.4	0.4	0,.4	0.4	0.4	0.4	0.4
Total	201.1	187.8	163.3	240.4	175	175	175	127.4	127.4	127.4

Source: Company Data and HA Analysis

Figure 28- Forecast CAPEX, Construction Costs and Revenues (€Millions)

CAPEX
Constructions Costs
Construction Revenues

Source: Company Data and HA Analysis

Debt

The main objective, according to REN, since its credit rating changed in 2015 to an **investment grade**, is to reduce its debt. This reduction depends on the availability of REN to do so. With this in mind, by organizing the forecast of the **cash flow statement** (Appendix 4) by **operating activities** (EBIT, D&A, income tax, changes in NWC), **investing activities** (CAPEX and other investments), **financing activities** (only considering the interest paid and dividends paid) and considering the forecast value (beginning and ending balance) for the **cash and cash equivalents** for each year, that we calculated using the assumption define for it (Appendix 5), we were able to define the amount that REN would issue or retire in terms of debt. After the calculations it was assumed that the company would have the capability to reduce its debt, Figure 29 and Table 21.

This reduction of REN´s debt alters the capital structure of the company, reducing the **weight of debt (Wd)** from 71% in 2012, 68% in 2016F and 63% in 2021F (Figure 30).

The debt reduction will, consequently, also decrease the interest that REN pays over its debt, *please refer to Figure 36 in the Investment Risks section.*

Table 21- Gross to Net Debt (€Millions)

	2016F	2017F	2018F	2019F	2020F	2021F
Gross Debt	2,535.1	2,512.6	2,481.8	2,401.8	2,313.1	2,211.7
minus hedging swaps	12.8	12.8	12.8	12.8	12.8	12.8
minus cash and cash equivalents	92.7	93.7	94.4	88.1	88.9	90.1
Net Debt	2,429.6	2,406.1	2,374.6	2,300.9	2,211.3	2,108.8

Source: HA Analysis

Figure 29- Forecast Debt (€Millions)

Gross Debt
Net Debt
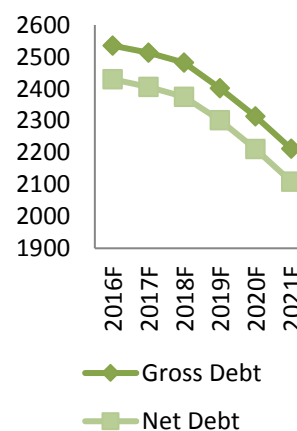
Source: HA Analysis

Figure 30- REN`S Capital Structure

	2012	2013	2014	2015	2016F	2017F	2018F	2019F	2020F	2021F
Wd	71%	69%	68%	68%	68%	68%	67%	67%	65%	63%
We	29%	31%	32%	32%	32%	32%	33%	33%	35%	37%
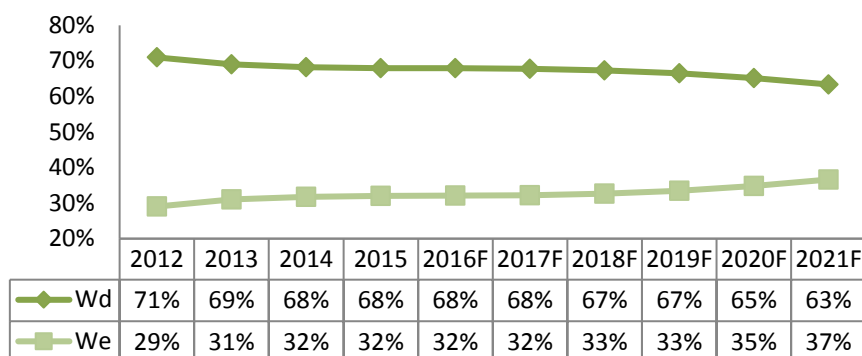
Source: Company Data and HA Analysis

Valuation Methodology

To reach the price target we decided to use **DCF valuation** (Appendix 8), as explained before.

After analyzing and forecasting the three segments of the company (electricity, gas and others), the next step was to use the DCF valuation for the calculation of the FCFF for the forecasting period and discounting the future cash flow with the WACC as a discount rate. The DCF valuation was considered the most reliable valuation methodology to reach REN´s price target of our valuation.

The price target was calculated for the beginning of the year 2016, being the **forecast period** from 2016 to 2021.

To reach the **price target** for REN, using the DCF Valuation, we had two major steps, the calculation of the **FCFF** and the **WACC**. The FCFF gave us an idea of the future cash flow available to the REN´s capital suppliers after all operating expenses, including taxes, **Net Working Capital (NWC)** (Appendix 3) and investments in fixed capital had been made and the WACC, the discount rate, permitted us to know the required rate of return of REN´s capital suppliers and the change in the capital structure in the forecast period.

After all calculations, the price target for the beginning of 2016 was **€3.10** with an **upside potential of 9.83%**. The conclusions that can be taken are that REN was **undervalued** with a **recommendation** of **NEUTRAL** (Table 22).

The FCFF (Table 23), was calculated by using the formula, being that the **valuation period** was considered to be the forecast period, from 2016F to 2021F:

$$FCFF = EBIT\ (1 - Marginal\ Tax\ Rate) + D\&A - Net\ Increase\ NWC - CAPEX$$

Table 22- DCF Price Target

Enterprise Value (€Millions)	4,119.5
Net Debt (€Millions)	2,465.5
Value of Equity (€Millions)	1,654
Number of Shares Outstanding (Millions)	534
Price Target	3.10 €
Price at 04/01/2016	2.82 €
Upside Potential	9.83%
Recommendation	Neutral

Source: Company Data and HA Analysis

Table 23- FCFF Calculation (€Millions)

	2016F	2017F	2018F	2019F	2020F	2021F
EBIT* (1-Marginal Tax Rate)	194.8	206	214.7	214.8	226	238.8
D&A	202.7	200.9	199.4	198.1	194.3	190.6
Net Increase in NWC	22.9	0.7	0.5	-4.5	0.6	0.8
CAPEX	175	175	175	127.4	127.4	127.4
FCFF	**199.6**	**231.2**	**238.7**	**290**	**292.3**	**301.2**

Source: HA Analysis

WACC Assumptions

The **WACC** (Table 24), was determined by using the formula:

$$WACC = We * Ke + Wd * Kd * (1 - T)$$

Relatively to the WACC calculation and assumptions, we decided to first calculate the **Cost of Equity Unlevered (Ku)** using the **Capital Asset Pricing Model (CAPM)** and afterwards the **Cost of Equity Levered (Ke).**

$$Ku = RFR + CRP + (MRP * \beta)$$

For the **Risk Free Rate (RFR)**, since REN is a company based in an Eurozone country (Portugal), we used a 5 year average Eurozone 10 year AAA government bond yields (source: European Central Bank Database).

For the **Beta Unlevered (β)** we decided to use the industry Beta (energy) taken from Aswath Damodaran´s Database.

Relatively to the **Country Risk Premium (CPR)** we decided to obtain it from Aswath Damodaran´s Database for January 2016, with a value of 3.72%.

The **Market Risk Premium (MRP)**, 5.04%, was also obtained by using the Aswath Damodaran´s Database for January 2016.

The **Cost of Debt (Kd)**, was assume to be the **interest rate that REN pays for its debt** in the valuation period, by doing an average of the interest paid over debt, from 2012 to 2015. After the calculations we reached a value for the Kd and for the interest rate for REN´s total debt of **5.22%**.

For the **Marginal Tax Rate (T)**, it was consider to be the sum of the Portuguese corporate tax rate (21%) and the Municipal surcharge rate (1.5%).

For the **Terminal Value (TV),** we assumed that the **Perpetual Growth Rate (g)** should be 1.15% (the value represents the expected percentage value, from IMF, of the GDP growth in Portugal for 2021). The **Perpetuity WACC** was assume to be the estimated 2021F WACC of 7.79%.

Table 24- WACC Calculation

WACC	2016F
Risk Free Rate (RFR)	1.84%
Country Risk Premium (CRP)	3.72%
Market Risk Premium (MRP)	5.04%
Beta Unlevered (β)	0.7
Cost of Equity Unlevered (ku)	9.09%
Cost of Equity Levered (ke)	15.44%
Cost of Debt (kd)	5.22%
Marginal Tax Rate (T)	22.50%
After-tax Cost of Debt	4.05%
Weight of Equity (We)	32.07%
Weight of Debt (Wd)	67.93%
WACC	**7.70%**

Source: HA Analysis

Multiples Approach

For the multiples valuation, which serves as a complement to the DCF valuation, we used the **Forecast Multiples Approach** relative to 2016F.

The **peer's selection** is explained in Appendix 9, they were based on their **localization** and the values, from 2015, of the **market capitalization**, **total assets** and **net debt.**

The multiples chosen for the valuation were **EV/EBITDA**, **P/E** and **P/Book Value**.

From the mean of the four peer companies chosen (Table 25), we were able to reach a price target for REN using the different multiples.

Table 25- Peers Multiples 2016F

Peers Multiples 2016F			
Peers	EV/EBITDA	P/E	P/B
EVN AG	6.29	11.41	0.78
TERNA SPA	12.02	16.91	2.62
RED ELECTRICA CORPORACION SA	11.34	18.13	3.72
IREN SPA	6.43	12.17	0.96
Median	8.89	14.54	1.79
Mean	9.02	14.66	2.02

Source: Bloomberg and HA Analysis

Using the forecast fundamentals for each multiple chosen, we were able to reach a conclusion for REN´s price target and compare it to the one reached in the DCF valuation.

For the **EV/EBITDA** (Table 26), we reached a price target of **3.12€** with an **upside potential** of **10.61%.** This price is in accordance with the result reached in the DCF valuation, giving strength to the conclusion that REN was **undervalued**.

For the **P/E** (Table 27), we reached a price target of **2.10€** with a **downside potential** of **-25.39%.**This price target is not in accordance with the DCF valuation due to the fact that with the P/E multiple, REN was **overvalued.** The price target reached by using the P/E dictates that that REN performs below its peers, but this result can be explained by two facts: the first one is that, according to our assumptions and subsequently our forecast for the P&L, in 2016, it´s expected that REN´s net profit will decrease significantly (€77 Million) relatively to its prior year, consequently decreasing the **Earnings per Share (EPS)** as well. The second reason is related to the fact that REN is a smaller company comparing to its peers and this can be proved by analyzing, for example, the **market capitalization** of REN and the others chosen peers (Appendix9).

For the **P/Book Value** (Table 28)**,** we reached a price target of **4.39€** with an **upside potential** of **55.78%**. This price is in accordance with the DCF valuation, meaning that using this multiple, REN was **undervalued**.

Aggregating the three multiples chosen, using the forecast fundamentals of 2016F, we were able to conclude that REN, was **undervalued**, meaning that the forecast multiples approach solidifies the conclusion taken from the DCF valuation (Table 29).

Forecast Financial Analysis

Looking at the **Net Profit, EBITDA** or the **EBIT** from 2015 to 2016F, there is a clear reduction between those two years. This happens due to the fact that, from our assumptions, we expect the total revenues to drop significantly between 2015 and 2016F, especially the construction revenues (due to the disinvesting in terms of CAPEX), in the revenues from assets and in the other revenues (in 2015 REN sold its Enagás stake, increasing the other revenues in that year but dropping again in 2016F). Although the construction costs and OPEX costs (operating costs) are expected to decrease as well, the high costs in terms of D&A, financial costs and the extraordinary contribution on energy sector reduces REN´s profitability in 2016F.

From 2017F to 2021F, there is a recovery in terms of profitability, but with three stages in terms of total revenues and a clear tendency in terms of company costs.

In terms of **revenues** (Figure 31), from 2016F to 2018F there is a growth in the total revenues provided by a rise in the return on RAB (not because of the ROR rate, but for the increasing value of the RAB, for the electricity and gas) and in the revenues from the recovery of depreciation (also due to the increasing value on RAB). 2019F is marked again by a reduction in the total revenues, relative to the drop in the return on RAB, this time, because of the drop in the electricity ROR rate from 6% to the minimal 5.65% and a drop in the construction revenues, from €174.7 Million (2018F) to €127.1 Million (2019F), due to the drop in the CAPEX.

In terms of REN´s **costs** (Figure 32), from 2016F to 2021F there is a clear tendency of reduction, including **operating costs** (OPEX and construction costs), **D&A** and even in the **financial costs** (interest paid on debt). This arrives from a reduction in terms of CAPEX, which decreases the conduction costs; from a reduction in the OPEX due to REN´s OPEX efficiency strategy and a reduction in the interest paid due to the decreasing values of debt. This reduction on REN´s costs allows the company to have

Table 26- EV/EBITDA Multiple

Price Target from Multiple Valuation	
EV/EBITDA	2016F
REN EBITDA (€Millions)	454
Average Peers EV/EBITDA	9.02
REN EV by Peers estimate (€Millions)	4,095.2
REN Net Debt (€Millions)	2,429.6
REN Equity by Peers estimate (€Millions)	1,665.6
Shares outstanding (Millions)	534
Price Target from Relative Valuation	**3.12€**
Price at 04/01/2016	2.82€
Upside Potential	10.61%

Source: HA Analysis

Table 27- P/E Multiple

Price Target from Multiple Valuation	
P/E	2016F
REN EPS	0.14
Average Peers P/E	14.66
Shares outstanding (Millions)	534
Price Target from Relative Valuation	**2.10 €**
Price at 04/01/2016	2.82€
Downside Potential	-25.39%

Source: HA Analysis

Table 28- P/Book Multiple

Price Target from Multiple Valuation	
P/Book	2016F
REN Book Value	2.17
Average Peers P/Book	2.02
Price Target from Relative Valuation	**4.39 €**
Price at 04/01/2016	2.82 €
Upside Potential	55.78%

Source: HA Analysis

Table 29- Forecast Multiples Approach

	Price	Potential
EV/EBITDA	3.12 €	10.61%
P/E	2.10 €	-25.39%
P/B	4.39 €	55.78%
Average	3.21 €	13.67%
DCF valuation	3.10 €	9.83%

Source: HA Analysis

increasing **EBIT** and **EBITDA margins** regarding 2015, with a growth tendency from 2016F to 2021F, meaning that the company will become more profitable.

The **Return on Equity (ROE)** suffers a big tumble from 2015 to 2016F, as the **EPS**, but with a recovery starting from 2016F to 2017F. This happens from the reduction of profitability of the company (a natural effect from the reduction of the total revenues of the company), but then following the trend of REN´s growing profitability. Although the ROE and EPS might not seem attractive for the equity shareholders, the fact that the company is expected to pay a constant value of dividends (€91.31 Millions, 0.171€ per share) might compensate for the ROE and EPS values (Figure 33).

REN´s Key Financial Ratios can be seen in Appendix 7.

Figure 33- REN´s Main Financial Ratios
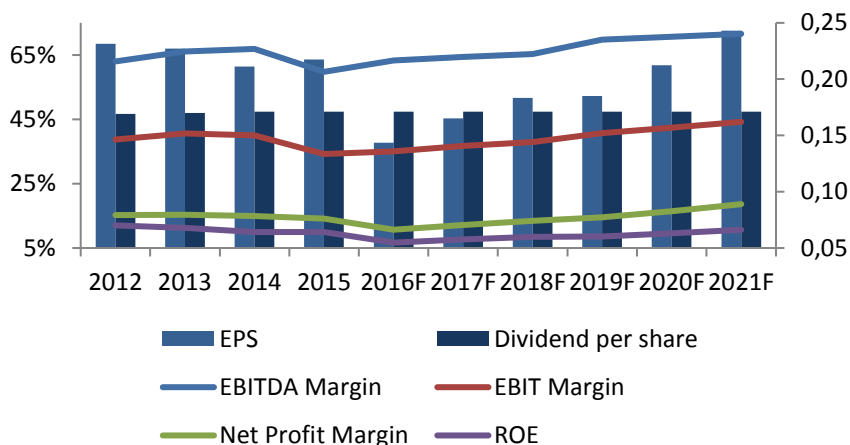
Source: HA Analysis

Figure 31- REN´s Revenue Sources (€Millions)

Source: HA Analysis
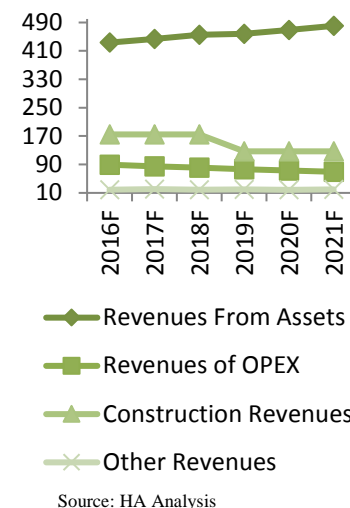
Figure 32- REN`s Costs (€Millions)

Source: HA Analysis
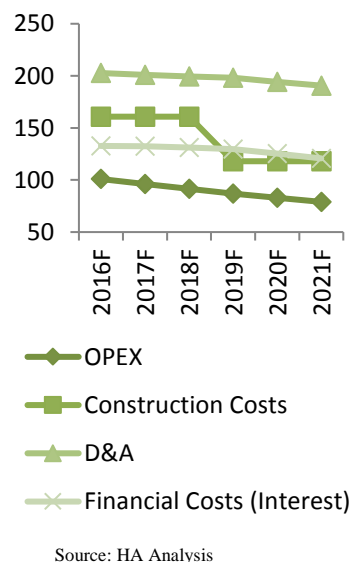
Investment Risks

Political and Regulatory Risk (P&R)

- **ERSE Regulation (ERSE):** As it was explained before, this relates to the regulatory environment, meaning, **the parameters establish by ERSE.** These regulatory parameters (reviewed every three years), in which REN does not have any control, are mostly relative to the attribution of revenues, **the allowed revenues**, but also the valuation and approval of investments plans (CAPEX). This imposes a risk of investment due to the fact that REN, including the Shareholders, do not have a clear idea of the type and which parameters will affect the revenues and the profitability of the company. One example of a negative aspect of this point and a clear risk to REN is the constant changes of the ROR that will affect the return on RAB (one of the biggest sources of revenues for the company).

- **Extraordinary Contribution to the Energy Sector (ECES)**: this ECES was created by the government in charge in 2014. This came about when Portugal was under the purview of Troika, constituted by IMF, ECB and European Commission. This new contribution, which is expected to maintain until 2022, affects in a considerable rate the profitability of the company (Figure 35).

Market and Corporate Risk (M&C)

- **Energy Consumption (EC):** this point can be considered as the combination of the energy consumption, pollution regulation and the entry of new technologies (for example, renewable energy). Energy is an essential "good" used by all of us and it will always be needed by families and businesses, but transformations in this sector will happen. The entry of new, cleaner and friendly environment technologies can change the way that REN operates, with the help of new pollution policies imposed in by the European Union, for example. These facts, combine with the levels of energy consumption that may fluctuate (for example, if household has the financial opportunity to spent a lot of their income on energy or if they have to safe on their energy use), will affect the way REN operates, which is something that the company is already doing in a smaller scale with ENONDAS (development of energy production from ocean waves) and the usage of renewable energy for the electricity, *please refer to fig.19 in the Industry Overview section*. It is important to note that this aspect imposes a risk but also an opportunity to REN and with a low probability, due to the fact that this type of changes are expected to happen in a long run.

- **Debt and Interest Rate Risks (DIR)**: this risk arrives from the amount of debt that REN has and the excessive interest payments that are a consequence of that amount. As explain before, REN is expected to reduce its debt in the following years, but REN´s capital structure still shows that the company is leverage, with around 60% of debt and 30% of equity. Although, in 2015, the credit rating for REN was positive and stable, the **debt to equity ratio,** for example, shows the weight that the debt has over the company (2.63x in 2012, 2.19x in 2015 and 1.81x in 2021F). There is a medium probability, with a large impact, that if REN does not continue to decrease its debt, the company could be affected in a large scale (for example, in profitability, due to the large amounts paid on interest due to it, Figure 36).

- **Shareholders (Sh):** the **shareholder structure** may be consider a risk due to the fact that, after the first and second stages of the reprivatisation process, the company structure has two major private entities (OMAN OIL and State Grid of China, Appendix 17). This may impose a risk to the company if one of

Figure 34- REN´s Risk Matrix
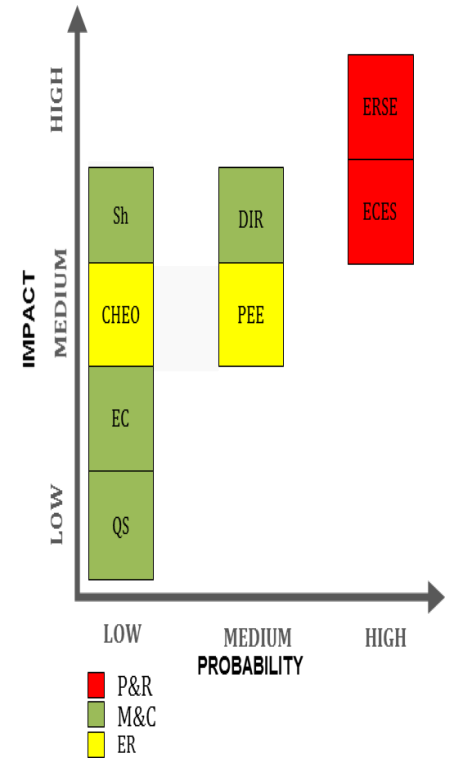
Source: HA Analysis

Figure 35- Weight of Tax Expenses
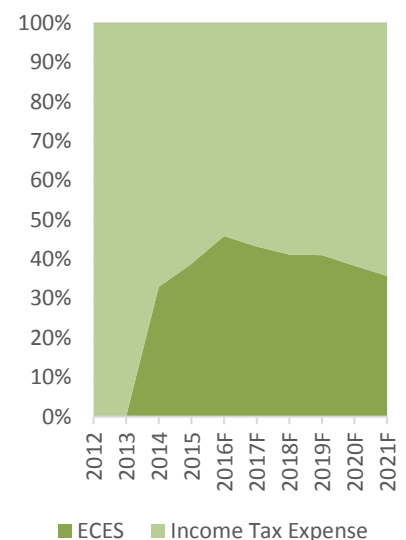
Source: Company Data and HA Analysis

these two entities decides to sell their position, which can leave REN in a fragile position in the financial markets (speculation and other news).

- **Quality Service (QS):** the quality service for REN is based on the number of accidents that can happen during the process of the energy transmission. This point has a low probability and impact because, according to REN, the amounts recorded for five of the six general indicators of continuity service, established in the quality of service regulation, were positive with a low number of incidents in 2015 (Figure 37).
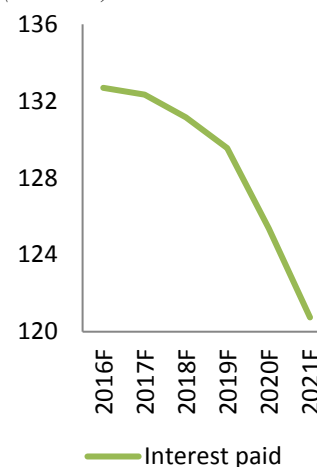
Economic Risk (ER)

- **Portugal Economic Environment (PEE):** this point imposes a risk for REN specifically because the company is regulated by ERSE and their activity is dependent of the concessions assigned by the Portuguese State , as explain before, meaning that its activity, especially the revenues (allowed revenues) and Investment plans (CAPEX) are scrutinized by the regulator. This imposes as a risk because the parameters for the allowed revenues and the valuation for the CAPEX have to be aligned to the country economic environment, for example, the ROR is linked to the average Portuguese sovereign 10-year bond yields. Another example, if the economy is in a recession, the private consumption index (where the energy consumption is included), is going to decrease, making it harder for REN to have investments plans approved by ERSE because it could be consider by the regulator (representing and defending the interests of the Portuguese State) obsolete and not necessary for that time, consequently affecting the allowed revenues originated by the CAPEX (construction revenues).

- **China Economic Outlook (CHEO):** this point can be a risk to REN deriving from two situations. The first one is related to the fact that the biggest private shareholder is the State Grid of China, as explain in the **Sh risk.** The second one is related to the fact that REN has been financing itself from Chinese entities, ICBC and CBD, meaning that if the China economic environment is not favorable, these Chinese banks will be affect too, which can, for example, create difficulties for REN to finance itself from these sources.

In conclusion, after all considerations in terms of possible risks, we consider that REN is a **LOW RISK** company. The main and most dangerous risk to REN is the impact of **ERSE Regulation** that affects the course of action for the company. This risk can even be considered a positive aspect because it enables good decisions by the management and highly precision plans in terms of investments. Another point that strengthens the idea of REN being a low risk company, is the fact that it doesn´t have any competitors in the Portuguese market due to the fact that REN has the concessions assigned by the Portuguese State.

Risk to Price Target Analysis

To analyze the possible changes that could occur in the price target defined (3.10€), we did a **sensitivity analysis** on what we consider to be the key variables in the DCF Valuation method for reaching the price target.

With the guidance of the **BPI´s Investment Rating and Risk Classification**, *please refer to Table 2 in the Research Snapshot section* , we were able to define, from the sensitivity analysis, what measure should be taken relatively to the alteration that would occur in the price target from the changes in the keys variables.

The key variables chosen for the sensitivity analysis were the **CRP** (country risk premium), **MRP** (market risk premium), **g** (perpetual growth rate) and **WACC** (weight average cost of capital).

Figure 36- Interest Paid on Debt (€Millions)

Source: HA Analysis

Figure 37- Number of Accidents

Source: Company Data and HA Analysis

The sensitivity analysis is presented by the demonstration of the **change in the price (3.10€) according to the percentage variation in the key variables** and an illustration, where we present the **percentage variation between the prices and the market share price at 04/01/2016 (2.82€)**. With colors (green is buy; grey is neutral; yellow is reduce and red is sell) we can perceived what type of action should have been taken, as shown by the following Tables (30-37).

Table 30- g Sensitivity Analysis and Percentage Variation

Change in Terminal Growth							
3.10 €	0.70%	0.85%	1.00%	1.15%	1.30%	1.45%	1.60%
Price	2.73 €	2.84 €	2.97 €	3.10 €	3.23 €	3.37 €	3.52 €
Change (%)	-3.34%	0.86%	5.25%	9.83%	14.63%	19.66%	24.93%

Source: HA Analysis

Table 31- WACC Sensitivity Analysis and Percentage Variation

Change in WACC							
3.10 €	5.68%	6.31%	7.01%	7.79%	8.57%	9.43%	10.37%
Price	5.66 €	4.67 €	3.83 €	3.10 €	2.52 €	2.01 €	1.56 €
Change (%)	100.69%	65.74%	35.74%	9.83%	-10.63%	-28.70%	-44.69%

Source: HA Analysis

Table 32- CRP Sensitivity Analysis and Percentage Variation

Change in CRP							
3.10 €	2.71%	3.01%	3.35%	3.72%	4.09%	4.50%	4.95%
Price	3.19 €	3.16 €	3.13 €	3.10 €	3.06 €	3.03 €	2.99 €
Change (%)	13.06%	12.09%	11.02%	9.83%	8.66%	7.39%	5.99%

Source: HA Analysis

Table 33- MRP Sensitivity Analysis and Percentage Variation

Change in MRP							
3.10 €	3.67%	4.08%	4.54%	5.04%	5.54%	6.10%	6.71%
Price	3.18 €	3.16 €	3.13 €	3.10 €	3.07 €	3.03 €	2.99 €
Change (%)	12.89%	11.97%	10.95%	9.83%	8.72%	7.51%	6.19%

Source: HA Analysis

Table 34- WACC and g Sensitivity Analysis

		Change in WACC								
	3.10 €	5.11%	5.68%	6.31%	7.01%	7.79%	8.57%	9.43%	10.37%	11.41%
Change in Terminal Growth	0.75%	5.95 €	4.98 €	4.14 €	3.41 €	2.77 €	2.25 €	1.79 €	1.38 €	1.01 €
	0.84%	6.12 €	5.12 €	4.25 €	3.50 €	2.83 €	2.31 €	1.84 €	1.42 €	1.04 €
	0.93%	6.31 €	5.27 €	4.37 €	3.59 €	2.91 €	2.37 €	1.89 €	1.46 €	1.08 €
	1.04%	6.54 €	5.45 €	4.51 €	3.70 €	3.00 €	2.44 €	1.95 €	1.51 €	1.12 €
	1.15%	6.81 €	5.66 €	4.67 €	3.83 €	3.10 €	2.52 €	2.01 €	1.56 €	1.16 €
	1.27%	7.10 €	5.88 €	4.84 €	3.96 €	3.20 €	2.60 €	2.08 €	1.61 €	1.20 €
	1.39%	7.44 €	6.13 €	5.04 €	4.11 €	3.32 €	2.70 €	2.15 €	1.68 €	1.25 €
	1.53%	7.83 €	6.43 €	5.27 €	4.29 €	3.45 €	2.81 €	2.24 €	1.75 €	1.31 €
	1.68%	8.30 €	6.78 €	5.53 €	4.49 €	3.61 €	2.93 €	2.34 €	1.83 €	1.37 €

Source: HA Analysis

Table 35- WACC and g Percentage Variation

Change in Terminal Growth	Change in WACC								
3.10 €	5.11%	5.68%	6.31%	7.01%	7.79%	8.57%	9.43%	10.37%	11.41%
0.75%	110.85%	76.72%	46.99%	20.98%	-1.84%	-20.10%	-36.41%	-50.99%	-64.04%
0.84%	116.90%	81.47%	50.74%	23.95%	0.53%	-18.18%	-34.83%	-49.69%	-62.98%
0.93%	123.91%	86.95%	55.04%	27.35%	3.22%	-15.99%	-33.05%	-48.23%	-61.78%
1.04%	132.08%	93.30%	60.00%	31.25%	6.30%	-13.49%	-31.01%	-46.57%	-60.42%
1.15%	141.66%	100.69%	65.74%	35.74%	9.83%	-10.63%	-28.70%	-44.69%	-58.88%
1.27%	151.80%	108.46%	71.75%	40.41%	13.49%	-7.69%	-26.31%	-42.75%	-57.31%
1.39%	163.69%	117.50%	78.68%	45.78%	17.67%	-4.34%	-23.61%	-40.57%	-55.53%
1.53%	177.73%	128.07%	86.73%	51.96%	22.46%	-0.51%	-20.54%	-38.09%	-53.53%
1.68%	194.49%	140.55%	96.14%	59.13%	27.98%	3.87%	-17.04%	-35.28%	-51.25%

Source: HA Analysis

Table 36- MRP and CP Sensitivity Analysis

Change in MRP	Change in CRP								
3.10 €	2.44%	2.71%	3.01%	3.35%	3.72%	4.09%	4.50%	4.95%	5.45%
3.31%	3.33 €	3.30 €	3.27 €	3.24 €	3.21 €	3.17 €	3.14 €	3.10 €	3.05 €
3.67%	3.30 €	3.28 €	3.25 €	3.22 €	3.18 €	3.15 €	3.11 €	3.07 €	3.03 €
4.08%	3.28 €	3.25 €	3.22 €	3.19 €	3.16 €	3.12 €	3.09 €	3.05 €	3.00 €
4.54%	3.25 €	3.22 €	3.19 €	3.16 €	3.13 €	3.10 €	3.06 €	3.02 €	2.98 €
5.04%	3.21 €	3.19 €	3.16 €	3.13 €	3.10 €	3.06 €	3.03 €	2.99 €	2.95 €
5.54%	3.18 €	3.16 €	3.13 €	3.10 €	3.07 €	3.03 €	3.00 €	2.96 €	2.92 €
6.10%	3.15 €	3.12 €	3.09 €	3.06 €	3.03 €	3.00 €	2.96 €	2.93 €	2.88 €
6.71%	3.11 €	3.08 €	3.06 €	3.03 €	2.99 €	2.96 €	2.93 €	2.89 €	2.85 €
7.38%	3.07 €	3.04 €	3.02 €	2.99 €	2.95 €	2.92 €	2.89 €	2.85 €	2.81 €

Source: HA Analysis

Table 37- MRP and CPR Percentage Variation

Change in MRP	Change in CPR								
3.10 €	2.44%	2.71%	3.01%	3.35%	3.72%	4.09%	4.50%	4.95%	5.45%
3.31%	17.95%	17.05%	16.05%	14.94%	13.73%	12.52%	11.21%	9.78%	8.22%
3.67%	17.09%	16.19%	15.20%	14.10%	12.89%	11.69%	10.39%	8.97%	7.42%
4.08%	16.14%	15.25%	14.26%	13.17%	11.97%	10.78%	9.48%	8.07%	6.53%
4.54%	15.10%	14.21%	13.23%	12.15%	10.95%	9.77%	8.49%	7.08%	5.56%
5.04%	13.94%	13.06%	12.09%	11.02%	9.83%	8.66%	7.39%	5.99%	4.48%
5.54%	12.80%	11.92%	10.96%	9.89%	8.72%	7.56%	6.29%	4.91%	3.41%
6.10%	11.55%	10.68%	9.73%	8.67%	7.51%	6.36%	5.10%	3.74%	2.25%
6.71%	10.19%	9.33%	8.38%	7.34%	6.19%	5.05%	3.81%	2.45%	0.98%
7.38%	8.71%	7.86%	6.92%	5.89%	4.75%	3.62%	2.39%	1.05%	-0.40%

Source: HA Analysis

Appendix

Appendix 1- REN´s Balance Sheet (€Millions)

	2012	2013	2014	2015	2016F	2017F	2018F	2019F	2020F	2021F
Period End Date	31-Dec-2012	31-Dec-2013	31-Dec-2014	31-Dec-2015						
ASSETS										
Non-Current Assets										
Property, Plant and Equipment	0.8	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6
Goodwill	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Intangible Assets	3,891.5	3,877.4	3,838.2	3,869.1	3,834.8	3,807.1	3,781.2	3,709.2	3,638.5	3,571.6
Investments in Associates and Joint Ventures	9.4	12.2	12.6	14.6	14.6	14.6	14.6	14.6	14.6	14.6
Available-for-Sale Financial Assets	131.0	156.9	144.4	154.9	154.9	154.9	154.9	154.9	154.9	154.9
Derivative Financial Instruments	6.9	-	22.0	10.2	10.2	10.2	10.2	10.2	10.2	10.2
Other Financial Assets	112.6	102.3	93.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trade and Other Receivables	70.5	81.6	86.2	133.7	123.0	128.2	131.9	112.0	118.7	126.3
Deferred Tax Assets	61.2	67.8	66.0	65.8	65.8	65.8	65.8	65.8	65.8	65.8
Total	4,287.6	4,302.8	4,267.3	4,252.7	4,207.7	4,185.2	4,163.0	4,071.1	4,007.1	3,947.8

	2012	2013	2014	2015	2016F	2017F	2018F	2019F	2020F	2021F
Current Assets										
Inventories	2.9	1.9	1.8	3.0	2.6	2.6	2.7	2.5	2.5	2.5
Trade and Other Receivables	310.7	565.9	459.8	263.8	363.8	367.8	370.4	345.9	349.2	353.7
Available-for-Sale Financial Assets	-	-	62.5	-	-	-	-	-	-	-
Current Income Tax Recoverable	14.3	-	10.2	5.4	6.8	6.8	6.9	6.4	6.5	6.6
Derivative Financial Instruments	0.4	-	-	-	-	-	-	-	-	-
Other Financial Assets	8.9	22.7	8.9	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Cash and Cash Equivalents	61.2	168.0	114.3	63.7	92.7	93.7	94.4	88.1	88.9	90.1
Total	398.5	758.5	657.4	337.3	467.4	472.5	475.8	444.4	448.6	454.4

	2012	2013	2014	2015	2016F	2017F	2018F	2019F	2020F	2021F
TOTAL ASSETS	4,686.1	5,061.3	4,924.8	4,590.0	4,675.1	4,657.7	4,638.9	4,515.5	4,455.7	4,402.2

EQUITY										
Shareholders' Equity:										
Share Capital	534.0	534.0	534.0	534.0	534.0	534.0	534.0	534.0	534.0	534.0
Own Shares	-10.7	-10.7	-10.7	-10.7	-10.7	-10.7	-10.7	-10.7	-10.7	-10.7
Reserves	231.8	271.6	315.6	325.6	325.6	325.6	325.6	325.6	325.6	325.6
Retained Earnings	149.0	163.4	183.9	196.3	221.7	207.1	204.0	210.5	218.1	240.1
Other Changes in Equity	-	-	-	0.0	-	-	-	-	-	-
Net Profit for the Year	123.6	121.3	112.8	116.1	76.7	88.2	97.9	98.9	113.3	129.8

TOTAL EQUITY	1,027.6	1,079.6	1,135.6	1,161.3	1,147.3	1,144.2	1,150.7	1,158.3	1,180.3	1,218.8

LIABILITIES										
Non-Current Liabilities										
Borrowings	1,535.5	2,430.2	2,207.5	1,891.2	1,884.3	1,861.8	1,831.0	1,751.0	1,662.3	1,560.9
Liability for Retirement Benefits and Others	105.8	126.2	126.6	129.2	129.2	129.2	129.2	129.2	129.2	129.2
Derivative Financial Instruments	28.0	34.3	24.6	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Provisions	4.8	4.7	4.9	5.7	5.7	5.7	5.7	5.7	5.7	5.7
Trade and Other Payables	360.9	370.3	328.2	332.2	314.3	317.7	319.9	298.7	301.6	305.5
Deferred Tax Liabilities	82.8	74.0	92.3	88.2	88.2	88.2	88.2	88.2	88.2	88.2
Total	2,117.8	3,039.7	2,784.2	2,455.1	2,430.2	2,411.1	2,382.6	2,281.4	2,195.5	2,098.1

Current Liabilities										
Borrowings	1,170.4	250.3	397.0	650.8	650.8	650.8	650.8	650.8	650.8	650.8
Provisions	2.4	1.2	2.4	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Trade and Other Payables	367.1	643.0	605.7	315.7	439.7	444.5	447.7	418.0	422.0	427.5
Income Tax Payable	-	44.9	-	-	-	-	-	-	-	-
Derivative Financial Instruments	0.8	2.7	-	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Total	1,540.7	942.1	1,005.0	973.6	1,097.6	1,102.4	1,105.5	1,075.9	1,079.8	1,085.3

TOTAL LIABILITIES	3,658.5	3,981.8	3,789.2	3,428.7	3,527.8	3,513.5	3,488.1	3,357.2	3,275.4	3,183.4

TOTAL EQUITY AND LIABILITIES	4,686.1	5,061.3	4,924.8	4,590.0	4,675.1	4,657.7	4,638.9	4,515.5	4,455.7	4,402.2

Source: Company Data and HA Analysis
References:
Kaplan, S., Ruback, R. (1995). The Valuation of Cash Flow Forecasts: An Empirical Analysis. Journal of Finance, Volume 50.

Appendix 2- REN´s Consolidated and Individual Profit & Loss (€Millions)

P&L (€Millions)	2012	2013	2014	2015	2016F	2017F	2018F	2019F	2020F	2021F
Total Revenues	811	789	756	819	717	724	730	681	688	697
Revenues From Assets	493	476	470	446	433	444	455	458	469	481
Return on RAB	287	269	263	220	219	225	230	228	234	240
-Electricity	200	180	180	137	133	137	140	136	140	144
-Natural Gas	87	89	83	83	86	88	90	92	94	96
Hydro Land and Remuneration	10	8	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2
Lease Revenues from Hydro Protection Zone	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Remuneration of Fully Depreciated Assets	8	8	9	19	8	8	8	8	8	8
Tariff Smoothing Effect (Natural Gas)	- 8	- 12	- 6	- 4	- 4	- 4	- 4	- 4	- 4	- 4
Recovery of Depreciation (Net from Subsidies)	177	182	185	192	190	195	200	206	211	217
Subsidies Amortization	18	19	18	18	18	18	18	18	18	18
Revenues of OPEX	110	105	103	94	89	85	81	77	73	69
Other Revenues	7	21	20	39	19	21	19	20	19	19
Construction revenues	201	188	163	240	175	175	175	127	127	127
OPEX	- 124	- 111	- 106	- 106	- 101	- 96	- 91	- 87	- 83	- 79
Personnel Costs	- 54	- 54	- 53	- 51	- 44	- 42	- 40	- 38	- 36	- 34
External Supplies and Services	- 57	- 43	- 40	- 42	- 46	- 44	- 42	- 40	- 38	- 36
Other Operational Costs	- 13	- 13	- 13	- 13	- 11	- 10	- 10	- 9	- 9	- 9
Construction Costs	- 173	- 162	- 143	- 223	- 161	- 161	- 161	- 118	- 118	- 118
Other	- 3	6	- 1	- 0.9	- 0.9	- 0.9	- 0.9	- 0.9	- 0.9	- 0.9
EBITDA	512	522	505	490	454	467	476	475	486	499
Depreciation and Amortization	- 197	- 201	- 203	- 209	- 203	- 201	- 199	- 198	- 194	- 191
EBIT	314	320	303	280	251	266	277	277	292	308
Financial Result	- 136	- 142	- 114	- 99	- 120	- 120	- 118	- 117	- 113	- 108
Financial Costs (Interest)	- 146	- 163	- 132	- 111	- 133	- 132	- 131	- 130	- 125	- 121
Financial Income	2	13	9	6	7	7	7	7	7	7
Investment Income - Dividends	7	8	9	6	6	6	6	6	6	6
Income Tax Expense	- 55	- 57	- 51	- 40	- 30	- 33	- 36	- 36	- 40	- 45
Extraordinary Contribution on Energy Sector	-	-	- 25	- 25	- 25	- 25	- 25	- 25	- 25	- 25
Net Profit	124	121	113	116	77	88	98	99	113	130

	2012	2013	2014	2015	2016F	2017F	2018F	2019F	2020F	2021F
Dividends Paid to Shareholders	89.6	90.1	90.7	90.7	91.3	91.3	91.3	91.3	91.3	91.3
Dividend per Share	0.169	0.170	0.171	0.171	0.171	0.171	0.171	0.171	0.171	0.171
Dividend Payout Ratio(EBIT)	28.50%	28.14%	29.96%	32.33%	36.33%	34.36%	32.96%	32.94%	31.32%	29.63%

Electricity P&L (€Millions)	2012	2013	2014	2015	2016F	2017F	2018F	2019F	2020F	2021F
Revenues	580	572	548	518	473	478	481	431	435	442
Revenues from Assets	354	338	336	308	290	298	306	305	314	322
Return on RAB	200	180	180	137	133	137	140	136	140	144
Hydro Land Remuneration	10	8	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2
Lease revenues from Hydro Protection Zone	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Remuneration of Fully Depreciated Assets	8	8	9	19	8	8	8	8	8	8
Recovery of Depreciation (Net from Subsidies)	124	129	134	139	136	140	144	148	152	157
Subsidies Amortization	12	12	12	12	12	12	12	12	12	12
Revenues of OPEX	72	67	68	59	55	51	48	45	42	39
Other Revenues	- 2	10	6	3	3	5	3	4	3	4
Allowed Incentives	3	3	3	-	-	-	-	-	-	-
Interest on Tariff Deviation	- 8	2	0.1	1	0.1	1	0.1	1	0.1	1
Other	3	5	3	2	3	3	3	3	3	3
Construction Revenues	156	158	137	148	125	125	125	76	76	76
OPEX	- 58	- 52	- 52	- 52	- 49	- 47	- 45	- 44	- 42	- 40
Construction Costs	- 133	- 137	- 121	- 133	- 112	- 112	- 112	- 69	- 69	- 69

Gas P&L (€Millions)	2012	2013	2014	2015	2016F	2017F	2018F	2019F	2020F	2021F
Revenues	224	209	200	270	232	234	237	239	242	244
Revenues from Assets	139	137	134	138	143	146	149	152	155	159
Return on RAB	87	89	83	83	86	88	90	92	94	96
Tariff Smoothing Effect (Natural Gas)	- 8	- 12	- 6	- 4	- 4	- 4	- 4	- 4	- 4	- 4
Recovery of Depreciation (Net from Subsidies)	53	53	51	53	54	55	57	58	59	60
Subsidies Amortization	6	7	6	6	6	6	6	6	6	6
Revenues of OPEX	38	38	35	35	34	34	33	32	31	30
Other Revenues	1	4	6	4	4	4	5	4	4	4
Interest on Tariff Deviation	1	1	1	1	1	1	1	1	1	1
Other	0.1	3	5	3	3	3	3	3	3	3
Construction Revenues	45	30	26	92	50	50	50	51	51	51
OPEX	- 28	- 27	- 25	- 25	- 24	- 23	- 23	- 22	- 21	- 20
Construction Costs	- 40	- 25	- 22	- 89	- 49	- 49	- 49	- 49	- 49	- 49

Others P&L (€Millions)	2012	2013	2014	2015	2016F	2017F	2018F	2019F	2020F	2021F
Revenues	8	8	8	31	12	12	11	11	11	11
OPEX	- 38	- 32	- 29	- 30	- 27	- 25	- 23	- 22	- 20	- 18
Construction Costs	-	-	-	0.2	-	-	-	-	-	-

Source: Company Data and HA Analysis
References:
Kaplan, S., Ruback, R. (1995). The Valuation of Cash Flow Forecasts: An Empirical Analysis. Journal of Finance, Volume 50.
Piotroski, J. (2000). Value investing: the use of historical financial statement information to separate winners from losers. Journal of Accounting Research, 38, 43-51.

Appendix 3- REN´s Net Working Capital (€Millions)

∆Current Assets

Years	2015	2016F	2017F	2018F	2019F	2020F	2021F
Inventories	3.0	2.6	2.6	2.7	2.5	2.5	2.5
Trade and Other Receivables	263.8	363.8	367.8	370.4	345.9	349.2	353.7
Current Income Tax Recoverable	5.4	6.8	6.8	6.9	6.4	6.5	6.6
Derivative Financial Instruments	-	-	-	-	-	-	-
Other Financial Assets	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Total Current Assets	273.6	374.7	378.8	381.5	356.3	359.7	364.3
Total ∆Current Assets	207.0	- 101.1	- 4.0	- 2.7	25.2	- 3.4	- 4.6

∆Current Liabilities

Years	2015	2016F	2017F	2018F	2019F	2020F	2021F
Provisions	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Trade and Other Payables	315.7	439.7	444.5	447.7	418.0	422.0	427.5
Income Tax Payable	-	-	-	-	-	-	-
Derivative Financial Instruments	5.9	5.9	5.9	5.9	5.9	5.9	5.9
Total Current Liabilities	322.8	446.8	451.6	454.8	425.1	429.1	434.6
Total ∆Current Liabilities	- 285.3	124.0	4.8	3.2	-29.7	4.0	5.5

Total ∆NWC	-78.2	22.9	0.7	0.5	-4.5	0.6	0.8

Source: Company Data and HA Analysis

Appendix 4- REN´s Cash Flow Statement (€Millions)

	2016F	2017F	2018F	2019F	2020F	2021F
Operating Activities						
EBIT	251.3	265.8	277.0	277.2	291.6	308.1
D&A	202.7	200.9	199.4	198.1	194.3	190.6
Income Tax	- 54.5	- 57.9	- 60.7	- 61.0	- 65.2	- 69.9
Change in NWC	22.9	0.7	0.5	- 4.5	0.6	0.8
Total Cash from Operating Activities	422.4	409.5	416.3	409.8	421.3	429.6

	2016F	2017F	2018F	2019F	2020F	2021F
Investing Activities						
CAPEX	- 175.0	- 175.0	- 175.0	- 127.4	- 127.4	- 127.4
Other Investments	12.5	12.6	12.7	12.2	12.3	12.4
Total Cash from Investing Activities	- 162.5	- 162.4	- 162.3	- 115.2	- 115.1	- 115.0

	2016F	2017F	2018F	2019F	2020F	2021F
Financing Activities						
Interest Paid	- 132.7	- 132.3	- 131.2	- 129.5	- 125.4	- 120.7
Dividends Paid	- 91.3	- 91.3	- 91.3	- 91.3	- 91.3	- 91.3
Issuance (Retirement) of Debt	- 6.9	- 22.5	- 30.8	- 80.0	- 88.7	- 101.4
Total Cash from Financing Activities	- 230.9	- 246.1	- 253.3	- 300.9	- 305.4	- 313.4

	2016F	2017F	2018F	2019F	2020F	2021F
Net Change in Cash	29.0	1.0	0.7	- 6.3	0.8	1.2
Net Cash - Beginning Balance	63.7	92.7	93.7	94.4	88.1	88.9
Net Cash - Ending Balance	92.7	93.7	94.4	88.1	88.9	90.1

Source: Company Data and HA Analysis

Appendix 5- Balance Sheet Assumptions

Balance Sheet	Assumptions							Description
	Unit	2016F	2017F	2018F	2019F	2020F	2021F	
Non-Current Assets								
Property, Plant and Equipment	%	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%	percentage of capex
Goodwill	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Intangible Assets	%	99.98%	99.98%	99.98%	99.98%	99.98%	99.98%	percentage of capex
Investments in Associates and Joint Ventures	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Available-for-Sale Financial Assets	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Derivative Financial Instruments	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Deferred Tax Assets	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Current Assets								
Inventories	%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	percentage of total revenues
Trade and Other Receivables	%	50.77%	50.77%	50.77%	50.77%	50.77%	50.77%	percentage of total revenues
Available-for-Sale Financial Assets	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Current Income Tax Recoverable	%	0.94%	0.94%	0.94%	0.94%	0.94%	0.94%	percentage of total revenues
Derivative Financial Instruments	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Other Financial Assets	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Cash and Cash Equivalents	%	12.93%	12.93%	12.93%	12.93%	12.93%	12.93%	percentage of total revenues
Shareholders' Equity								
Share Capital	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Own Shares	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Reserves	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Other Changes in Equity	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2014 nominal value
Non-Current Liabilities								
Borrowings	%							please refer to the valuation section
Liability for Retirement Benefits and Others	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Derivative Financial Instruments	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Provisions	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Trade and Other Payables	%	43.85%	43.85%	43.85%	43.85%	43.85%	43.85%	percentage of total revenues
Deferred Tax Liabilities	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Current Liabilities								
Borrowings	%							please refer to the valuation section
Provisions	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Trade and Other Payables	%	61.36%	61.36%	61.36%	61.36%	61.36%	61.36%	percentage of total revenues
Income Tax Payable	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value
Derivative Financial Instruments	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	equal to 2015 nominal value

Source: Company Data and HA Analysis

Appendix 6- Profit & Loss Assumptions

P&L		Assumptions						Description
	Unit	2016F	2017F	2018F	2019F	2020F	2021F	
Total Revenues								SUM of Electricity, Gas and Others Revenues
OPEX								SUM of Electricity, Gas and Others OPEX
Construction Costs								SUM of Electricity and Gas Construction Costs
Other	%	0%	0%	0%	0%	0%	0%	Equal to 2015 nominal value
Depreciation and Amortization	%	5.24%	5.24%	5.24%	5.24%	5.24%	5.24%	Mean from 2012 to 2015 D&A (5.24%), then 5.24% of Fixed Assets
Financial Result								SUM of Financial Costs, Financial Income and Investment Income- Dividends
Financial Costs (Interest)	%	5.22%	5.22%	5.22%	5.22%	5.22%	5.22%	Average (5.22%) of the interest paid over debt, from 2012 to 2015
Financial Income	%	0.97%	0.97%	0.97%	0.97%	0.97%	0.97%	Percentage of Total Revenues
Investment Income - Dividends	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	Equal to 2015 nominal value
Income Tax Expense	%	22.50%	22.50%	22.50%	22.50%	22.50%	22.50%	SUM of the Portuguese corporate tax rate (21%) and the Municipal surcharge rate (1.5%)
Extraordinary Contribution on Energy Sector	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	Assumed to maintain at €25M

Electricity P&L		Assumptions						Description
	Unit	2016F	2017F	2018F	2019F	2020F	2021F	
Revenues								SUM of Assets, OPEX, Other and Construction Revenues
Revenues from Assets								SUM 1), 2), 3), 4), 5), 6)
1)Return on RAB	%	6.00%	6.00%	6.00%	5.65%	5.65%	5.65%	Electricity RAB*Electricity ROR
2)Hydro Land Remuneration	%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%	0.1%* Land RAB, being that 0.1% is establish by ERSE
3)Lease Revenues from Hydro Protection Zone	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	Equal to 2015 nominal value, from historical analysis
4)Remuneration of Fully Depreciated Assets	€Millions	8.3	8.3	8.3	8.3	8.3	8.3	Establish by ERSE, in 2015 was 18.5 M but it is expected to became close to the values before 2015, mean between 2012-2014
5)Recovery of Depreciation (net from subsidies)	%	6.32%	6.32%	6.32%	6.32%	6.32%	6.32%	Mean from 2012 to 2015 Electricity RAB recovery depreciation (6.32%), then 6.32% of the Electricity RAB
6) Subsidies Amortization	€Millions	12.1	12.1	12.1	12.1	12.1	12.1	Mean from 2012 to 2015 , from historical analysis
Revenues of OPEX	%	-6.53%	-6.53%	-6.53%	-6.53%	-6.53%	-6.53%	CAGR (-6.53%) from 2012 to 2015
Other Revenues								SUM 7), 8) ,9)
7) Allowed Incentives	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	Equal to 2015 nominal value, from historical analysis
8) Interest on Tariff Deviation	€Millions	0.1	1.2	0.1	1.2	0.1	1.2	(1+euribor12M n-2)*(1+Euribor12 n-1)*interest tariff deviation n-2 , being euribor n-2= euribor 12 months 2014 and euribor n-1= euribor 12 months 2015
9)Other	€Millions	3.2	3.3	2.9	2.9	3.1	3.0	Moving average of 4 years, from historical analysis
Construction Revenues	%	-15.92%	-15.92%	-15.92%	-38.84%	-38.84%	-38.84%	The construction revenues are correlated to the CAPEX, so it is assume that it will drop/rise the same % that the capex will drop/rise in terms of electricity capex
OPEX	%	-4.05%	-4.05%	-4.05%	-4.05%	-4.05%	-4.05%	CAGR (-4.05%) from 2012 to 2015
Construction Costs	%	-15.92%	-15.92%	-15.92%	-38.84%	-38.84%	-38.84%	The construction costs are correlated to the CAPEX, so it is assume that it will drop/rise the same % that the capex will drop/rise in terms of electricity capex

Gas P&L		Assumptions						Description
	Unit	2016F	2017F	2018F	2019F	2020F	2021F	
Revenues								SUM of Assets, OPEX, Other and Construction Revenues
Revenues from Assets								SUM 10), 11), 12), 13)
10)Return on RAB	%	7.33%	7.33%	7.33%	7.33%	7.33%	7.33%	Gas RAB*GAS ROR
11)Tariff Smoothing Effect (natural gas)	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	Maintain the same to 2015 nominal value, establish by ERSE
12)Recovery of Depreciation (net from subsidies)	%	4.70%	4.70%	4.70%	4.70%	4.70%	4.70%	Mean from 2012 to 2015 Gas RAB recovery depreciation (4.70%), then 4.70% of the Gas RAB
13)Subsidies Amortization	€Millions	6.3	6.3	6.3	6.3	6.3	6.3	Mean from 2012 to 2015 , from historical analysis
Revenues of OPEX	%	-2.59%	-2.59%	-2.59%	-2.59%	-2.59%	-2.59%	CAGR (-2.59%) from 2012 to 2015
Other Revenues								SUM 14), 15)
14)Interest on Tariff Deviation	€Millions	1.2	1.1	1.2	1.1	1.2	1.1	(1+euribor12M n-2)*(1+Euribor12 n-1)*interest tariff deviation n-2 , being euribor n-2= euribor 12 months 2014 and euribor n-1= euribor 12 months 2015
15)Other	€Millions	2.7	3.4	3.5	3.1	3.2	3.3	Moving average of 4 years, from historical analysis
Construction Revenues	%	-45.53%	-45.53%	-45.53%	1.60%	1.60%	1.60%	The construction revenues are correlated to the CAPEX, so it is assume that it will drop/rise the same % that the capex will drop/rise in terms of gas capex
OPEX	%	-3.36%	-3.36%	-3.36%	-3.36%	-3.36%	-3.36%	CAGR (-3.36%) from 2012 to 2015
Construction Costs	%	-45.53%	-45.53%	-45.53%	1.60%	1.60%	1.60%	The construction costs are correlated to the CAPEX, so it is assume that it will drop/rise the same % that the capex will drop/rise in terms of gas capex

Others P&L		Assumptions						Description
	Unit	2016F	2017F	2018F	2019F	2020F	2021F	
Revenues	%	-1.89%	-1.89%	-1.89%	-1.89%	-1.89%	-1.89%	CAGR (-1.89%) from 2012 to 2014
OPEX	%	-7.58%	-7.58%	-7.58%	-7.58%	-7.58%	-7.58%	CAGR (-7.58%) from 2012 to 2015
Construction Costs	%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	No constructions costs were assumed

Source: Company Data and HA Analysis

Appendix 7- REN´s Key Financial Ratios

Years	2012	2013	2014	2015	2016F	2017F	2018F	2019F	2020F	2021F
Liquidity Ratios										
Current Ratio (x)	0.26	0.81	0.65	0.35	0.43	0.43	0.43	0.41	0.42	0.42
Quick Ratio (x)	0.26	0.80	0.65	0.34	0.42	0.43	0.43	0.41	0.41	0.42
Cash Ratio (x)	0.04	0.18	0.11	0.07	0.08	0.08	0.09	0.08	0.08	0.08
Efficiency Ratios										
Total Assets Turnover (x)	0.17	0.16	0.15	0.18	0.15	0.16	0.16	0.15	0.15	0.16
Accounts Receivables Turnover (x)	3.02	1.80	1.47	2.26	2.28	1.98	1.98	1.90	1.98	1.98
Collection Period (days)	120.92	202.83	247.71	161.17	159.83	184.32	184.66	191.89	184.44	184.13
Profitability Ratios										
EBITDA Margin (%)	63.06%	66.11%	66.85%	59.77%	63.35%	64.42%	65.31%	69.77%	70.65%	71.59%
EBIT Margin (%)	38.75%	40.61%	40.04%	34.22%	35.07%	36.69%	37.97%	40.69%	42.40%	44.23%
Net Profit Margin (%)	15.23%	15.38%	14.93%	14.17%	10.70%	12.18%	13.42%	14.51%	16.48%	18.63%
ROA (%)	2.64%	2.40%	2.29%	2.53%	1.64%	1.89%	2.11%	2.19%	2.54%	2.95%
ROE (%)	12.03%	11.24%	9.93%	10.00%	6.68%	7.71%	8.51%	8.54%	9.60%	10.65%
EPS (x)	0.23	0.23	0.21	0.22	0.14	0.17	0.18	0.19	0.21	0.24
Solvency Ratios										
Long-and short-term Debt Ratio (%)	57.74%	52.96%	52.89%	55.38%	54.23%	53.95%	53.50%	53.19%	51.91%	50.24%
Long-term Debt Ratio (%)	32.77%	48.01%	44.82%	41.20%	40.31%	39.97%	39.47%	38.78%	37.31%	35.46%
Debt to Equity Ratio (x)	2.63	2.48	2.29	2.19	2.21	2.20	2.16	2.07	1.96	1.81
Equity Multiplier (x)	4.56	4.69	4.34	3.95	4.07	4.07	4.03	3.90	3.78	3.61
Interest Coverage Ratio (x)	2.16	1.97	2.30	2.54	1.89	2.01	2.11	2.14	2.33	2.55
Equity Ratio	21.93%	21.33%	23.06%	25.30%	24.54%	24.57%	24.81%	25.65%	26.49%	27.69%

Source: HA Analysis

Appendix 8- DCF Valuation

Years	2016F	2017F	2018F	2019F	2020F	2021F
Risk Free Rate (RFR)	1.84%	1.84%	1.84%	1.84%	1.84%	1.84%
Country Risk Premium (CRP)	3.72%	3.72%	3.72%	3.72%	3.72%	3.72%
Market Risk Premium (MRP)	5.04%	5.04%	5.04%	5.04%	5.04%	5.04%
Beta Unlevered	0.7	0.7	0.7	0.7	0.7	0.7
Cost of Equity Unlevered (ku)	9.09%	9.09%	9.09%	9.09%	9.09%	9.09%
Cost of Equity Levered (ke)	15.44%	15.40%	15.28%	15.05%	14.71%	14.28%
Cost of Debt (kd)	5.22%	5.22%	5.22%	5.22%	5.22%	5.22%
Effective Tax Rate (T)	22.5%	22.5%	22.5%	22.5%	22.5%	22.5%
After-tax Cost of Debt	4.05%	4.05%	4.05%	4.05%	4.05%	4.05%
Weight of Equity (We)	32%	32%	33%	33%	35%	37%
Weight of Debt (Wd)	68%	68%	67%	67%	65%	63%
WACC	7.70%	7.70%	7.71%	7.73%	7.76%	7.79%

Years	2016F	2017F	2018F	2019F	2020F	2021F
(€ Millions)	1	2	3	4	5	6
EBIT(1-Marginal Tax Rate)	194.78	205.99	214.70	214.81	225.99	238.81
D&A	202.68	200.89	199.44	198.08	194.31	190.60
Net Increase in NWC	22.91	0.72	0.48	-4.49	0.60	0.83
CAPEX	175.00	175.00	175.00	127.39	127.39	127.39
FCFF	199.56	231.15	238.66	289.99	292.30	301.19
Discounted FCFF	185.29	199.27	190.98	215.30	201.19	191.99
Cumulative discounted FCFF	185.29	384.56	575.53	790.83	992.03	1,184.02
Terminal Value	3,161.50	3,404.96	3,667.28	3,950.11	4,255.44	4,585.51

Growth Rate (g)	1.15%
Perpetuity WACC	7.79%
PV of terminal Value (€ Millions)	2,935.45
NPV of FCFF (€ Millions)	1,184.02
Enterprise Value	4,119.47
Net debt (€ Millions)	2,465.50
Value of equity (€ Millions)	1,653.97
Number of shares outstanding (Millions)	534
Price Target	3.10 €
Price at 04/01/2016	2.82 €
Upside Potential	9.83%

Source: Company Data and HA Analysis
References:
Damodaran, A. (1999). *Estimating Risk Paramaters,* Working Paper, Stern School of Business: New York University.
Damodaran, A. (2008). *Equity Risk Premiuns (ERP): Determinants, Estimation and Implications*. Working Paper, Stern School of Business: New York University.
Fama, E. F., & French, K. R. (2004). *The Capital Asset Pricing Model: Theory and Evidence*. Journal of Economic Perspectives, 18 (3), 25–46.
Fernández, P. (2002). *Valuation Methods and Shareholder Value Creation*. San Diego CA: Academic Press.
Luehrman, A. T. (1997). *What's it Worth? A General Manager's Guide to Valuation*. Harvard Business Review, 132–142
Modigliani, F., & Miller, M. H. (1958). *The Cost of Capital, Corporation Finance and the Theory of Investment*. The American Economic Review, Vol. 48, No. 3, 261-297.
Ross, S. A. (1976). *The Arbitrage Theory of Capital Asset Pricing*. Journal of Economic Theory, 13, 341–360.

Appendix 9- Multiple Valuation

The **first step** for choosing the peer group was using the **Bloomberg platform** to determine the possible companies in the same sector and headquarters in Europe.

The **second step** was eliminating the companies that are not a part of the **Western Europe Region.**

Companies	Location
ELIA SYSTEM OPERATOR SA/NV	Western Europe
TERNA SPA	Western Europe
RED ELECTRICA CORPORACION SA	Western Europe
LECHWERKE AG	Western Europe
NATIONAL GRID PLC	Western Europe
MAINOVA AG	Western Europe
ENERGIEDIENST HOLDING AG-REG	Western Europe
EVN AG	Western Europe
IREN SPA	Western Europe
MVV ENERGIE AG	Western Europe
TAURON POLSKA ENERGIA SA	Eastern Europe
ROSSETI PJSC	Eastern Europe
FEDERAL GRID CO UNIFIED ENER	Eastern Europe
ENEA SA	Eastern Europe
IRKUTSKENERGO PJSC	Eastern Europe
TRANSELECTRICA SA	Eastern Europe
CEZ AS	Eastern Europe
MOSCOW UNITED ELECTRIC GRID	Eastern Europe
POLSKIE GORNICTWO NAFTOWE I	Eastern Europe
TRANSGAZ SA MEDIAS	Eastern Europe

In the **third step** we used REN´s **market capitalization for 2015** (>€1.45 Billion) has an elimination parameter.

Market cap (€ Billions)

Market cap	2015	Peer?
REN	1.45	>1.45
ELIA SYSTEM OPERATOR SA/NV	2.90	✓
TERNA SPA	9.80	✓
RED ELECTRICA CORPORACION SA	11.18	✓
LECHWERKE AG	2.33	✓
NATIONAL GRID PLC	48.49	✓
MAINOVA AG	1.84	✓
ENERGIEDIENST HOLDING AG-REG	0.72	X
EVN AG	1.89	✓
IREN SPA	1.88	✓
MVV ENERGIE AG	1.31	X

In the **fourth step** we used REN´s **total assets for 2015** (>€4.59 Billion) as another peer eliminator.

Total Assets (€ Billions)		
Total Assets	2015	Peer?
REN	4.59	>4.59
ELIA SYSTEM OPERATOR SA/NV	6.44	✓
TERNA SPA	15.46	✓
RED ELECTRICA CORPORACION SA	10.60	✓
LECHWERKE AG	1.63	X
NATIONAL GRID PLC	76.22	✓
MAINOVA AG	2.67	X
EVN AG	6.50	✓
IREN SPA	6.89	✓

In the **fifth and final step** we used a **limit of €10 Billion in net debt for 2015** as an elimination factor for the peer group selection.

Net Debt 2015 (€ Billions)		
Net Debt	Net Debt	Peer?
REN	2.47	<10
ELIA SYSTEM OPERATOR SA/NV	2.58	✓
TERNA SPA	8.75	✓
RED ELECTRICA CORPORACION SA	5.75	✓
NATIONAL GRID PLC	32.14	X
EVN AG	1.28	✓
IREN SPA	2.18	✓

In conclusion, since it was difficult to find reliable data or even information for the multiples of **Elia System Operator SA/NV**, we decided to exclude it from the peer group, making it, constitute only by 4 companies (TERNA, REE, EVN and IREN).

Peer Selection (only 4 companies)				
Peer Selection (only 4)	Market Cap	Total Assets	Net Debt	Yes/No (only 4)
ELIA SYSTEM OPERATOR SA/NV	✓	✓	✓	No
TERNA SPA	✓	✓	✓	Yes
RED ELECTRICA CORPORACION SA	✓	✓	✓	Yes
LECHWERKE AG	✓	X	X	No
NATIONAL GRID PLC	✓	✓	X	No
MAINOVA AG	✓	X	X	No
ENERGIEDIENST HOLDING AG-REG	X	X	X	No
EVN AG	✓	✓	✓	Yes
IREN SPA	✓	✓	✓	Yes
MVV ENERGIE AG	X	X	X	No
Description	>1.45	>4.59	<10	Only 4

Source: Bloomberg Data and HA Analysis
References:
Fernández, P. (2002). *Valuation Methods and Shareholder Value Creation*. San Diego CA: Academic Press.
Fernández, P. (2002). *Valuation using multiples. How do analysts reach their conclusions?* s.l: IESE Research Papers D/450.
Liu, J., Nissim, D. and Thomas, J. (2002), *Equity Valuation Using Multiples*. Journal of Accounting Research, 40 (1), 135-172.
Liu, J., Nissim, D. and Thomas, J. (2004). *Price multiples based on forecasts and reported values of earnings, dividends, sales, and cash flows: An international analysis*. Working Paper, Yale University.
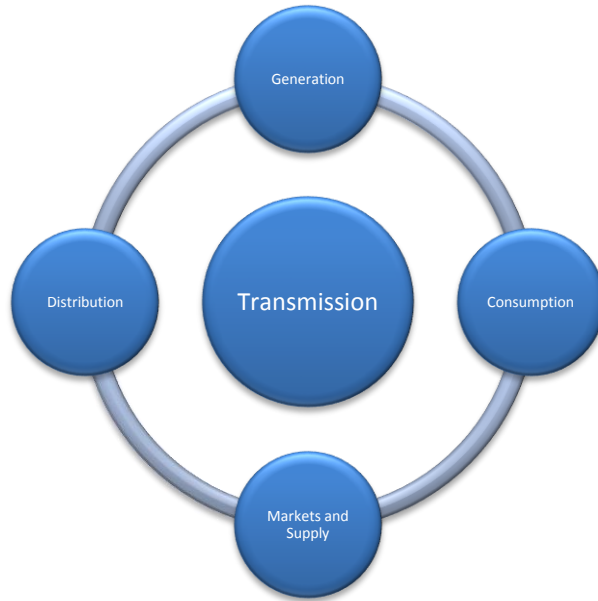
Generation

Electricity generation is open to competition and has two legal schemes: (1) ordinary status generation for electricity generated from traditional, non-renewable sources and at large hydroelectric power stations and (2) special status generation referring to co-generation and electricity generated from renewable energy sources

Distribution

Electricity is distributed in the National Transmission Grid, which consists of high, medium and low voltage infrastructures. The low-voltage distribution grids are operated under concession contracts between municipalities and distributors.

Markets and Supply

The organized electricity markets operate freely and are subject to authorization from the Portuguese state. Ordinary status generators, suppliers and special status generators can become market agents if they wish to do so.

Suppliers can buy and sell electricity freely and are entitled to access the transmission and distribution grids on payment of access tariffs fixed by the regulator, ERSE. They are subject too public service obligations with regard to quality and a continuous electricity supply and must give their customers access to simple, understandable information.

Consumption

The consumers are the reason behind this complex system. There are almost 6.2 Million consumers in mainland Portugal, most of them using low voltage, 23,500 medium voltage and 350 high and extra high voltage.

They used more than 49 Billion kWh in 2013. After the opening of the electricity market in Portugal, consumers who wish to do so are free to choose their electricity supplier.

Source: Company Data and HA Analysis

Planning

Pursuant to current legislation, REN must conduct planning studies of the transmission grid in order to coordinate grid development plans with national generation and demand forecasts.

These studies must be sent to competent authorities for prior approval, without which it is not possible to go on to the investment phase. It is also REN's legal obligation to collaborate in official studies of medium and long-term security of the country's electricity supply.

Investment

Investment in the transmission grid has kept up with growth in consumption in Portugal. In recent years, as a result for the integration of high levels of new, renewable generation (basically wind power), mostly in inland areas, the NTG has been reinforced for these areas so that it can transmit more renewable energy to consumption centers.

Under agreements between Portugal and Spain on the development of the Iberian electricity market, there has been a substantial increase in interconnection capacity between the two countries, which was only possible after completion of transmission grid reinforcements on both sides of the border.

Operation

REN has 8,733 km of lines all over the country. The 400 kV grid lines mainly run north to south near the coast from the Alto Lindoso power station in the north to the Algarve, and West to east, where they interconnect with the Spanish grid.

The 220 kV lines basically run between Lisbon and Porto, diagonally between Miranda do Douro and Coimbra, along the River Douro and in Beira Interior.

System Management

System management involves constantly ensuring the necessary balance for an appropriate technical performance of the system nationwide. This task entails permanent monitoring of a vast number of parameters (generation, consumption, status of equipment, unavailability of the grid, etc.) in order to ensure that the entire system is operating properly, safely and always with reserve margins.

Source: Company Data and HA Analysis

Appendix 12- Natural Gas Complex Transmission System
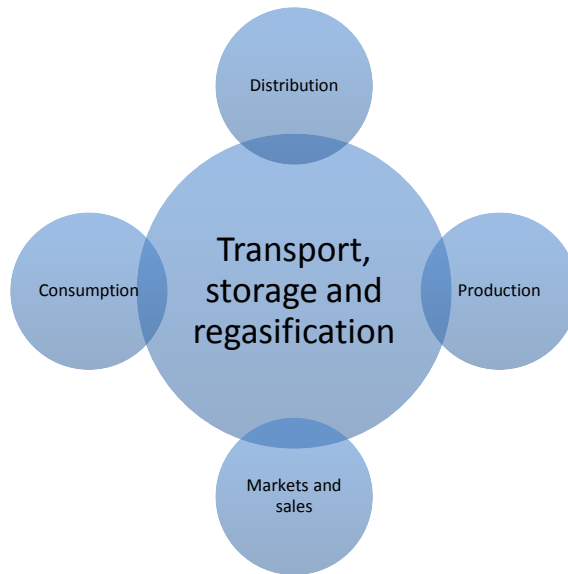
Production

The gas pipeline is interconnected to the Spanish and European network, from which it receives natural gas in gaseous form at high pressure. At the Sines terminal, the natural gas is received in liquid form (LNG) from gas tanker ships and pumped into intermediate storage tanks.

Distribution

Natural gas is distributed in medium- and low-pressure pipelines under concessions and licenses granted by the Portuguese state. Natural gas from high-pressure pipelines is transferred to medium-pressure branches through regulation and metering stations. These pipelines and low-pressure networks branching from them belong to distribution companies that deliver the natural gas to end users.

Consumption

The consumers are the reason behind this complex system. There are more than 1.3 Million consumers in mainland Portugal, most of them low-pressure consumers, 279 medium pressure and 21 high pressure. In 2011 they used more than 57 Billion kWh, which corresponds to around 4.7 Billion square meters.

After the opening of the natural gas market in Portugal, consumers who wish to do so are free to choose their electricity supplier.

Markets and Sales

The natural gas markets are operated on an open-market basis and require authorization from the Portuguese state. The natural gas is sold to end consumers by the suppliers, which buy and sell it freely on the open market or in bilateral contracts.

Storage and Regasification

The natural gas is received at the border and transported by high-pressure pipelines connected, through pressure metering and reduction stations, to the medium-pressure pipelines operated by the distribution companies.

At the underground storage facilities in Pombal, the high-pressure natural gas is stored in gaseous form in caverns created inside salt formations at depth of over 1,000 meters.

Source: Company Data and HA Analysis

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Planning → Investment → Operation → System management
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Planning

Under current legislation, REN is responsible for conducting 10-year planning studies of the National Natural Gas System in order to coordinate network development plans with national demand forecasts. These studies must be sent to the competent authorities for prior approval, without which it is not possible to go on to the investment phase.

It is also REN's legal obligation to collaborate in official studies of medium and long-term security of the country's natural gas supply.

Investment

Investment on the natural gas transport network has kept up the growth in the country's consumption. The expansion of the Sines Liquefied Natural Gas Terminal, which was completed in July 2012, was particularly important. It increased useful storage capacity of LNG by 62.5%, to 390,000 m3, raised gas emission capacity to the network by 50% to 1,350,000 m3/h, adapted the jetty for reception of high-capacity tankers and implemented a number of procedural reinforcements to maximize the availability of infrastructure and a high standard of operational safety. As a result, the Sines Terminal now offers favorable access conditions to more agents and more flexible management of imported volumes. It boasts unique conditions for the reception of LNG ships more remote, diversified sources, thereby contributing to sector's competitiveness in Portugal.

Operation

The NNGS consists of main and branch pipelines totaling 1,248 km and 195 pipeline stations (84 sectioning valve stations, 66 intermediate junction stations, 84 pressure regulation and metering stations and two custody transfer stations).

System Management

As the overall technical system manager, REN Gasodutos is responsible for access to infrastructures by third parties, for ensuring a balance between supply and demand and efficient management of the high-pressure natural gas network.

The overall technical management of the system coordinates the operation of the NNGS and distribution networks connected to the system, thereby guaranteeing security of supply, freedom of access and equal treatment of all agents, in accordance with criteria of non-discrimination, impartiality and transparency.

REN Gasodutos is responsible for managing the interconnection of the NNGS with international networks and underground storage infrastructures and the LNG terminal and controlling the formation and maintenance of safety natural gas reserves.

Source: Company Data and HA Analysis

Appendix 14- Pilot Zone Development Plan for ENONDAS

Phase 1(concept demonstration and pre-commercial)

-Development of the Pilot Zone to receive in pre-commercial and proof of concept stages, generators of electricity (based on wave energy devices);

-Objective – Power injection in the Distribution Grid, up to 80 MW.;

-The concessionaire of the national distribution grid of electricity ensures the building, near the pilot area, of the infrastructure necessary to receive the electrical power supplied by the promoters, to a global power up to 80 MW.

Phase 2 (Commercial)

-Objective – Power injection in the Transmission Grid, up to 250 MW;

-The concessionaire of the national transmission grid of electricity ensues the building, near the pilot area, of the infrastructure necessary to receive the electrical power supplied by the promoters, to a global power up to 250 MW.

Source: Company Data and HA Analysis

Appendix 15- REN´s Corporate Governance

Appendix 15a. General Shareholders Meeting

Name	Post	First Year Election	Year Term Mandate
Pedro Maia	Chairman of the General Shareholders Meeting Board	2012	2017
Francisco Santos Costa	Vice-Chairman of the General Shareholders Meeting Board	2015	2017

Appendix 15b. Board of Directors

Name	Age	Post	First Year Election	Year Term Mandate
Rodrigo Costa	55	Chairman of the Board of Directors and of the Executive Committee	2014	2017
João Faria Conceição	42	Executive Director	2009	2017
Gonçalo Morais Soares	44	Executive Director	2012	2017
Guangchao Zhu	48	Vice-Chairman	2012	2017
Mengrong Cheng	47	Director	2012	2017
Longhua Jiang	47	Director	2014	2017
Omar Al-Wahaibi	49	Director	2015	2017
Manuel Champalimaud	69	Director	2012	2017
Jorge Magalhães Correia	57	Director	2015	2017
José Luís Arnaut (Independent)	52	Director	2012	2017
Manuel Sebastião (Independent)	65	Director/member of Audit Committee	2015	2017
Gonçalo Gil Mata (Independent)	45	Director/member of Audit Committee	2015	2017
Maria Estela Barbot (Independent)	55	Director/member of Audit Committee	2015	2017

Appendix 15c. Executive Committee

Name	Age	Post	First Year Election	Year Term Mandate
Rodrigo Costa	55	Chairman of the Executive Committee	2014	2017
João Faria Conceição	42	Executive Director	2009	2017
Gonçalo Morais Soares	44	Executive Director	2012	2017

Appendix 15d. Audit Committee

Name	Age	Post	First Year Election	Year Term Mandate
Manuel Sebastião (Independent)	65	Member of Audit Committee	2015	2017
Gonçalo Gil Mata (Independent)	45	Member of Audit Committee	2015	2017
Maria Estela Barbot (Independent)	55	Member of Audit Committee	2015	2017

Appendix 15e. Remuneration Committee

| Name	Post	First Year Election	Year Term Mandate
Paulo Pimenta	Chairman of the Remuneration Committee	2014	2017
Manuel de Lancastre	Member of the Remuneration Committee	2014	2017
Fernando Neves de Almeida	Member of the Remuneration Committee	2014	2017

Source: Company Data and HA Analysis

Appendix 16- REN´s Shareholder Structure 31/12/2015 (Exact Number)

Entity	Number of Shares	%
State Grid of China	133,500,000	25%
Oman Oil Company SAOC	80,100,000	15%
Gestmin, SGPS, S.A.	32,760,000	6%
Fidelidade companhia de Seguros, S.A.	28,370,665	5.3%
Red Eléctrica Corporación, S.A.	26,700,000	5%
EDP, Energias de Portugal, S.A.	26,707,335	5%
Own Shares (REN-Redes Energéticas Nacionais, SGPS, S.A.)	3,881,374	0.7%

Board of Directors	Acquisitions (2015)	Alienation	Number of Shares (31/12/2015)
Emílio Rui Vilar			10,390
Gonçalo Morais Soares			0
João Faria Conceição			500
Guangchao Zhu			133,500,000
Mengrong Cheng			0
Longhua Jiang			0
Hilal Al-Kharusi			0
Rodrigo Costa			0
Manuel Champalimaud	713,049		32,040,000
José Folgado Blanco			26,700,000
José Luís Arnaut	7,107		7,587
Francisco João Oliveira		26,700,000	0
Omar Al Wahaibi			0
Jorge Manuel Magalhães Correia	28,370,665		28,370,665

Source: Company Data and HA Analysis

44

45
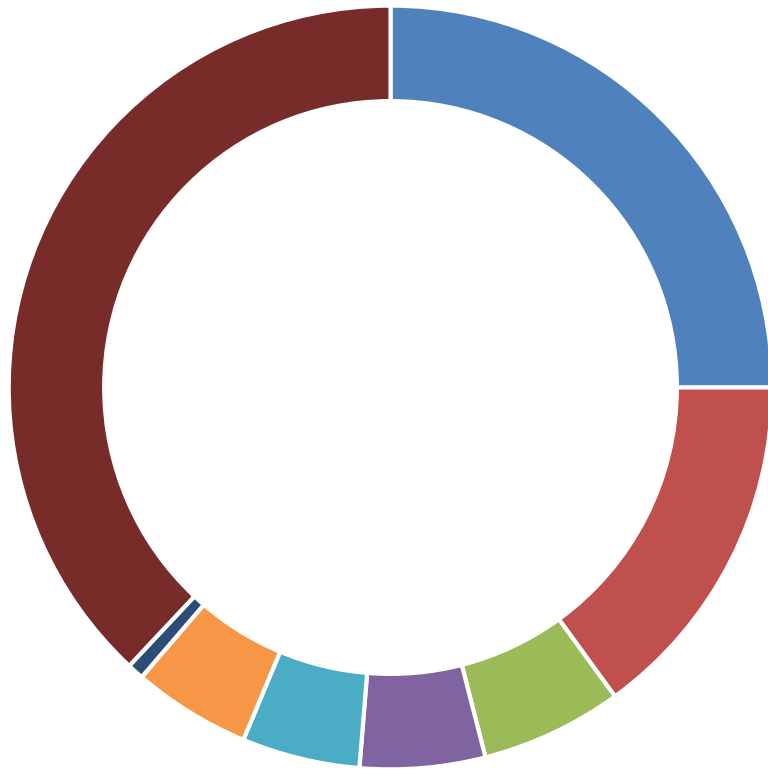
- State Grid of China (25%)
- OMAN OIL (15%)
- GESTMIN, SGPS, S.A (6%)
- Fidelidade- Companhia de Seguros, S.A (5.3%)
- EDP Group (5%)
- Red Electrica Corporacion, S.A (5%)
- Own Shares (0.7%)
- Free Float (38%)

Source: Company Data and HA Analysis

Appendix 18- Electricity and Natural Gas Infrastructures (31/12/2015)

Electricity	31/12/2015
Length of the service lines (Km)	8,805
400 KV	2,632
220 KV	3,611
150 KV	2,562
Power of transformation in service (MVA)	36,673
Self-transformation	12,040
400/220 KV	7,200
400/150 KV	5,990
220/150 KV	700
150/130 KV	150
Transformation	22,633
400/60 KV	3,910
220/60 KV	12,209
150/60 KV	6,054
150/130 KV	140
220/30 KV	320

| Natural Gas		Ø (MM)	KM
Batch 1	Setúbal-Leiria	700	173
Batch 2	Leiria Gondomar	700	164
	Gondomar-Braga	500	50
Batch 3	Campo Maior-Leiria	700	220
Batch 4	Braga-Valença	500	74
Batch 5	Monforte-Guarda	300	184
Batch 6	Mealhada-Viseu	500	68
Batch 7	Sines-Setúbal	800	87
Batch 8	Mangualde-Celorico-Guarda	700/300	76
High pressure extensions		150-700	278
Total			1,375

Source: Company Data and HA Analysis

Appendix 19- Electricity and Natural Gas Concessions

Electricity Concession	Function	Regulated Activities	Tariff
50 years	Operation of the system (including managing interconnections)	Overall technical management of the national electricity system	Overall system use tariff
	Technical operation of market planning		
	Compensation for energy imbalances		
	Operation of Costs for Maintenance of Contractual Equilibrium		
	Planning, construction, operation and maintenance of electricity transmission grid and international connections	Electricity transmission	Transmission grid tariff

Natural gas Concession	Function	Regulated Activities	Tariff
40 years	Unloading, transporting and delivering natural gas via high pressure gas pipelines	Natural gas transport	Overall transport network use tariff
	Construction and maintenance of infrastructure and its connections		
	Planning, development, expansion and technical management		
	Interconnections, underground storage and connections to LNG terminals		
	Overall technical management of the National Natural Gas System	Overall technical management of the natural gas system	Overall system use tariff
	Planning of network and use of national transport network infrastructure, storage infrastructure and LNG terminals		
	Management of natural gas safety reserves		
	Unloading, storage and regasification of LNG	Unloading, storage and regasification of LNG	Tariff for the use of the LNG unloading, storage and regasification terminal
	Delivery of high-pressure natural gas to the national natural gas transport network		
	Loading of LNG onto tanker trucks		
	Construction, operation, maintenance and expansion of Sines infrastructure and facilities		
	Reception, injection, underground storage, extraction, dehydration and delivery of natural gas for (1) the constitution or maintenance of safety reserves and (2) operation and supply	Underground storage of natural gas	Tariff for the use of underground natural gas storage
	Construction, operation, maintenance and expansion of infrastructure and facilities		

Source: Company Data and HA Analysis
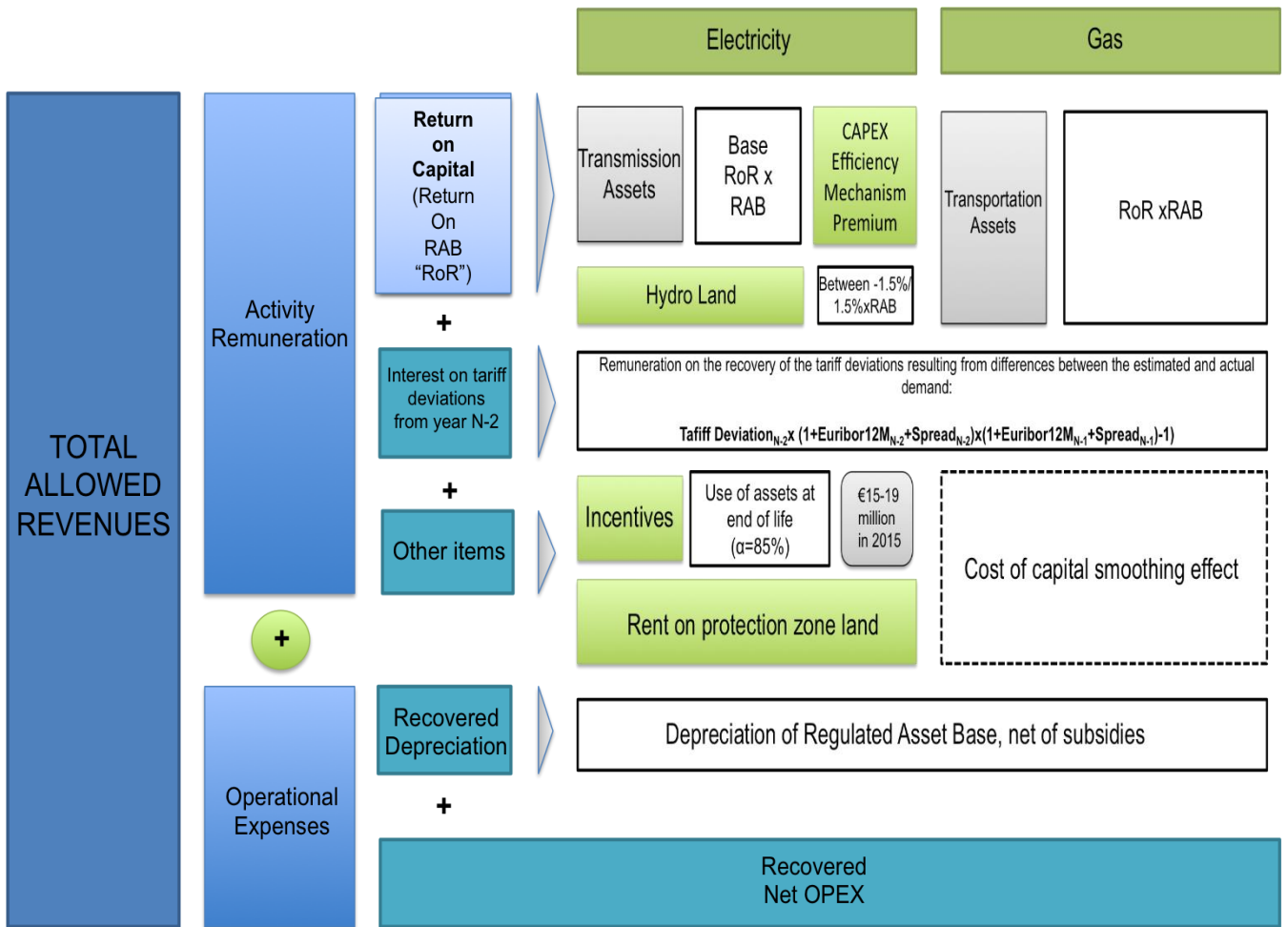
Source: Company Data and HA Analysis

Major Group Investments in 2015 - Electricity

Development of Minho's (Cávado) network:
19.6M€

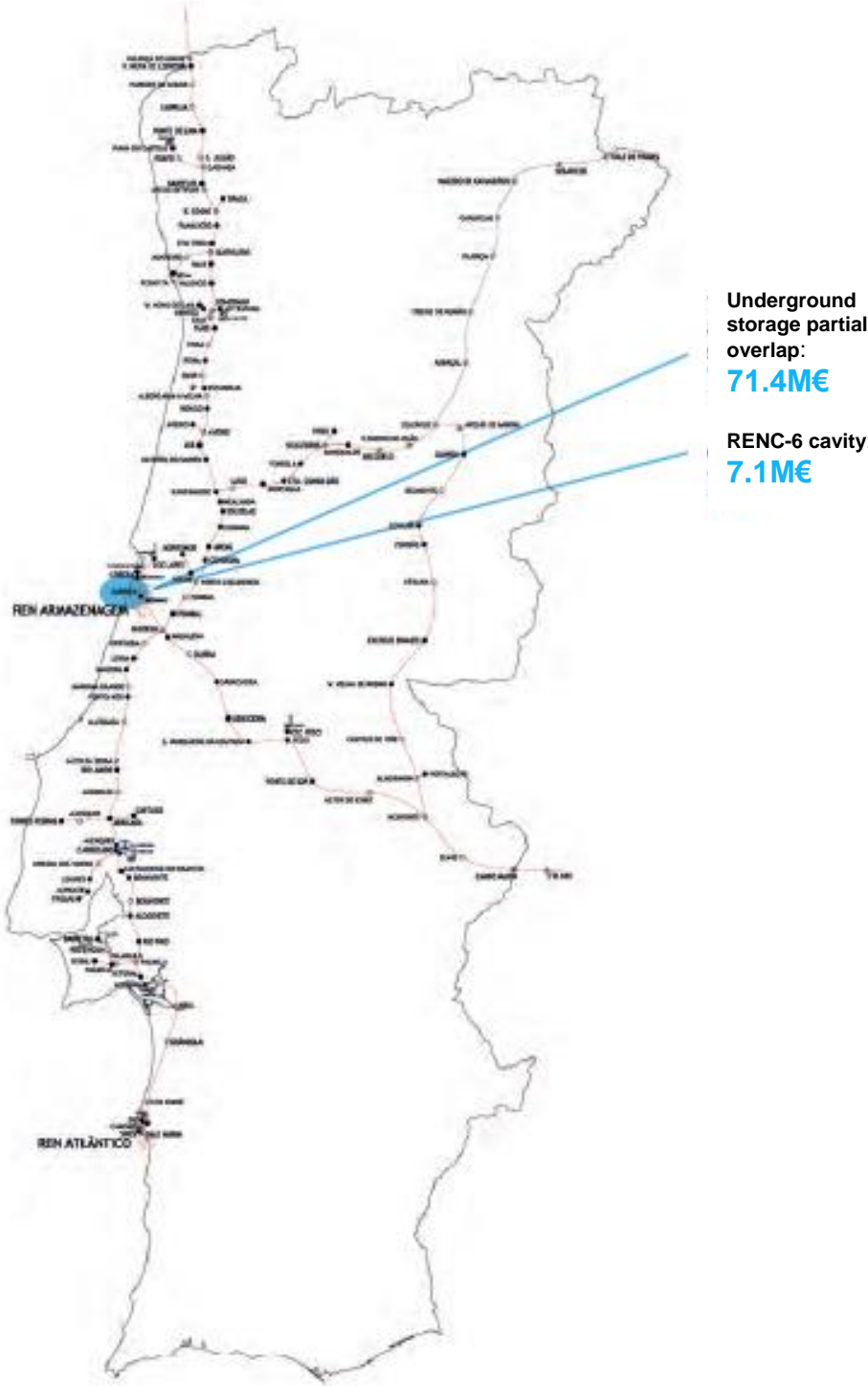**Development of Minho's (Fafe) network:**
5.8M€

Development of Porto's (V.N. Famalicão) network:
35.4M€

Reactive Compensation:
8.1M€

Reinforcement of Lisbon's Network (Alto de São João):
7.0M€

Reinforcement of Alentejo's Network:
14.0M€

Major Group Investments in 2015 – Natural Gas

Underground storage partial overlap:
71.4M€

RENC-6 cavity:
7.1M€

Source: Company Data and HA Analysis

Abbreviations

β- Beta Unlevered

CAPM- Capital Asset Pricing Model

CBD- China Development Bank

CHEO-China Economic Outlook

CAGR- Compound Annual Growth Rate

Kd- Cost of Debt

Ke- Cost of Equity Levered

Ku-Cost of Equity Unlevered

CPR-Country Risk Premium

DIR- Debt and Interest Rate Risk

D&A-Depreciation and Amortization

DCF- Discounted Cash Flow

EPS-Earnings per Share

ER- Economic Risk

EDP-Energias de Portugal S.A.

T-Marginal Tax Rate

EIB- European Investment Bank

EC- Energy Consumption

ERSE-Energy Services Regulatory Authority

ECB-European Central Bank

ECES- Extraordinary Contribution to the Energy Sector

FCFF- Free Cash Flow to the Firm

GALP- GALP Energia, S.A.

OMIP- Iberian Market Operator (Portugal), SGPS, SA

ICBC- Industrial and Commercial Bank of China

IEA- International Energy Agency

IMF- International Monetary Fund

LNG- Liquefied Natural Gas

M&C- Market and Corporate Risk

MRP- Market Risk Premium

NES- National Electric System

NNGS- National Natural Gas System

NTG- National Transmission Grid

NWC- Net Working Capital

OMI CLEAR- OMI CLEAR- Society of Energy Markets Compensation

g- Perpetual Growth Rate

P&R- Political and Regulatory Risk

PEE-Portugal Economic Environment

DGEG-Portuguese Competition Authority and Directorate General for Energy and Geology

PPAS- Power Purchase Agreements

P&L- Profit and Loss

QS- Quality Service

RAB- Regulated Asset Base

REE- Red Eléctrica de España

REN- Redes Energéticas Nacionais, SGPS, S.A.

ROE-Return on Equity

RFR- Risk Free Rate

Sh-Shareholders

TV- Terminal Value

Wd- Weight of debt

We- Weight of equity

WACC- Weighted Average Cost of Capital

References

Articles and Working Papers

Damodaran, A. (1999). *Estimating Risk Paramaters,* Working Paper, Stern School of Business:

New York University.

Damodaran, A. (2008). *Equity Risk Premiuns (ERP): Determinants, Estimation and Implications*.

Working Paper, Stern School of Business: New York University.

Fama, E. F., & French, K. R. (2004). *The Capital Asset Pricing Model: Theory and Evidence*.

Journal of Economic Perspectives, 18 (3), 25–46.

Fernández, P. (2002). *Valuation Methods and Shareholder Value Creation*. San Diego CA:

Academic Press.

Fernández, P. (2002). *Valuation using multiples. How do analysts reach their conclusions?* s.l.:

IESE Research Papers D/450.

Kaplan, S., Ruback, R. (1995). *The Valuation of Cash Flow Forecasts: An Empirical Analysis*.

Journal of Finance, Volume 50.

Liu, J., Nissim, D. and Thomas, J. (2002), *Equity Valuation Using Multiples*. Journal of Accounting

Research, 40 (1), 135-172.

Liu, J., Nissim, D. and Thomas, J. (2004). *Price multiples based on forecasts and reported values

of earnings, dividends, sales, and cash flows: An international analysis*. Working Paper,

Yale University.

Luehrman, A. T. (1997). *What's it Worth? A General Manager's Guide to Valuation*. Harvard

Business Review, 132–142.

Modigliani, F., & Miller, M. H. (1958). *The Cost of Capital, Corporation Finance and the Theory of

Investment*. The American Economic Review, Vol. 48, No. 3, 261-297.

Piotroski, J. (2000). *Value investing: the use of historical financial statement information to

separate winners from losers*. Journal of Accounting Research, 38, 43-51.

Ross, S. A. (1976). *The Arbitrage Theory of Capital Asset Pricing*. Journal of Economic Theory,

13, 341–360.

Books

Berk, J., Demarzo, P. (2013). *Corporate Finance,* 3ª Ed. Boston: Pearson.

Damodaran, A. (1997). *Corporate Finance- Theory and Pratice*, 1ª Ed. John Wiley & Sons.

Damodaran, A. (2006). *Valuation Approaches and Metrics: A Survey of the Theory and Evidence,*

Stern School of Business: New York University.

Damodaran, A. (2012). *Investment Valuation: Tools and Techniques for the determining the*

value of any asset. 3ª Ed. Hoboken, New Jersey: John Wiley and Sons.

Defusco, R. A., Mcleavey, D. W. and Pinto, J. E. (2007). *Quantitative Investment Analysis.* CFA

Institute Investment Series, 2ª Ed. John Wiley & Sons.

Koller, T., Goedhart, M., & Wessels, D. (2005). *Valuation: Measuring and Managing the Value of*

Companies. 4 Ed. New Jersey: John Wiley and Sons.

Pinto, J. E., Henry, E., Robinson, T. R. and Stowe, J.D. (2010). *Equity Asset Valuation,* CFA

Institute Investment Series, 2ª Ed. John Wiley & Sons.

Investor Relations – Company Consolidated Reports

REN- Redes Energéticas Nacionais, SGPS, S.A., Consolidated Annual Accounts and

Management Report 2011.

REN- Redes Energéticas Nacionais, SGPS, S.A., Consolidated Annual Accounts and

Management Report 2012.

REN- Redes Energéticas Nacionais, SGPS, S.A., Consolidated Annual Accounts and

Management Report 2013.

REN- Redes Energéticas Nacionais, SGPS, S.A., Consolidated Annual Accounts and

Management Report 2014.

REN- Redes Energéticas Nacionais, SGPS, S.A., Consolidated Annual Accounts and

    Management Report 2015.

Databases and Websites

Aswath Damodaran, http://pages.stern.nyu.edu/~adamodar/

Bloomberg Database

DGEG- http://www.dgeg.pt/

Enerdata- http://www.enerdata.net/enerdatauk/

Eurostat- http://ec.europa.eu/eurostat/web/main/home

European Central Bank- https://www.ecb.europa.eu/home/html/index.en.html

IMF World Economic Outlook April 2016 Database

IEA- https://www.iea.org/

OECD- https://data.oecd.org/

Portal ERSE- http://www.erse.pt/pt/Paginas/home.aspx

REN- Redes Energéticas Nacionais, SGPS, S.A.- http://www.ren.pt/

Yahoo Finance- https://finance.yahoo.com/