ISCTE Business School
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EQUITY RESEARCH: AN EVALUATION OF EDP'S TENDER OFFER OVER EDP RENOVÁVEIS

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To my sister Mariana, who is now starting this amazing journey.

"Education is the most powerful weapon which you can use to change the world."

Nelson Mandela

Resumo

A crescente competitividade no custo das tecnologias (principalmente eólica e solar), o aumento no consumo de eletricidade e as rígidas políticas governativas rumo à descarbonização da economia são alguns dos principais desafios que têm, cada vez mais, transformado o sector das energias renováveis.

Uma das empresas que se encontra em posição favorável nesta revolução em curso é a EDP Renováveis, dedicando-se à produção de energia exclusivamente através de fontes renováveis, particularmente eólica *onshore*.

Assim, para incrementar a exposição ao crescimento das renováveis, o maior acionista (EDP - Energias de Portugal) lançou, a 27 de março de 2017, uma Oferta Pública de Aquisição (OPA) sobre os 22.47% de capital que não controlava na subsidiária, a um preço de 6.75€ por ação.

Esta dissertação apresenta uma análise, a 31 de março de 2017, e consequente definição de um preço-alvo para a ação no final do ano de 2017. Foi também possível analisar se o valor oferecido pela EDP era justo e se os acionistas minoritários estariam, ou não, dispostos a aceitá-lo.

Um modelo DCF, alicerçado na soma das partes, assinala um preço-alvo de €7.83, ou seja, uma apreciação de 13%, o que indica que o valor oferecido pela EDP não reconhece verdadeiramente o valor intrínseco e o crescimento potencial da empresa.

Concluindo, o desempenho histórico positivo aliado a uma abordagem de baixo risco na exposição a mercado atraentes, como os Estados Unidos, são essenciais para reforçar uma recomendação de Compra, considerando que o mercado não reflete o correto valor da EDP Renováveis.

Palavras-Chave: Value of Firm; Equity Research; Valuation; Renewable Energy

Código de Classificação JEL: G32 – Financing Policy; Financial Risk and Risk Management; Capital and Ownership Structure; Value of Firms; Goodwill

G39 - Corporate Finance and Governance: Other

Abstract

The increasing cost competitiveness of renewable technologies (mainly wind power and solar PV), the continuous increase in global electricity demand and strict government policies towards the decarbonisation of the economy are some of the main challenges and growth opportunities that have been increasingly transforming the renewable energy industry.

One of the companies in the front row of this ongoing revolution is EDP Renováveis, focused exclusively on the generation of energy from renewable sources, primarily wind onshore.

Hence, to benefit even more from the attractive growth of EDPR, its major shareholder (EDP - Energias de Portugal) launched on 27 March 2017 a tender offer to buy-back the 22.47% of share capital it did not hold in the subsidiary, at a price of €6.75 per share.

This dissertation presents, as of 31 March 2017, a comprehensive analysis and consequent estimation of the fair value of EDP Renováveis, by targeting a price for the year-end 2017. Consequently, it allowed for the fair evaluation of EDP's offer and to answer whether minority shareholders should be willing to accept it or not.

Accordingly, a sum-of-the-parts DCF valuation derives a target price of €7.83 per share, i.e., a 13% upside, which clearly indicates that the price offered by EDP did not truthfully reflected the fundamental value of the company and its potential growth.

Overall, the positive historical performance and low-risk approach to attractive markets, such as the United States, are fundamental to support a buy recommendation, considering the market might be undervaluing the stock.

Keywords: Value of Firm; Equity Research; Valuation; Renewable Energy

JEL Classification Code: G32 – Financing Policy; Financial Risk and Risk Management; Capital and Ownership Structure; Value of Firms; Goodwill

G39 - Corporate Finance and Governance: Other

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List of Abbreviations

APV – Adjusted Present Value
CAPM – Capital Asset Pricing Model
CAPEX – Capital Expenditures
COP - Conference of Parties
DCF -Discounted Cash Flow
DPS -Dividends per Share
EBIT – Earnings Before Interest and Taxes
EDPR – EDP Renováveis
EQV -Equity Value
EV -Enterprise Value
EV/EBITDA – Enterprise Value to EBITDA
EV/EG – Enterprise Value to EBITDA growth
EV/FCF – Enterprise Value to Free Cash Flow
EV/Sales – Enterprise Value to Sales
EVA – Economic Value Added
FCFE – Free Cash flow to Equity
FCFF – Free Cash Flow to the Firm
FiT – Feed-in-Tariff
GDP - Gross Domestic Product
GW – Gigawatt
GWEC – Global Wind Energy Council
IC – Invested Capital
IEA – International Energy Agency
IRENA – International Renewable Energy Agency
LCOE – Levelized Cost of Energy
NOPLAT – Net Operating Profit Less Adjusted Taxes
OPEX – Operating Expenses
P/BV – Price to Book Value
P/CE – Price to Cash Earnings
PEG – Price Earnings Growth
PER – Price Earnings Ratio
PPA – Power Purchase Agreement
P/S – Price to Sales
PV – Photovoltaic
ROIC – Return on Invested Capital
SOTP –Sum-of-the-parts
WC – Working Capital
WACC -Weighted Average Cost of Capital

1. Introduction

Valuation assumes an essential role in the life of a company since it not only allows the fair value estimation of a business for potential transactions, but is also a source of information about the main risks and sources of growth, enhancing the decision-making process regarding the company's business strategy.

Driven by the opportunity to put in practice all the concepts related to equity valuation learned during the academic curriculum, this dissertation has the main objective of delivering the right framework and proceed to the fair value estimation of EDP Renováveis S.A. (hereinafter referred to as "EDP Renováveis" or "EDPR").

In this matter, this is also the opportunity to study in detail a company that has a leading position in terms of innovation and sustainability, within an industry facing constant challenges and growth opportunities.

In fact, the increase in cost competitiveness of renewable technology and the political pressure for the decarbonisation of the economy, reinforced by the recent COP 21 agreement reached in Paris, has put EDPR in a favourable position to this transition towards a more efficient and clean energy production worldwide.

Created as the renewable subsidiary of EDP S.A. (a vertically-integrated utility company), EDP Renováveis is currently headquartered in Madrid and listed in the Euronext Lisbon since 2008. The company is a global leader in the renewable energy sector, with an installed capacity of 10.4 GW (gigawatts) as of 31 March 2017, being the fourth biggest wind power producer in the world.

As such, in order to incorporate all these growth prospects, EDP (owner of 77.53% of the company) launched, on 27 March 2017, a tender offer to buy the remaining outstanding shares at €6.75, expecting to attain more than 90% of total shares (and voting rights) and withdraw EDPR from the stock exchange.

So, this project aims to answer the major research question "What is the fair value of EDP Renováveis' share?" and, therefore, provide a recommendation to potential investors, based on the target price for the year-end 2017. Correspondingly, this study also intends to examine what should be the expected reaction of the remaining shareholders to EDP's market proposal of €6.75 per share.

All things considered, the first section of this project focus on the literature review, containing a detailed description of the main valuation methodologies and all their essential inputs, as well

as a brief comparison among them. A note about the assessment of renewable energy utilities and multinational companies is also added to this conceptual review.

The next section includes a comprehensive description of EDPR's business, its historical performance, shareholder structure, regulatory framework and main strategic drivers. This also includes an overview of the industry, describing the competitive environment and the main threats and opportunities in the renewable energy sector.

Afterwards, the main segment is centred in the valuation of EDP Renováveis. Taking into account all the available information, performance forecasts and assumptions, different valuation models are performed in order to define a target price for the company's stock by the end of 2017.

This research report is primarily based on the DCF (Discounted Cash Flow) methodology, through the FCFF (Free Cash Flow to the Firm) discounted at the WACC (Weighted Average Cost of Capital), since it is the most widespread practice to value renewable energy companies among analysts.

Additionally, a sensitivity analysis will also be necessary to define what supports the final value estimated, providing meaningful insights to both investors and EDPR's decision makers.

Nonetheless, other DCF methodologies are also presented, namely the Adjusted Present Value (APV) and the FCFE (Free Cash Flow to Equity), as a confirmation tool for the previous results. In the same way, the Equity value of EDPR was estimated based on forward multiples for 2017.

Moreover, a comparative analysis is presented in Chapter 5, in which the estimates and results of this research are compared with the targets of EDPR's business plan and the reports of analysts from BPI - Banco Português de Investimento (27 March 2017) and Santander (27 March 2017).

Chapter 6 will be the end-point of this project, in which the current (31 March 2017) market price is compared with the target price for 2017, resulting in a final recommendation based on the total expected return. Lastly, also taking into consideration the expectation of returns within the next months, the tender offer of EDP to current equity holders is analysed, as of 31 March 2017.

2. Review of literature

2.1. Fundamentals of Valuation

Regardless of the company being valued, the process should not only focus on the financial/qualitative aspects of the firm, but also on all non-financial resources and strategic outlook presented in its business plan. Thus, before assessing the value of any company, it is important to fully understand its market situation, business model and all the macroeconomic and regulatory framework related to its operations (Damodaran, 2012).

Moreover, equity valuation can play distinct roles, representing a valuable tool for investors while taking portfolio management decisions. Valuation reports not only allow the analysis and comparison of various target companies but are also used to compare its intrinsic value with the stock price on the market and make an informed investment decision: buy, sell or hold.

Similarly, equity valuation is widely used in corporate transactions such as mergers and acquisitions, representing a tool to back up negotiations between the parties; it is also a major factor in the process leading to stock market listing (IPO) or delisting (takeovers).

Koller, Goedhart and Wessels (2005) state that "managers who focus on shareholder value create healthier companies," therefore they should put their efforts into long-term value rather than quarterly earnings. In this perspective, valuation is also important for corporate strategy, allowing managers to continuously rethink and measure the impact of their decisions on the creation or destruction of company's long-term sustainable value.

2.2. Valuation Methods

2.2.1. Introduction

Even though there is an extensive amount of literature and several different categorisations to the valuation process, Damodaran (2012) establishes three general valuation methodologies: Discounted cash-flow valuation, relative (multiples) valuation and contingent claim valuation. The latter, which uses option pricing theory, has limited applications due to difficulties in estimating the inputs and control the risk sources, which results in its lack of utilisation for valuation purposes (Koller, Goedhart and Wessels, 2005).

Therefore, in this section, the focus will be in the detailed analysis of the other two methodologies.

2.2.2. Discounted Cash Flow Models

The discounted cash Flow (DCF) models are the most commonly used by analysts and equity researchers due to its dynamic and forward-looking perspective, not being dependent on past performance. These models claim that the value of a company corresponds to the present value of the expected cash-flows that will be generated in the future, discounted at the most appropriate discount rate (Fernández, 2005).

Two different concepts of cash flows can be used: The Free Cash Flow to the Firm (FCFF) and the Free Cash Flow to Equity (FCFE).

2.2.2.1. FCFF - Free Cash Flow to the Firm

The Free Cash Flow to the Firm corresponds to the after-tax cash-flow generated by operations that is available to investors, after deducting all the expenses, including working capital and net capital expenditures, needed to support company's operations.

Therefore, starting from deducting taxes directly from the operating income (Earnings Before Interest and Taxes), the depreciation for the period should be added, since it is an accounting (non-cash) item. Moreover, the new investments in fixed assets and the working capital requirements should be subtracted to get the final FCFF, as follows:

$$\begin{aligned} FCFF = EBIT\,(1 - t) &+ Depreciations - Capital\ Expenditures\ (CAPEX) \\ &\pm Changes\ in\ Working\ Capital\ (\Delta WC) \end{aligned} \quad (1)$$

Since the Free Cash Flows to the Firm are the sum of the cash-flows related to all investors (including bondholders and stockholders), their discount rate should take into consideration the risk of all claim holders in the company. Therefore, as Fernández (2011) state, the discount rate should be a weighted average of two measures: the cost of debt (r_D) and the required return on equity (r_E).

Thus, this Weighted Average Cost of Capital (WACC) will have the following formulation:

$$WACC = \frac{E}{E + D} \times r_E + \frac{D}{E + D} \times r_D \times (1 - t) \quad (2)$$

D and E are, respectively, the market values of Debt (interest-bearing) and Equity of the firm. Moreover, the cost of debt (r_D) is reduced by the marginal tax rate (t) to account for the interest tax shields generated by the interest payments on the outstanding debt.

To get the most appropriate rate of return, three essential inputs should be accounted carefully: required return on equity, cost of debt and the targeted capital structure for the company.

2.2.2.1.1. Required return on Equity

Some risk and return models attempt to find the correct expected return on the investment, such as the three-factor model introduced by Fama and French (1993) or the Arbitrage Pricing Theory (APT). Nevertheless, the most commonly used method is the Capital Asset Pricing Model - CAPM, firstly presented by William Sharpe (1964).

The CAPM is a single-factor model that assumes the expected return on equity equals the risk-free rate plus the beta of the security multiplied by the market risk premium (expected return on the market over risk-free rate), as presented in equation 3. (Elbannan, 2014).

$$r_E = r_f + \beta_L \times [\, E(r_M) - r_f \,] \quad \textbf{(3)}$$

r_f = risk free rate
β_L = Equity beta of the company
$E(r_M)$ = expected return on the market index

2.2.2.1.1.1. Risk-Free Rate

According to Damodaran (2008), the risk-free rate is the return on investments that, theoretically, satisfy two essential conditions. First, no default risk, which means only a few government securities might have the possibility to be completely risk-free. Second, no reinvestment risk, meaning it should ideally have the same duration as the cash-flow being discounted.

Due to difficulties in estimating the rate bearing in mind the exact previous conditions, Copeland, Koller and Murrin (2008) outline three different alternatives to use:(1) government treasury (short-term) bills, (2) ten-year treasury bond rate and (3) thirty-year treasury bond rate. The authors state that, for simplicity, it is recommended the yield-to-maturity of the long-term government bonds that better match the features of the stream of cash-flows, usually the 10-year risk-free government bond[1].

Correspondingly, providing its consistency with the currency in which the cash-flows are estimated, this option is the one that better approximates the duration of the cash-flows and is less sensitive to fluctuations in inflation and liquidity.

[1] Koller *et al*. (2005) and Damodaran (2012) also defend this approach when estimating risk-free rates

The main issues in assessing risk-free rates arise when a country is not default-free or has only long-term bonds outstanding in a currency that is not the domestic one, which takes importance when valuing companies in emerging markets.

Damodaran (2008) suggests that this can be achieved using the rate of an entirely risk-free country, such as the United States, scaling it up by the differential inflation between the US and the currency in question, as follows:

$$\text{risk-free}_{\text{Currency}} = (1 + \text{risk-free}_{\text{US}}) \times \frac{(1 + \text{expected inflation}_{\text{foreign currency}})}{(1 + \text{expected inflation}_{\text{US}})} - 1 \quad (4)$$

2.2.2.1.1.2. Beta

The beta (β) is a measure of systematic risk and reflects how a stock behaves to changes in the market. It is dependent on three main variables: the type of business of the company, its degree of operating level and the financial leverage.

It is commonly estimated by regressing the returns of the stock against the market returns, using the market model (Koller *et al*., 2005), where the slope corresponds to the beta, as follows:

$$r_i = \alpha + \beta \times r_M + \varepsilon \quad (5)$$

Koller *et al*. (2005) also argue that the regression should be based on monthly returns (with at least five years of data) and regressed against a value-weighted and diversified market index.

However, Damodaran (1999a) provides evidence that this approach might not be accurate since the market index can be dominated by a few stocks, i.e., not well-diversified, and the beta estimates can be noisy (high standard-error), reflecting the firm's historical average regardless of its current situation.

For this reason, some fundamentals can be modified to improve the beta estimates. From several approaches to improve the regression betas, "the bottom-up approach has the most promise when it comes to delivering updated betas for most firms" (Damodaran, 1999a).

Accordingly, the industry and the size of the company being evaluated should be identified prior to calculate the operating beta, commonly known as unlevered. Therefore, by looking at companies within the same sector (all sample should present a similar operational risk), the unlevered beta can simply be calculated using the industry median or average.

Afterwards, since the beta of the firm should also reflect its financial leverage, it is important to "relever" the industry unlevered beta, using market values of the current company's capital structure.

In order to do so, the relationship between the unlevered and the equity (levered) beta can be expressed as follows:

$$\beta_L = \beta_U + (\beta_U - \beta_D) \times \frac{D}{E} \times (1 - t) \quad (6)$$

β_D = Debt beta (commonly assumes a value of 0)[2]
β_U = Unlevered beta
β_L = Levered beta

2.2.2.1.1.3. Market Risk Premium

As presented before, the market risk premium corresponds to the additional return any investor demands for taking non-risk-free investments, with higher variability in returns. In this way, it is computed as the difference between the expected return on the market portfolio and the risk-free rate: [$E(r_M) - r_f$] (Fernández, 2006).

The market risk premium is not constant over time and is usually measured separately for each country, depending on numerous factors, such as the fluctuation of the economy and the market structure. In this way, in times of high political, social or economic volatility, the premiums tend to be higher in order to incorporate these risks.

There is no exact estimation model for the market risk premium and different practices can lead to significantly different results. Despite this uncertainty, Damodaran (1999) suggests three separate methodologies to truthfully determine this value: historical risk premium, modified historical risk premium and implied equity premium.

First, the historical risk premium approach, which is the most commonly used and widely accepted, simply consists in the difference between historical market returns and the return on a 10-year government bond (the risk-free rate, as previously explained), over an explicit period. The market portfolio might be represented by a country index (such as the S&P 500 for the United States or FTSE 100 for the United Kingdom) or a global price index (e.g., MSCI World). In order to compute the historical market returns, two key points must be highlighted (Koller *et al.*, 2005): the period of data should be as long as possible to avoid noisy estimates[3] and the historical rate of return should be computed using an arithmetic average (simple mean of returns) rather than geometric, since "well-accepted statistical principles dictate that the arithmetic average is the best-unbiased estimator" (Koller *et al.*, 2005).

[2] Fernández (2006a)
[3] Damodaran (1999) shows that the higher the time period, the lower standard error of risk premium estimates

Briefly mentioning the other two alternative methodologies, the "modified historical risk premium" lie in only two estimates, starting with a single base equity premium for a mature equity market and adding an extra premium, depending on the country risk. Therefore, the cost of equity is transformed as follows:

$$r_E = r_f + \beta_L \times MRP + CRP \quad (7)$$

The simplest measurement method to use for this specific country risk is the sovereign rating assigned by rating agencies. This is particularly relevant in emerging markets which might not have an extensive range of historical data (Damodaran, 1999).

The "implied equity premium," which does not require any historical data, uses cash-flow or dividend discount models to estimate the implied required return on equity (r_E) and, consequently, the market risk premium by deducting the risk-free rate.

2.2.2.1.2. Cost of Debt

According to Copeland *et al*. (2008), the best option to estimate the cost of debt consists in using the yield to maturity of long-term, liquid and option-free company bonds.

For debt with default risk, one suitable alternative to calculate it directly lies in using corporate bond ratings (investment grade) to determine a default spread, which will then be added to the risk-free rate.

$$r_D = (r_f + \text{Default Spread}) \quad (8)$$

However, the authors argue that for company's debt with no investment grade, commonly denoted as "junk," i.e., with high default probability, the yield to maturity is not a good proxy for the cost of debt. In fact, the cost of debt estimation needs to be adjusted, considering the expected default rate and the difference in the systematic risk (β) over investment grade bonds. Moreover, as presented before, the after-tax cost of debt is used in the estimation of the WACC, since the interests paid are tax deductible.

2.2.2.1.3. Target Capital Structure

When estimating the WACC to discount the free cash flows, the required return on equity and the after-tax cost of debt must be weighted based on market values of equity and debt. (Koller *et al*., 2005).

According to the authors, it is suggested the definition of a "target" capital structure, i.e., the structure which is expected to prevail over the life of the company, based on the current market value of capital, business prospects or the capital structure of comparable companies.

If a company's stock is traded publicly, the best way to estimate the equity market value is simply to multiply its price by the number of shares outstanding in the market. If it is a private-held company, equity value should be determined using an iterative DCF or relative valuation (Copeland *et al*., 2008).

In the same way, if there are no available market values for company's debt, securities should be valued using cash-flows discounted at the proper yield to maturity. Lastly, the book value of Debt can also be used as a proxy, since it "reasonably approximates the current market value" (Koller *et al*., 2005).

2.2.2.1.4. Taxes

When computing the cost of capital, another equally important input is the corporate tax rate, due to the tax deductibility of the interest paid on debt.

Damodaran (2012) asserts that "it is far safer to use the marginal tax rate since the effective tax rate is really a reflection of the difference between the accounting and the tax books." Accordingly, the tax rate used in the cost of capital estimation should be consistent with the one used to compute the after-tax operating income.

This takes particular importance when valuing multinational firms, with operations in more than one country and consequently different marginal tax rates. In this case, Damodaran (2009) concludes that the highest marginal rate can be used, assuming the company will maximise its tax benefits by directing the interest expenses to the country with the highest rate.

2.2.2.1.5. Terminal Value

Since the future cash-flows might not be estimated forever, the estimation of the terminal (also called continuing) value is a vital part of the valuation process since it usually represents a substantial part of the company's present value.

Damodaran (2012) presents three different approaches to estimate the terminal value of a company: liquidation value, multiples approach and stable growth model.

The first assumes the liquidation of the company at the end of the forecasting period and consequent sale of its assets in the market, while the second states that the future value of a company will be based on current multiples of earnings or book value for the firm.

The stable growth model is the most commonly used and assumes that after a concrete and long enough period of explicit forecasts, the business will reach a steady state and the cash-flows will grow at a stable rate afterwards.

Thus, it can be expressed as:

$$\text{Terminal Value}_n = \frac{CF_{n+1}}{r-g} \quad (9)$$

- CF_{n+1} is the cash flow at the first year of the perpetuity
- r is the discount rate
- g is the stable growth rate

Accordingly, a special focus should be given to determining the final cash-flow of the forecasting period (considering all the assumptions related to sales, margins and investments), and the perpetual growth rate "g."

Koller *et al*. (2005) argue that the best estimate for the perpetual growth rate "g" is the long-term growth of the economy (gross domestic product growth). Therefore, if the valuation is in real terms, the stable growth rate equals GDP growth. If it is in nominal terms, the expected inflation should be added, and the nominal GDP growth will be composed by the real GDP growth plus expected inflation.

Regarding the other inputs of Free Cash-flow estimation, Damodaran (2012) addresses that when a company reaches its stable growth stage, the depreciation is assumed to be equal to capital spending, i.e., it is taken on a zero-net investment, only with the reinvestments needed to replace the current assets.

Likewise, if the company grows at a certain rate *g*, the investment in Working Capital at the first year of the perpetuity will correspond to the Working Capital of the previous year multiplied by the sustainable growth rate (Mota and Custódio, 2012).

The Free Cash Flow to the Firm estimation for the first year of the perpetuity can be decomposed and simplified as follows:

$$FCFF_{n+1} = NOPLAT_n \times (1 + g) - \text{Working Capital}_n \times (1 + g) \quad (10)$$

Concluding, the present value of the Free Cash Flows to the Firm, discounted at the Weighted Average Cost of Capital (WACC) represents the Enterprise Value:

$$\text{Enterprise Value} = \sum_{t=1}^{n} \frac{FCFF_t}{(1+WACC)^t} \quad (11)$$

If the firm starts growing at the steady rate "g" after n years, the value of the company can be adjusted to:

$$\text{Enterprise Value} = \sum_{t=1}^{n} \frac{FCFF_t}{(1+WACC)^t} + \frac{\text{Terminal Value}}{(1+WACC)^n} \quad (12)$$

All the non-equity claims, such as Debt (interest bearing), Contingent Liabilities or Minority Interests should be subtracted to the Enterprise Value, in order to achieve the Equity value. Moreover, the market value of non-business assets, such as excess cash or marketable securities should be added to the calculation, as presented in equation 13 (Koller *et al.*, 2005).

$$\text{Equity Value} = \text{Enterprise Value} - \text{Non-equity claims} + \text{Non-Business Assets} \quad (13)$$

Finally, to get the company's fair value per share, the Equity Value is divided by the total number of outstanding shares.

2.2.2.2. FCFE – Free Cash Flow to Equity

The FCFE is the amount an equity holder receives for investing in a firm, i.e., the cash-flow available to pay as a dividend to shareholders, after meeting all debt obligations, capital expenses and reinvestment. Mathematically, it can be presented as follows:

$$\text{FCFE} = \text{Net Income} + \text{Depreciation and Amortization} - \text{Investment in CAPEX} \pm \text{Changes in Working Capital} - \text{Debt Principal repayments} + \text{New Debt Issues} \quad (14)$$

Another way to measure the FCFE, using the FCFF as the basis for calculation, is the following:

$$\text{FCFE} = \text{FCFF} - \text{Interest}(1-t) - \text{Principal Repaid} + \text{New Debt Issued} - \text{Preferred Dividends} \quad (15)$$

Since FCFE is a direct measure of the cash flows available only to shareholders, they should be discounted at a rate that reflects the correspondent level of their risk, since equity holders are usually associated with higher risk than other investors. Thus, the appropriate discount rate will be the expected return on equity (r_E).

Consequently, the present value of all Free Cash flows to Equity, discounted at the required return on Equity, will directly yield the intrinsic value of equity. Generally:

$$\text{Equity Value} = \sum_{t=1}^{n} \frac{FCFE_t}{(1 + r_E)^t} \quad (16)$$

According to Damodaran (2012), the value of equity obtained from FCFF estimates and FCFE will be the same if "consistent assumptions are made about growth in the two approaches" and if the market value of debt is correctly estimated.

2.2.2.3. APV - Adjusted Present Value

The Adjusted Present Value Model was firstly presented by Stewart Myers (1974), following the Modigliani and Miller's (M&M) assumptions about the value of companies and the interest tax shields.

According to Luehrman (1997) this model is more versatile and efficient than cash flow discounting with the WACC, since it requires fewer assumptions and works even when the other does not.

Furthermore, it ponders more effectively and in detail all the financial side effects, opposing to WACC, in which there is only the adjustment in the discount rate directly to bear these effects. Therefore, the APV of a company can be reflected as the sum of the company value as if it was all-equity financed (base case) and the present value of all financial side effects calculated individually, such as interest tax shields, subsidies, bankruptcy costs, issue costs, among others.

Firm Value (APV) = Base case (Unlevered) Value + Value of all financial Side Effects (17)

Koller *et al*. (2005) and Luehrman (1996) state that the APV yields a better estimate for company's value when the capital structure is expected to change constantly over time since it allows different rates to discount the different cash-flows.

The first step to value a business by the Adjusted Present Value is then forecasting the future cash-flows and discount them (along with the terminal value) at the applicable discount rate, as usual in DCF methods. However, in this case, the unlevered cost of equity should be used as discount rate (instead of WACC) once the company is assumed to have an all-equity capital structure.

To calculate the unlevered cost of equity, i.e., the required return for the shareholders of a company without debt, a return-risk model as the CAPM should also be applied, using the unlevered beta to remove the effects of leverage. In this way:

$$r_U = r_f + \beta_U \times [\, E(r_M) - r_f \,] \quad (18)$$

r_U = unlevered cost of capital
β_U= beta coefficient for an unlevered company

After getting the unlevered company value, all the financial side effects should be evaluated individually. From now on, the most common are presented.

2.2.2.3.1. Interest tax shields

When a company has Debt in its capital structure, the interests paid are deductible, that is, they will reduce the taxable income and therefore the company will save, in every fiscal period, an amount of taxes equal to the tax rate times the amount of interest paid. Thus, this should be taken into consideration when valuing side effects, since the company value is expected to increase.

To compute the present value of the expected tax shields, the finance literature does not provide consensus on what is the best discount rate to use (Fernández, 2002).

While Modigliani and Miller (1993) discount it at the risk-free rate (r_f), Harris and Pringle (1985) state that the tax shields must be discounted at the cost of capital for the unlevered firm because the tax shields have the same risk as the operational cash-flows of the company.

Nevertheless, some authors as Myers (1974) and Luehrman (1997) defend the use of cost of debt as the appropriate discount rate to compute the present value of interest tax shields, since tax shields have the same risk and uncertainty of debt and interest payments.

Fernández (2011) provides evidence that the final value will depend on the capital structure of the company over the years. If there is an expected constant debt ratio, the cost of debt is a correct proxy to be used.

Accordingly, the present value of tax shields can be estimated as follows:

$$PV_{\text{Tax Shields}} = \sum_{t=1}^{n} \frac{\text{tax rate}_t \times \text{Interests}_t}{(1 + r_D)^t} \quad (19)$$

2.2.2.3.2. Expected Bankruptcy Costs

The Debt level of a company can also have effects on the default risk and consequently the expected bankruptcy costs, which will impact the final valuation of the firm.
Damodaran (2012) establishes that the expected bankruptcy costs are a function of the company's probability of default and its costs of bankruptcy, as expressed in equation 20.

$$PV_{\text{Expected Bankruptcy Costs}} = \text{Probability of Bankruptcy} \times PV_{\text{Bankruptcy Costs}} \quad (20)$$

Even though none of the parameters is easy to directly estimate, the author state that the probability of bankruptcy can be appraised either by looking at bond ratings or using statistical methods.
Moreover, the direct bankruptcy costs are usually estimated as a loss in the company's value. According to empirical studies, Damodaran (2012) estimates direct costs to be around 5-10% of firm value. Likely, Shapiro and Titman (1985) defend that indirect costs can represent 25% to 30% of the value of the company.
To summarise, the Firm (Enterprise) value will then be the sum of the present value of the company as if it was all-equity financed (V_U) plus the present value of interest tax shields, deducted by the value of expected bankruptcy costs.

2.2.3. DDM - Dividend Discount Model

The Dividend Discount Model is another approach to directly value the equity of a company, in which the intrinsic price of any stock corresponds to the present value of the future dividends per share, discounted at the appropriate rate of return on equity.
The general valuation case assumes the following formulation:

$$\text{Share value} = \sum_{t=1}^{\infty} \frac{DPS_t}{(1+r_E)^t} \quad (21)$$

DPS_t = expected dividend per share at period t
r_E = required return on equity

Based on the expectation about growth rates, there are several different approaches to dividend valuation. The Gordon growth model is a special case to value companies that are in a steady state, assuming the dividends grow annually at a constant rate (g) in the long term.

Regarding the computation of the appropriate growth rate, Gordon (1959) refers that "if a corporation is expected to earn a return *r* on investment and retain a fraction *b* of its income, the corporation's dividend can be expected to grow at the rate *br*."

The share value will then be presented as follows:

$$\text{Share value} = \frac{DPS_1}{r_E - g} \quad (22)$$

Nevertheless, some authors defend its unrealistic application, since it is hard to find a company that grows at a constant rate perpetually. This model is extremely sensitive to the discount rate and the dividend payout ratio the company would assume over time.

Hence, the two and three-stage dividend discount models appear as better solutions to incorporate the expected growth (Damodaran, 2012).

As reported by Damodaran (1994), the last is the most relevant since it does not rely on the payout ratio of the company, assuming a beginning period of high growth, followed by a second of declining growth and a last period of stable low growth for the rest of company's life.

2.2.4. Relative Valuation

The main goal of relative valuation is to determine how much a company is worth, based on the value of similar companies. Analysts and researchers widely use this method due to its simplicity and the need for fewer assumptions.

A brief definition of this approach is proposed by Lie and Lie (2002): "valuation by multiples entails calculating particular multiples for a set of benchmark companies and then finding the implied value of the company of interest based on the benchmark multiples."

The three most important categories of multiples are presented in the table below, along with the most relevant examples.

Table 1: Most commonly used multiples (Fernández, 2001)

Multiples based on Market Capitalization	PER; P/CE; P/BV; P/S
Multiples based on Enterprise Value	EV/EBITDA; EV/Sales; EV/FCF
Growth-referenced multiples	PEG; EV/EG

The Price/Earnings Ratio (PER) and the Enterprise Value to EBITDA (EV/EBITDA) are the two most commonly used multiples by analysts and equity researchers in valuation practices (Fernández, 2001).

The PER multiple relates the market share price with the earnings per share**.** In this case, the final Equity Value of the company being valued can be computed as follows:

$$\text{Equity Value} = \text{PER} \times \text{Earnings} \tag{23}$$

Despite its straightforwardness, Koller *et al.* (2005) state that the PER is not meaningful when a company presents negative results or a high volatility in its earnings.

In the same way, to compute the Enterprise Value/EBITDA, the sum of market capitalisation and financial debt (assumed as Enterprise Value) is divided by the EBITDA (Earnings before taxes, depreciation and amortisation). Due to its simplicity, this multiple has some shortcomings, as it does not take into account capital investments and working capital requirements (Fernández, 2001).

Based on Damodaran (2002), four steps should be taken to perform the relative valuation properly:

(1) Prior identification of the multiple to use and the comparable firms (*peer group*)**.** Ideally, to be recognised as comparable, a firm should be in the same business and have the same risk and growth profile as the one being valued. It is hard to find a good range of companies that fit into these criteria. Thus, most analysts tend to stretch and look to other drivers such as dividend policy, source of earnings, size or geographical distribution;

(2) Assurance of the accounting standards' consistency and uniformisation across all firms in the peer group;

(3) Calculation of the multiple for the peer group; In this step, more than one multiple should be calculated to define a range of possible values for the company;

(4) Average computation of the multiples and application to the company being valued (except when the multiple cannot assume a negative value. In that case, the median is calculated). To control for differences across companies, Damodaran (2002) suggests three alternatives: individual adjustments, modification of the multiples or run sector regressions. The first one is the most common, and it consists of a subjective analysis where some outliers can be taken out from the gathered *peer group*.

Using multiples for equity valuation can lead to some inconsistency due to their enormous subjectivity, volatility and dispersion regarding the choice of comparable companies and the multiples to use (Fernández, 2001).

Moreover, they are based on the assumption that the markets are always correctly priced, which can result in some bias in cases of overvaluation or undervaluation. Therefore, the relative valuation should be used cautiously and only as a secondary method, aimed to be used as a control tool for the values generated by the primary chosen method.

2.2.5. EVA -Economic Value Added Model

The Economic Value Added (EVA) can be defined as a profitability model which measures the economic value created by one company in each period (Fernández, 2015).
This method measures the difference between the return on the invested capital and its cost. Therefore, the company will only generate an economic profit if the Return on Invested Capital (ROIC) is higher than the WACC. The procedure to measure the EVA is the following:

$$\begin{aligned} EVA &= \text{Invested Capital} \times (\text{ROIC} - \text{WACC}) \\ &= \text{NOPLAT} - (\text{Invested Capital} \times \text{WACC}) \end{aligned} \tag{24}$$

- Net Operating Profit Less Adjusted Taxes (NOPLAT) corresponds to the after-tax operating income, i.e., EBIT (1-t)
- Return on Invested Capital (ROIC) is the return the company earns per unit invested and is computed as follows: $\frac{\text{NOPLAT}}{\text{Invested Capital}}$
- Invested Capital (IC) is the total capital need to fund operations. It can be calculated either using the operating or the financing method (Koller *et al*., 2005)

The present value of all economic value generated, discounted at the Weighted Average Cost of Capital, is usually called Market Value Added (MVA). It measures all the value created by the company in the past and the generation prospects for the future.

$$MVA = \sum_{t=1}^{n} \frac{EVA^t}{(1 + WACC)^t} \tag{25}$$

Therefore, the Enterprise Value will be equal to the book value of Invested Capital plus the Market Value Added.

$$EV = \text{Invested Capital} + MVA \tag{26}$$

Finally, taken the Enterprise Value, the value of Equity is computed by summing the market value of all non-business assets and deducting the market value of non-equity claims.

2.3. Valuation of Utilities and Renewable Energy

Utilities, particularly energy companies, have constantly been perceived as stable, low-risk entities, with a strong predictability of cash-flows and steady growth estimates. For this reason, the discounted cash-flow methods could be promoted as the most appropriate to appraise these businesses, given the robust visibility regarding the values of the inputs that will be used in the model.

Nevertheless, this industry is undergoing a disruptive revolution, facing constant regulatory, technological and strategic challenges, such as the increasing competitiveness and market volatility. Additionally, the renewable energy sector is also becoming more attractive due to environmental concerns and increasing cost competitiveness of different technologies.

Making precise predictions has become more uncertain, thus DCF methods might not be as accurate as expected. Under those circumstances, Lesser (2003) claims that there is not any perfect model to assess the value of a company, therefore other complementary methodologies, such as relative valuation, should be used along with the DCF methodologies.

Regarding multiples, some sector-specific multiples related with productivity or capacity must be considered, such as the EV/MW (enterprise value to megawatt).

2.4. Cross-Border Valuation

When dealing with multinational firms, i.e., companies operating in more than one country, the valuation process needs an additional layer of analysis, as it should account for idiosyncrasies on the risk profile, growth and cash-flow generation of the business units in different geographies.

As a result, some issues need to be accounted, namely which currency to use in the exercise and other country-specific risks, such as differences in taxes and accounting rules, political stability or exchange rate risks (Copeland *et al.*, 2008).

According to Damodaran (2009), before determining in which currency the cash-flows should be estimated, it is important to decide if the company will be valued aggregated, i.e., "as a whole" or divided into disaggregated business units.

In aggregated valuation, only one currency is picked (usually the one reported in the consolidated financial statements) to estimate all the cash-flows and weighted averages are used to assess the risk parameters and the discount rate.

Even though there is a higher and easier access to consolidated numbers, "a disaggregated valuation should yield a better estimation of value" (Damodaran, 2009) because it captures

more effectively the growth in cash-flows over different markets and does not rely on weights that are constantly subject to changes.

Considering a DCF disaggregated valuation, several authors[4] define two main methodologies to forecast and discount foreign cash-flows:

Method (1) - Forecast the Free Cash Flows of each business unit on the foreign currency, discount them at the specific discount rate and convert the present value into domestic currency by using the spot exchange rate.

First, when forecasting international free cash flows, the valuation of each business unit will be recorded in its national currency. In that case, it is critical to deeply understand all the differences in taxation, accounting standards and inflation rates[5], keeping the coherence all over the process.

Furthermore, the calculation of the discount rate (WACC) follows the same procedure as presented in equation (2), regardless of differences in the inputs, dependent on the particularities of being in a given country.

One of the main concerns in getting the most accurate cost of capital is the estimation of the target capital structure. In fact, when a company has various subsidiaries, it may not be possible to correctly identify the long-term capital structure of each business unit (in some cases, debt is consolidated at company level). Hence, the structure can either be assumed as equal across all business units or based on comparable companies from the same market and business (Copeland *et al*., 2008).

Additionally, there is also a concern regarding the risk premiums when estimating the cost of equity since when a company is located in emerging markets, it is exposed to risks such as high level of inflation, political changes, corruption or regulatory volatility. Thus, the cash flows are much riskier, and the risk premiums are usually higher to account for that exposure, leading to higher discount rates (James and Koller, 2000).

With the intention of recognising these specific risks more accurately, an extra risk premium can also be added to the discount rate. Nevertheless, Koller *et al*. (2005) do not defend this practice, showing that all these specificities should be directly accounted by adjusting cash-flow forecasts through probability-weighted scenarios.

[4] Froot and Kester (2010), Koller *et al*. (2005) and Damodaran (2009)

[5] Foreign cash flow forecasts should be stated in nominal, rather than in real terms (Copeland *et al*., 2008)

Method (2) - Forecast the Free Cash Flows of each business unit on the foreign currency, convert each cash-flow into domestic currency by using forward exchange rates and discount at the domestic discount rate.

This is more complex and less commonly used in cross-border valuations. However, Koller *et al*. (2005) state that it "should always lead to the same result regardless of the currency or mix of currencies in which cash flows are projected.".

Similarly, considering the relative valuation of multinational firms, Damodaran (2009) addresses that it is a complex process because if a company operates in many markets and businesses, it might be challenging to find similar companies with comparable profiles. Nonetheless, it can be polished by breaking the valuation by business and regions and looking at comparable firms that operate primarily or only in them.

All things considered, rather than valuing a multinational company "as is", using aggregated data, it is important to consider the individual analysis of its business units.

Copeland *et al*. (2008) state that "Valuing a multibusiness company is somewhat like putting together building blocks". So, after getting individual financial statements, estimate the discount rate for each unit and discount the cash-flows separately, the sum-of-the-parts (SOTP) approach is used to get the final value of the businesses.

Concluding, a detailed evaluation of each business unit, considering individual risks and growth patterns for each region, will not only assure a more reliable and precise assessment but will also provide insightful information about the company's performance for the management team.

3. Company and Market Overview

3.1. Renewable Energy Industry

3.1.1. Introduction

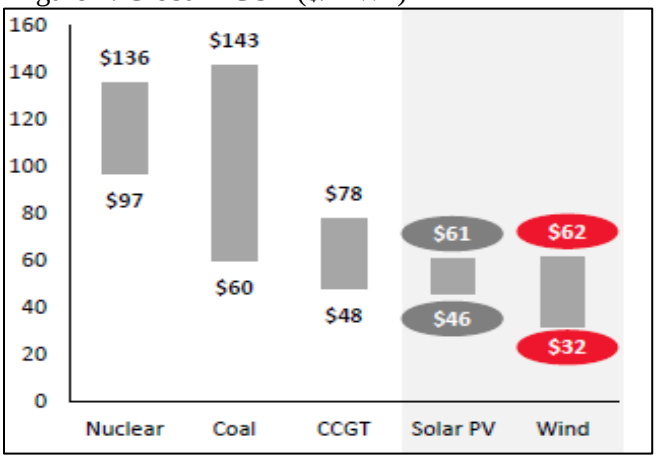
Global climate has been changing drastically over the years, driven mainly by the increasing emissions of carbon dioxide (CO_2) and other greenhouse gases (GHG), being the energy sector responsible for more than two-thirds of all emissions through the combustion of fossil fuels.

Therefore, renewable energy sources play a fundamental role in the ongoing transition towards a more sustainable and cleaner economy. Several countries agreed to strengthen their response to global warming by approving the Paris Climate Agreement[6], which provides a comprehensive framework to cut emissions and limit the increase in global temperature to two degrees Celsius, as an attempt to mitigate harmful consequences for the environment and society (IEA, 2016).

Besides their positive environmental impact, renewable energies also support social development and economic growth. It is a source of job creation (9.8 million people worldwide in 2016)[7] and also brings economic opportunities for many rural regions since most projects are developed far from the high-populated urban centres.

Furthermore, electricity production from renewable sources, mainly the wind and solar photovoltaic (PV) is becoming more competitive when compared with conventional technologies, as the Levelized Cost of Energy (LCOE)[8] is continuously decreasing (figure 1).

Figure 1: Global LCOE ($/MWh)



Source: Lazard Estimates, December 2016

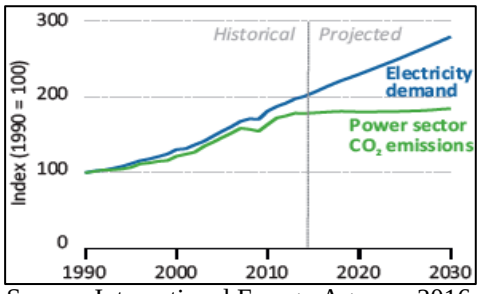
[6] See appendix A

[7] "Renewable Energy and jobs – Annual Review 2017", IRENA

[8] LCOE is used to compare the costs of energy production across different technologies and takes into account all the expenses related to installation, operations and financing over the life of a project.

3.1.2. Macroeconomic Outlook

Figure 2: World electricity demand and related $C0_2$ emissions



Source: International Energy Agency, 2016

As a consequence of the growth in population, urbanisation and transports, the global demand for energy has continuously risen throughout the years. This "economic electrification" is expected to increase global power consumption by more than 40% until 2030 (figure 2).

It is important to realise that, despite the global economic growth of around 3% in 2016 and consequent increase in power needs, the related CO_2 emissions remained stable. This can be explained by the continuous decline in coal consumption, efficiency improvements and the growth of renewable energy capacity over the last decade (See Appendix B.1).

In this way, the power sector is leading the transition to a low-carbon economy, with clean energy sources being responsible for nearly 24.5% of the total global electricity supply.

The renewable power capacity reached its largest annual increase in 2016, with the installation of 161 gigawatts (GW) (+9% YoY), contributing to a total of 2,017 GW installed worldwide.[9] From total renewable additions, solar PV accounted for around 47%, followed by wind power (34%) and hydropower (15.5%). Most of this capacity is being installed in developing countries, with China being the largest energy developer in the world.

Despite the increasing competitiveness and the development of storage mechanisms, these technologies will not be able to meet all the generation needs of the economy in the near future. Thus, the best solution is to use as many alternative resources as possible and promote a gradual phase-out from conventional technologies (Lazard, 2016).

In the long run, renewables will become the world's largest source of energy for power generation, representing 60% of total installed capacity worldwide by 2040. The Wind and solar PV will be responsible for 64% of the 8.6TW power additions worldwide and 60% of the $11.4 trillion expected investments[10] in the energy sector.

3.1.2.1. Wind Energy

The increasing maturity of wind power makes it a desirable business for energy producers that are looking to reduce the dependence on fuel fossils and expand their portfolio mix.

[9] Additional capacity details on appendix B.2

[10] Bloomberg New Energy Outlook, 2016 (appendix B.5)

As a result of significant technological improvements, reductions in material costs and valuable economic incentives, the wind energy industry has been increasingly cost-competitive, recording a 66% decrease in the LCOE over the last seven years (See Appendix C.1).

Furthermore, the costs will continue their decreasing path in the future (-41% by 2040), driven essentially by higher load factors – which are expected to be over 40% in 2040 (Bloomberg New Energy Outlook, 2016).

According to the Global Wind Energy Council (GWEC), the global installed capacity at the end of 2016 totalized 486.8 GW, representing a growth of 54.6 GW, more than 12% worldwide[11]. The total electricity generated from wind resources amounted to 241 TWh, a 30% increase over 2015 levels.

China (+23.4 GW YoY), which has been the biggest market for wind power since 2009, largely assured this growth in capacity, followed by the United States (+8.2 GW) and Germany (+5.4 GW). The three countries are responsible for more than 60% of worldwide capacity.

The main disadvantages of wind power energy are still related to the higher initial investment costs when compared with conventional technologies, and the inconsistency regarding the wind available throughout the day, which results in a lower load factor.

Nevertheless, the reliability and competitiveness of wind power will continue to increase in the future, providing growth in global capacity over 67% by 2021. The Asian region is the main driver of this market evolution, with India playing an increasing role alongside China's leading position.

Lastly, despite the high costs, the offshore wind is a key move for further renewable energy development due to its higher availability, mainly in Europe.

At the end of 2016, global offshore wind capacity reached 14 GW across 14 countries, around 90% of which installed on the coast of European countries. The UK is the world's largest offshore market and accounts for 36% of total capacity, followed by Germany with 29%.

The technology development and continuous cost reduction are expected to encourage future growth, allowing a total installed capacity of 84.2 GW to be reached by 2024.

3.1.2.2. Solar Energy

According to the Global Solar Council (2017), by the end of 2016 solar power capacity reached 307 GW worldwide, generating around 66 TWh of electricity, 2% of world's total demand. The

[11] See appendix C.2

installation of a total of 76.6 GW of solar power capacity occurred during the year, representing an increase of more than 30% (see Appendix D.1).

From these, China represented the major driver of growth, assuring 45% of total solar capacity additions (34.5 GW), which contributed to emphasise its leading position in the solar market, controlling 25% of global generation capacity. (See appendix D.2).

Furthermore, Japan reached an installed capacity of 42.9 GW, ranking second in the world with a 14% global market share in 2016, closely followed by the United States, which reached 42.4 GW (13.8%). Also, solar power was, for the first time, the top source of new capacity added to the US grid, with a 39% stake in the energy sources' mix.

Solar photovoltaic (PV) costs have dropped by 85% since 2009, with further reductions expected in the future, reaching a maximum estimate of $40/MWh worldwide in 2040 (Lazard, 2016).[12]

This cost competitiveness emerges as a result of technological developments, increasing efficiency and a wide range of supportive remuneration schemes, such as the solar investment tax credits (ITC) in the United States.

Looking to the future, the Asian region, mainly China and Japan, will continue to dominate this sector, absorbing more than half of total capacity installed until 2021. The solar PV capacity is expected to exceed 700 GW in 2021 and be responsible for more than 15% of total electricity consumption by 2040 (Solar Power Europe, 2017).

Equally important, due to decreasing prices, the installation of small-scale "rooftop systems" for household consumption has gained some significance and is usually more economical when the retail electricity is not subsidised.

[12] See appendix D.3

3.2. EDP Renováveis S.A.

3.2.1. General Description

EDP Renováveis is a global renewable energy group, focused on generating cleaner energy through the development, construction and operation of wind farms and solar plants.
The company manages renewable energy sources, primarily wind onshore, in several locations across the world, being the fourth largest wind power producer in the world. Accordingly, it is divided in three strategic business platforms (Europe, North America and Brazil) which, considering their idiosyncrasies, are managed separately through different subsidiaries.
As at December 2016, EDPR employed 1083 people and managed a portfolio with a total installed capacity[13] of 10.4 GW (Gigawatts) over 11 countries (See Appendix E).

3.2.2. Shareholder Structure

Since 1996, EDP – Energias de Portugal, the largest electric utility company in Portugal, has started the path into renewable energy with the exploration and development of wind power plants.
In order to pursue its market strategy and sustainable growth prospects, EDP Renováveis was created in December 2007, establishing the headquarters in Oviedo, Spain.
On 4 June 2008, EDPR went public, through an initial public offering (IPO) on the NYSE Euronext Lisbon, by issuing 872,308,162 shares which traded at the initial price of €8.
As at 31 March 2017, EDP remains the major shareholder of the company, controlling 77,53% of its capital. EDP is listed in the NYSE Euronext Lisbon since its privatisation in 1997. It is the third largest electric company and one of the main distributors of gas in the Iberian Peninsula. With more than 10 million electricity customers in 14 countries, the company has an installed capacity of 25.2 GW, with 65% of the energy produced in 2016 coming from renewable sources.
The remaining 22.47% are free-float across a wide range of international investors from 23 countries. From these, the biggest stake is owned by MFS Investment Management, controlling 3.11% of EDPR's capital and voting rights.

[13] Installed Capacity measures the potential energy generation within a certain period, usually one hour.

3.2.3. Company Performance

From the global 10.4 GW portfolio, 10.1 GW are fully consolidated while 356 MW are related to minority equity stakes in projects in Spain and the United States. In 2016, the company installed 770 MW (+8%), 429 MW of them in the US.

In order to minimise the exposure to market volatility, 91% of the installed capacity is backed with long-term contracts with pre-defined remuneration schemes, reaching an average price of €60.5 in 2016 (table 2).

Regarding its operational performance over the year, EDP Renováveis contributed to avoiding over 20 megatons of CO_2 emissions by producing 24.5 TWh of renewable energy. A sustained growth strategy and the maintenance of a load factor[14] above the market (around 30% over the past years) supports the continuous increase in electricity output.

Table 2: EDPR's Operational Summary 2013-2016

Operating Data	2013	2014	2015	2016
Installed Capacity	8 565	9 036	9 637	10 408
Electricity Generated (GWh)	19 187	19 763	21 388	24 473
Load Factor (%)	30%	30%	29%	30%
Average Selling Price (€/MWh)	62,6	58,9	64,0	60,5
Employees	890	919	1 018	1 083

Adapted from EDPR's 2016 Annual Report

Regarding the financial performance of EDPR, revenues totalled €m 1,650.8 in 2016 (+6.7%) as a consequence of the increase in total electricity generation (table 3).

Over the last years, Core OPEX[15] per MW has steadily decreased due to firm's strict control over operational costs, which allowed the company to present strong EBITDA margins, over 70%.

Table 3: EDPR's Financial Summary 2013-2016

Financial Data (€m)	2013	2014	2015	2016
Revenues	**1 316,4**	**1 276,7**	**1 547,1**	**1 650,8**
Operating Costs & Other Operating Income	(395,8)	(373,5)	(404,8)	(479,8)
EBITDA	**920,5**	**903,2**	**1 142,3**	**1 171,0**
EBITDA Margin	70%	71%	74%	71%
EBIT	473,0	422,4	577,8	564,0
Net Financial Expenses	(261,7)	(249,9)	(285,5)	(350,1)
Net Profit (Equity holders of EDPR)	**135,1**	**126,0**	**166,6**	**56,3**

Adapted from EDPR's 2016 Annual

[14]Load Factor is the ratio of the total energy actually produced in one period over the maximum energy output that could have been produced at full capacity

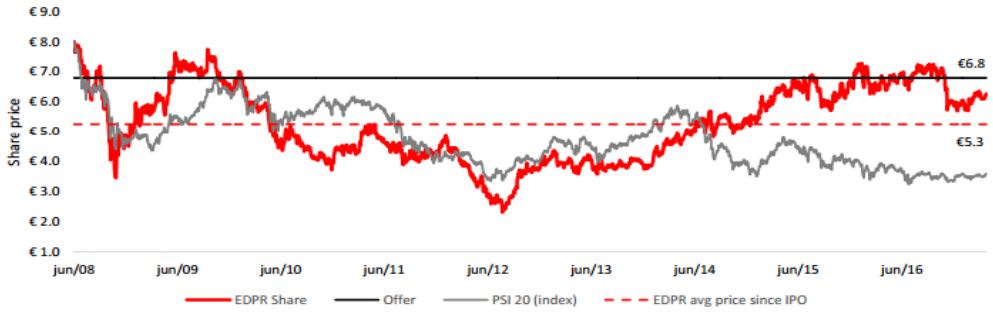
[15] Supplies and Services + Personnel Costs

In 2016, the decline in net profit attributable to Equity holders of 66,2% was driven by the increase in non-controlling interests (+€m 41 YoY) and net financial expenses (+€m 65).
Regarding its dividend policy, EDPR intends to distribute around 25-35% of net profit to its shareholders and retain the remaining to fund the company's growth and pay debt outstanding. Despite this decrease in the consolidated net profit, the administration decided to maintain, in 2016, the distribution of a €0.05 (five cents) gross dividend per share, which represented a payout of 78.5%.

3.2.4. The tender offer of EDP – Energias de Portugal

Concerning the stock market (figure 3), EDP Renováveis has shown, over the last years, a positive performance when comparing to the Euronext Lisbon index (PSI20), despite some lack of liquidity. Nevertheless, both the Board of Directors and the main equity holder (EDP) believe the market is not entirely recognising the potential value creation of the company.

Figure 3: Market performance since the Initial Public Offer



Source: Report of EDPR's BoD on the tender offer by EDP - Energias de Portugal

As a response, and in order to strengthen its sustainable growth strategy as a renewable energy leader, EDP launched, on 27 March 2017, a general and voluntary tender offer, that is, a formal offer to acquire all the remaining outstanding shares from existing shareholders (22.47%) at €6.80. The gross amount of €0.05 attributed as dividends will be deducted from this value.
According to the offeror, this integration intended to increase the portfolio-mix and exposure of the company to the attractive renewable energy sector, one of its main growth drivers, without changing the strategic guidelines defined for EDPR and its subsidiaries.
The anticipated acquisition of all the remaining shares of EDP Renováveis would be entirely payable in cash and financed through the proceeds from the sale of *Naturgas*, the Spanish subsidiary for gas distribution, which was sold for €2,591 million.
The offered value per share represented a 10.5% premium over the average share price of the six months prior to the day of the announcement. Thus, a total cost of €1,332 million would be

necessary to control 100% of the company, assuming the acceptance of the offer by the remaining shareholders.

Concluding, EDP was also considering the withdrawal of EDPR's shares from Euronext Lisbon regulated market if more than 90% of its share capital and voting rights were obtained as a result of this transaction, which would trigger a compulsory acquisition of the shares held by shareholders who have not decided to accept the Offer.

3.2.5. Markets and Regulatory Framework

3.2.5.1.Europe

The European business platform is referent to all of EDPR's subsidiaries located in Portugal, Spain, France, Belgium, Italy, Netherlands, Poland, Romania and the United Kingdom.

The operational activity in Europe totalized 45.9% of renewable energy produced in 2016 (11,230 GW), sold at an average price of €81.5 per megawatt (See Appendix F for more detail). Total installed capacity amounts to 4,986 MW (49.6% of EDPR's total), of which 4,934 MW are related to wind onshore and 52 MW to solar PV (50 MW in Romania and 2 MW in Portugal). From these, Spain and Portugal are the countries with the highest capacity and output, accounting for more than 65% of total energy produced in Europe.

Spain

The country represents 22.8% of EDPR's global installed capacity (2,194 MW + 177 MW equity consolidated). Seen as the main source of growth for EDPR in its early years, due to the high investments of Spanish government on renewable energies, it is now a mature market with little to no growth prospects besides short-term projects already in the pipeline.

As a matter of fact, with the approval of the Royal Decree 413/2014, the remuneration scheme of renewable energy changed considerably to correct the previous imbalances that originated high tariff deficits, which accounted for more than 3% of Spanish GDP in 2013.

In this way, from a fixed feed-in-tariff (FiT) regime, the remuneration changed to a scheme composed by the pool price (with caps and floors) plus an extra per MW of capacity. This covers the necessary costs to make renewable energy competitive and achieve a reasonable return of a standard power plant managed over its useful regulatory life.

The current "reasonable rate of return" is 7.398%, which corresponds to the pre-tax return on the average 10-year Spanish government bond yield plus a differential of 300 basis points[16]. Furthermore, at the beginning of 2016, the first renewable energy auctions were established in the Spanish market, designed to provide new power plants with a remuneration scheme identical to the previous framework. EDPR was awarded 93 MW of wind energy under this operation.

Portugal

As at December 2016, Portugal represented 12% of EDP Renováveis' global installed capacity, with a 1251 MW portfolio (4 MW added during the year).

Regarding the remuneration framework, it is dependent on the type of wind farms operating. For capacity installed until 2005, it is based on a feed-in-tariff contract for 15 years at the average market price of the previous 12 months (with a €74/MW floor and a €98/MW cap), up to the first 33 GWh produced per MW[17].

To provide additional stability to the electrical system, the Portuguese government published the Decree-Law 33-A/2005 stating that from 2006 onwards, all capacity additions must be based on competitive auction models. EDPR currently has 613 MW remunerated with this scheme, awarded under the extinct ENEOP (Eólicas de Portugal) consortium.

Rest of Europe

The total capacity installed in the Rest of Europe ("RoE") reached 1,542 MW by the end of 2016, representing around 15% of EDPR's total portfolio mix. These values are led by Romania (521 MW) and Poland (418 MW), regions in which generators traditionally produce under Green Certificates schemes. Further details on the remuneration frameworks are presented in Appendix G.2.

Concluding, the EU goal for 2020 is that renewable sources could represent 20% of total energy consumption in the region. Furthermore, the Renewable Energy Directive 2030[18] enforces the increase of this share to at least 27 % by 2030, assuring that the European Union becomes the front-runner in renewable energy development.

[16] According to the RD 413/2014, each regulatory period lasts for six years. The first started on July 2013 and will last until December 2019.

[17] In 2013, EDPR negotiated an extension of this scheme for 7 more years, in exchange for annual payments until 2020.

[18] Directive of the European parliament and the Council on the promotion of the use of energy from renewable sources, com (2016) 767 final/2, (23.2.2017)

3.2.5.2.North America

The company generated, in 2016, a total 12,576 GWh of electricity in North America (51.4% of total EDPR's output), sold at an average price of US$ 46.4. This business platform includes EDPR's subsidiaries from the United States, Canada and Mexico.

As at 31 December 2016, installed capacity in North America amounted to 4,861 MW, of which 4,631 MW from onshore wind farms in the United States, 200 MW recently added in Mexico and 30MW from a solar power plant in Canada.

Several states in the US promote different regulatory incentives, such as the implementation of quotas for renewable sources, under the GPP (Green Power Plan) [19] and also the creation of Renewable Energy Credits ("Green Certificates").

Regarding the remuneration framework, most of the electricity sales (83%) were secured with Power Purchase Agreements (PPA's), that is, long-term contracts, up to 20 years, with a pre-defined base tariff, which gives EDPR a high visibility over cash flow generation. The remaining are exposed to the electricity spot market.

Besides this, several fiscal policies in the United States promote the development of renewable energy projects at more attractive conditions, such as the PTC (Production Tax Credits) and ITC (Investment Tax Credits).

The PTC's are the main incentive for wind power production and take the form of a fixed monetary benefit per unit of energy produced ($23/MWh in 2016), for a 10-year operating period. After several law reviews, for projects started after 2016, the US Congress introduced a phase-out of the support until 2020 (See Appendix H).

Inversely, the renewable energy producers may qualify for ITC's, which provide the companies with a 30% refund of cash invested in new assets. In 2016, there was an extension of the 30% credit exclusively for solar projects under construction until 2019, followed by a gradual phase-out.

Regarding the 30 MW solar PV project in Canada, it is based on a feed-in-tariff for 20 years, while the wind farm installed in Mexico was awarded a 25-year PPA.

[19] Aims at reducing 32% of carbon emissions by 2030

3.2.5.3. Brazil

In 2016, EDPR Brazil produced 666 GWh of energy (2.7% of total output) through its small 204 MW portfolio of wind onshore. Nevertheless, this is a market with robust growth prospects, which presents the highest load factor (35%) of all geographies.

Regarding the remuneration scheme, by the end of 2015, all the capacity was installed under PROINFA[20], a feed-in-tariff scheme at an average price of R$ 370.

All the subsequent capacity additions (120 MW during 2016 and 267 MW already to be operating in 2018) are based on auctions, competing entirely on price. The winners of the auctions are rewarded with a 20-year long-term PPA at the bid price.

3.2.6. Strategic Outlook

On May 2016, EDPR presented its business plan for 2016-2020 based on the principles of sustainability, responsible growth and maximum value creation for its stakeholders.

The company aims to strengthen its market position, promote innovation and profitable growth, always under a disciplined risk management strategy and debt control. In this way, EDPR's daily operations and strategic plans are continually driven by three essential principles: operational excellence, self-funding business and selective growth.

Operational excellence

One of the main distinctive competencies of EDPR is the excellent operational performance, which results in prominent level of profitability and efficiency.

As a matter of fact, the company recorded, in 2016, a 97.7% technical availability, i.e., the percentage of time the wind and solar power plants were fully available to produce energy, not being subject to maintenance and reparations. This value was slightly above the long-term 97.5% targeted by the 2016-2020 business plan, which confirms the effectiveness and quality of the current methods for control and maintenance.

In the same way, EDP Renováveis has been making quality improvements and maximising the electricity output by applying technical innovations and managing its assets more efficiently, which allowed the company to reach a total load factor around 30% (see Appendix I).

[20] Program of Incentives for Alternative Electricity Sources

On its path until 2020, EPD Renováveis defined a load factor target of 33%, which is expected to be achieved by setting higher quality standards for additional assets (more efficient wind turbines and solar plants).

Additionally, the company has been rigorous over cost controlling, targeting a Core OPEX/MW reduction of 1% by 2020. In this way, it is important to highlight the insourcing of most of EDP's O&M (Operations and Maintenance) activities, which will not only benefit from company's business know-how but also increase profitability and reduce the dependency from third parties.

Self-funding business

In order to lessen the weight of debt financing from EDP, EDP Renováveis intends to finance its investment decisions (€4.8 billion in the 2016-2020 period)[21] using an asset rotation strategy and tax equity partnerships in the US, along with the retained business cash-flows.

In fact, the company expects a cash generation of €3.9 billion for this period. Since the target for dividend payments is defined around 25-35%, the residual will be completely directed to fund company growth.

On the other hand, the asset rotation strategy consists of selling minority stakes, generally 49%, of operating projects with low-risk and steady cash-flow generation and reinvesting the proceeds in new market opportunities with higher returns.

Half of the targeted €1.1 billion has already been achieved in 2016 at attractive market multiples. One of the main partners in these transactions is China Three Gorges, the major EDP's shareholder (21.35% of voting rights), which is looking for quality assets and solid cash flows.

Selective Growth

By assuming a selective growth, EDPR only intends to invest in solid low-risk projects, in which there is a high predictability of the cash-flow stream through the assurance of long-term contracts and stable regulation frameworks.

Moreover, EDPR's distinctive approach only assumes quality investments, that is, solid investments which present higher levels of efficiency and cost-competitiveness.

[21] See Appendix J

Consequently, the company defined a target of 3.5 GW additional capacity installed until 2020, which represents an average of 700MW per year[22]. From the total, 65% are already secured, which confirms the low risk and high visibility of investment decisions (See Appendix K).

Market Selection - North America embodies the main driver of growth for EDPR, representing 65% of the future wind power capacity additions until 2020. The stable framework of the PTC's in the United States, the increasing demand from both utility and non-utility companies along with the expected advantageous tax reform are the essential conditions to support the focus on this region.

Also, EDPR completed the installation of a 200MW wind farm in Mexico and established a contract for a 100 MW wind farm in Canada (to be operational in 2019), which represent attractive markets for further growth.

On the other side, the low-risk business environment of Europe accounts for 15% of the estimated growth until 2020 (+0.6 GW), represented by short-term investment opportunities already identified and Brazil accounts for a 10% growth, driven by strong renewable resources and long-term supply contracts.

Technology Diversification - As shown before, due to its cost-competitiveness and sustainable growth prospects, the core business of EDPR remains on the development of onshore wind energy, representing 99.2% of installed capacity (as at December 2016) [23].

However, to preserve its leading position in the market, the company is required to promote R&D and innovation activities, to increase its expertise and look for disruptive solutions that can foster a sustainable diversification of the portfolio mix.

Thereupon, EDPR intends to explore the increasing competitiveness of Solar PV energy, which is expected to account for about 10% of capacity additions by 2020. Likewise, the main target of this growth will be the United States, which benefit from higher fiscal incentives and energy demand.

Furthermore, the firm is engaging in the construction of offshore wind farms in some areas with propitious natural resources, such as the UK and France, with projects in the pipeline to be commissioned after 2020. Other initiatives, like the Windfloat Atlantic and Demogravi3, are also being developed to potentialize the company's know-how and place it as the front-runner in innovative technological developments.

[22] In 2016, EDPR recorded an increase in installed capacity of 820 MW

[23] The remaining 0,8 % (82 MW) are solar PV plants in Romania (50 MW), US (30 MW) and Portugal (2 MW)

4. Valuation

4.1. Introduction

As previously discussed, EDP Renováveis is a global renewable energy company operating in several regions with differences regarding remuneration schemes, investment schedule and growth prospects. Under those circumstances, to acknowledge and preserve the differences across regions, each business unit is valued individually, taking into consideration the most important markets: Europe (sub-divided into Spain, Portugal, and Rest of Europe), North America and Brazil.

In this way, at the valuation date (defined as 31 March 2017) each business unit is valued in its local currency, being afterwards converted to Euro (€) at the 2017 forward exchange rates to get their expected value by the end of the year. Then, the global Enterprise Value of the company is determined by summing the enterprise value of the disaggregated operating units (sum-of-the-parts approach).

Finally, to get the final equity value per share, the main goal of this project, the value of cash and other non-operating assets is added, while non-controlling interests, institutional partnerships and the market value of debt should be deducted from the enterprise value.

In this research, the equity value per share will be calculated using enterprise DCF methods, since they are the most widely accepted and traditionally used by financial analysts for renewable assets valuation, mainly using the FCFF approach, discounted at the weighted average cost of capital (WACC).

Nevertheless, an additional analysis was also performed using Multiples, the Adjusted Present Value (APV) and the Equity Cash Flow methodologies. Regarding the relative valuation, the company is assessed as an aggregated whole, using Euro (€) as the base currency, based on the Price to Earnings Ratio (PER) and Enterprise Value to EBITDA multiples, both for historical data of 2016 and estimated for 2017.

In this analysis, it is considered an explicit forecasting period in line with the time frame of the last business plan of EDPR (2016-2020), in which there is a considerable degree of certainty about the future business and market conditions. In this way, a detailed business forecast for four years is presented, including complete balance sheets and income statements.

After all, the fair value estimation of EDP Renováveis requests the development of a full set of assumptions regarding the business, which need to be based both on a detailed historical analysis and on the macroeconomic outlook, without disregarding the literature already reviewed and the strategic drivers of the company.

4.2. Assumptions and Forecasts

4.2.1. Balance Sheet and Income Statement estimation

As previously mentioned, to successfully perform the valuation of EDPR, it was necessary to estimate and build the main financial statements for the explicit forecasting period considered in the framework. In this way, individual income statements were developed for each business unit, which are presented in appendix L.

By resorting to this process, it was possible to reach the EBITDA values per geographical region shown in figure 4, which represent a total compound annual growth rate (CAGR) of around 7.1% over the period 2016-2020.

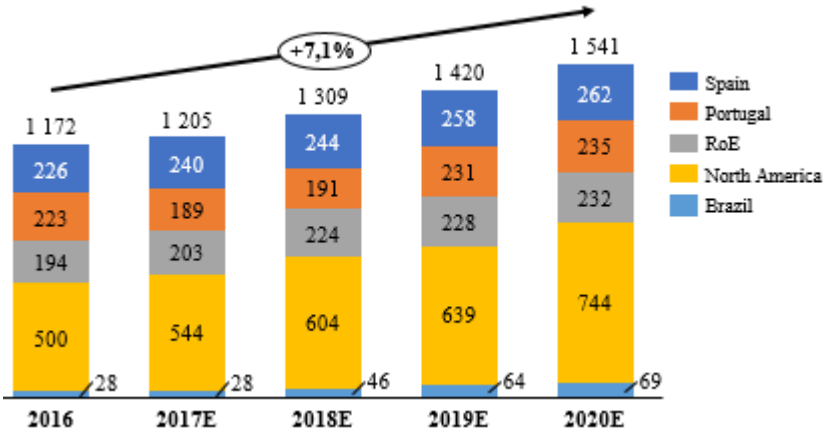


Figure 4: EBITDA per Business Unit (€m)

Regarding the Balance Sheet, it was only developed at an aggregate level, since there is no geographical breakdown of all the major elements (See Appendix N).

Other fundamental ratios and assumptions required to get the forecasted financial statements for EDP Renováveis are hereinafter presented.

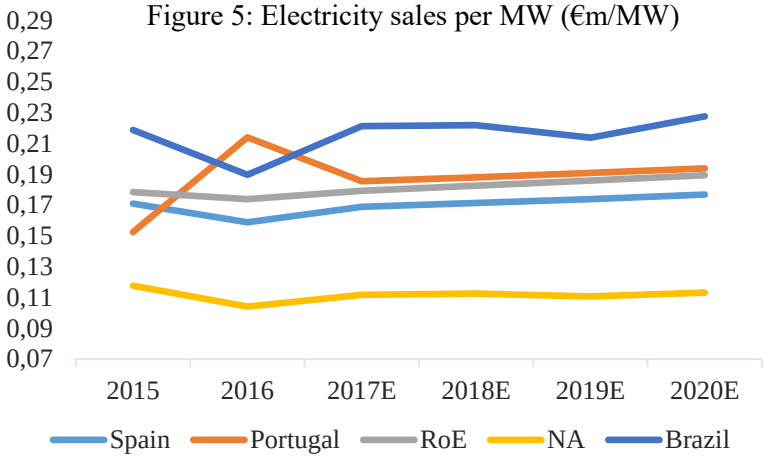
4.2.1.1.Revenues

The decomposition of EDP Renováveis' total revenues comprises mainly the income resultant from electricity sales over its different geographies, coupled with the income resulting from the institutional partnerships established in the United States.

Regarding the electricity sales, general assumptions need to be discussed about each region over the valuation timeline, since each wind farm presents a different remuneration and regulatory scheme.

Up until present time, the company's electricity sales per MW have been quite stable, especially in Spain, RoE (Rest of Europe) and North America (NA). In Portugal, the atypical low value of average sales per MW in 2015 is fundamentally explained by the asset consolidation of around 600 MW from ENEOP, which lowered the average selling price (figure 5).

Figure 5: Electricity sales per MW (€m/MW)



Source: EDPR and own estimates

As stated previously, most of EDPR's projects are secured through long-term, bilateral Power Purchase Agreements (PPA) that follow a fixed remuneration structure, usually linked to inflation movements. Therefore, the projected electricity sales will be based mainly on the historical sales performance per MW across the business units and the evolution of the total installed capacity expected to be operating over the years.

This approach assumes that the load factors and the average productivity of the wind farms are kept stable around the current values. In this way, all the main production drivers are assumed to be constant, except for the price of electricity in each market, which is yearly adjusted according to inflation.

Thus, the average ratio for the last two years was considered to get the expected value for 2017, assuming that the prices will be inflation-adjusted every year afterwards, based on the specific value of inflation for each market.

Also, since the increasing competitiveness of the Solar PV projects is pushing the levelized cost of energy to values along wind power technologies, all the production factors are assumed to follow the same trend and are jointly analysed.

Regarding the income from institutional partnerships, it results from projects in the United States that generate PTC's, ITC's and other tax benefits. The value of this instruments, which are also subject to yearly inflation adjustments, was assumed to follow the trend verified over

the past years, being relatively steady around $m0.05 per MW of capacity available in the country (Appendix O).

Installed Capacity

Taking into consideration that available MW capacity is the main driver of revenues, a detailed plan of capacity addition was assembled, including both projects already secured and in the pipeline to be installed by 2020[24] and other projects predicted by looking at the global business overview.

These projected additions follow the major trends presented on EDPR's business plan for 2016-2020 and are based on the premise that there will be no decommissions, i.e., all the existing capacity will continue to operate and produce energy at regular conditions.

Briefly detailing, during the first quarter of 2017, 3 MW of solar PV were already operating in Portugal, and 127 MW were under construction in Brazil, regarding JAU & Aventura projects (expected installation by 2018).

In 2018, the United States' additions (275MW) are a result of two onshore wind projects already identified in Indiana and Iowa, while the 127 MW in RoE arise from an Italian caution.

Regarding 2019, 100MW from the "Nation Rise" wind farm project are expected to be operating in Canada, along with 143MW from the Babilônia project (143MW) in Brazil. The projected additions in the United States were estimated based on the average values for the previous two years.

For 2020, all the growth was assumed to be recorded in the United States, in line with the average yearly additions (700MW) defined by the company, most of them (~350 MW) expected to represent the implementation of solar PV projects (see full portfolio detail in appendix M).

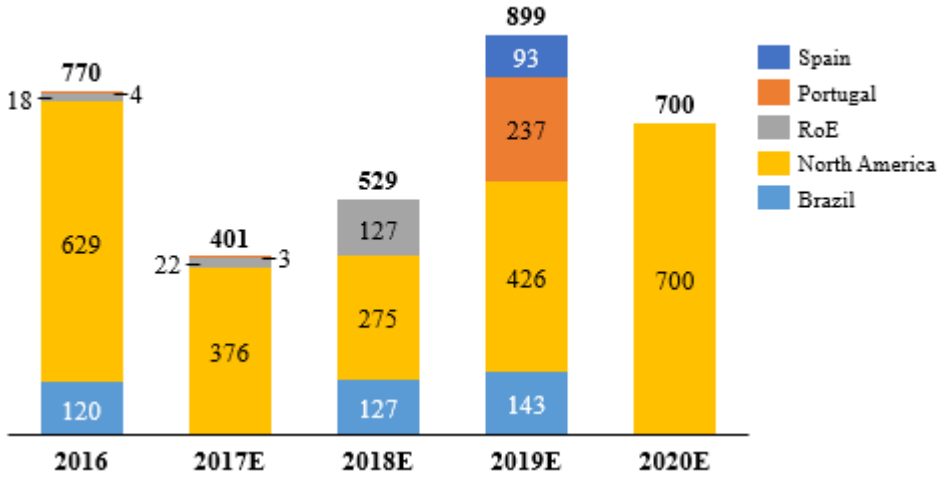
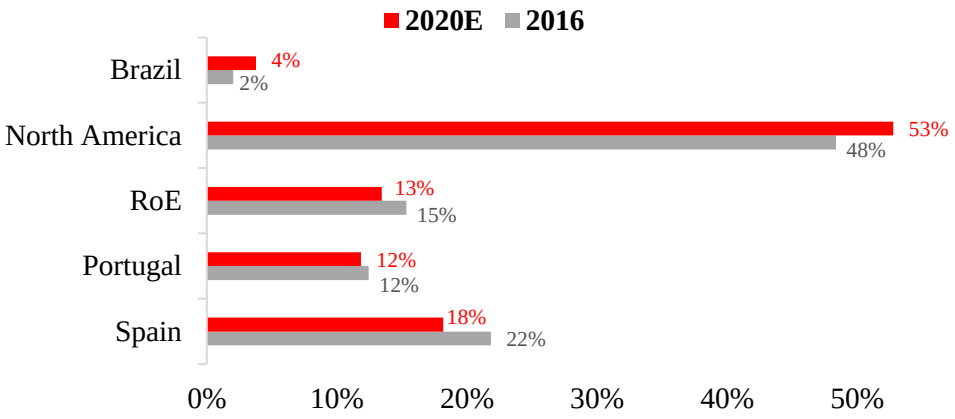


Figure 6: 2016-2020 estimated capacity additions (MW) Source: EDPR and own estimates

[24] By the end of 2016, more than 65% of capacity addition were already built or secured to be over the next years

To conclude, from the 3.3 GW estimated to be added by 2020, 15% will come from Europe, 12% from Brazil and 73% from North America. The United States represents the major growth driver for EDP Renováveis, with total additions of 2.1 GW, which will enable over 50% of total company's productive capacity to be geographically located in North America by 2020.

Figure 7: Geographical Breakdown (%)

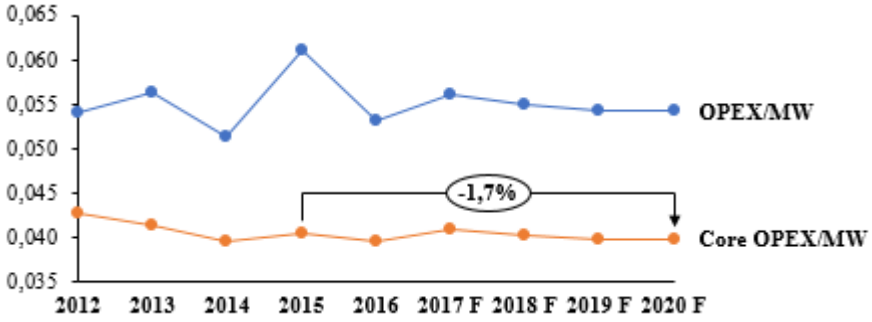


Source: Own estimates

4.2.1.2. Operating Costs

Regarding Operating expenses, they were calculated, for each business unit, as a portion of the regional electricity sales. Every year, this percentage was set to be correspondent to the average of the last three fiscal periods. This approach yields a Core Opex (defined as Supplies and Services plus Personnel Costs) reduction per MW installed of 1.7% over the 2015-2020 period, which is slightly above EDP Renováveis' strategic driver of cost control and increasing efficiency[25].

Figure 8: Operating Costs (€m) per MW



Source: EDPR and own estimates

[25] EDPR defined a target reduction of 1% by 2020

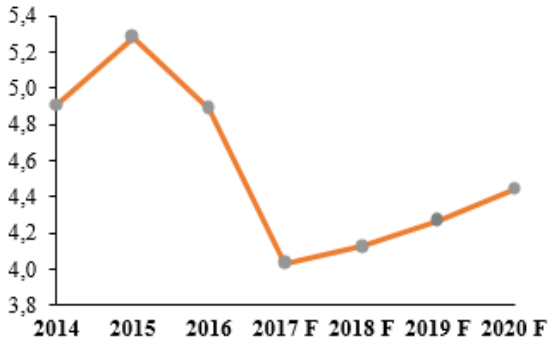
4.2.1.3. Depreciation and Amortization

It was not possible to accurately determine the total company's assets decomposition across the different business units so, from the different accepted methods to forecast depreciation and amortisation, the ratio per electricity sales was also considered in this estimation. As a result, the average percentage of the last three base years (2014-2016) was applied over the valuation period.

Nevertheless, it should be emphasised that the management of EDP Renováveis deliberated that, starting from 2017, the standard useful lifetime of renewable assets would be extended from 25 to 30 years, a practice already employed by Iberdrola and other renewable firms from the United States. Consequently, the forecasting ratio should be adjusted according to this revision[26].

As such, this update caused a major drop in the weight of total depreciation and amortisation on the book value of PP&E and intangible assets (figure 9).

Figure 9: D&A over previous year net PP&E and Intangibles (%)



Source: EDPR and own estimates

4.2.1.4. Non-controlling interests

Due to its active asset rotation strategy, EDPR managed, by the end of 2016, a portfolio of 2521 MW of minorities detained by other institutions, led by China Three Gorges Group, the company's most relevant strategic partner.

These assets generated a total value of non-controlling interests on the income statement of €119.8 million. Henceforth, to forecast these values for the explicit valuation period, the average value of €m0.05 per MW was assumed, based on the capacity held by the acquirers (table 4).

[26]To harmonize the practices, intangible assets were also assumed to have an average useful life of 30 years

Since most of these transactions are expected to occur in Brazil and the United States, no changes were assumed in the remaining regions, except for Portugal, where EDPR announced, in the first quarter of 2017, the sale of a 49% stake in a portfolio of onshore wind assets, covering 422MW that were part of the ENEOP consortium.

Regarding the United States and Brazil, a yearly growth equivalent to the arithmetic average of the 2013-2016 period was assumed.

Table 4: Non-Controlling interests estimates

Non-controlling Interests	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F		
(€m)	9,8	34,0	51,9	78,9	119,8	138,2	151,5	164,8	178,2	CAGR 13-16	Average Additions
(MW)											
Spain		224	224	71	230	230	230	230	230		
Portugal		315	316	318	414	621	621	621	621		
Rest of Europe (RoE)		108	277	271	557	557	557	557	557		
United States		341	356	765	1 122	1 382	1 643	1 903	2 164	49%	260,4
Brazil		38	38	41	98	118	138	158	178	37%	20,1
Total Non-controlling Interests (Net MW)		**1 026**	**1 210**	**1 466**	**2 521**	**2 909**	**3 189**	**3 470**	**3 750**		
Non-controlling Interests (€m/MW)		**0,03**	**0,04**	**0,05**	**0,05**	**0,05**	**0,05**	**0,05**	**0,05**		

Source: EDPR and own estimates

4.2.2. Capital Expenditures

Capital Expenditures (CAPEX) play a fundamental role in the valuation framework since they represent all the necessary funds not only to replace and repower all the existing wind farms and solar PV power plants, but also to acquire additional fixed assets and fund business growth and innovation.

In what concerns to the forecasting, the average CAPEX per megawatt ratio was estimated for each business unit regarding the historical values for the last three years, and is expected to be preserved over the valuation period (following the sales trend). As a result, it was possible to reach the values presented in figure 10.

Due to simplification and consistency with common practices, the capital expenditures are expected to normalise and follow the historical depreciation expenses after the explicit valuation period, that is, only repowering CAPEX is assumed.

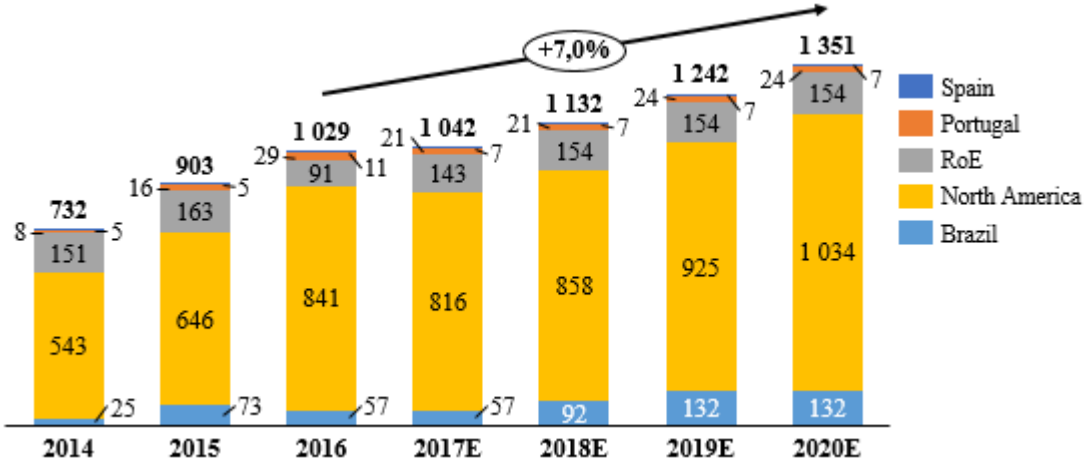


Figure 10: Capital Expenditures Source: EDPR and own estimates

4.2.3. Working Capital

Regarding the study of the Working Capital, defined as the difference between current operating assets and current operating liabilities, it was necessary to estimate the values for "Debtors and other Assets from commercial activities", "Inventories", "Current Tax Assets", "Trade and other payables from commercial activities" and "Current Tax Liabilities" (see Appendix Q).
All these accounts were estimated based on average historical revenue ratios. Again, since the company does not present the decomposition of all the elements per business unit, these are consolidated values.
The net working capital has been historically negative (-31.3% of revenues by December 2016), which can be explained by two circumstances. First, EDP Renováveis displays a residual value of inventories, since this sector does not require a lot of raw materials. After, the company quickly collects cash from its electricity sales to customers and pays their suppliers (who mainly provide property and equipment) based on extended payment terms.
This value is even lower than the average value of -15.25% for the green and renewables industry (Damodaran, 2017).

4.2.4. Discount rate – WACC

In order to determine the enterprise value for EDP Renováveis, all the Free Cash Flows projected for the firm should be discounted at the WACC, covering both the required return for equity holders and the cost of debt. In this case, since the cash-flows were projected individually and at local currencies for each business unit, different WACC should also be estimated to preserve consistency throughout the valuation.

4.2.4.1. Capital Structure

Since most of the financial debt is consolidated at the company level and all business units operate in the same industry, the capital structure was assumed to have the same composition along all regional units.
Assuming the market value of financial debt matches its book value, the total value of Debt is approximately €m3,406, that is, the sum of the short and medium/long-term financial debt recorded in the last available financial statements, as of 31 December 2016 (See Appendix R).
Looking at the market value of Equity, it simply results from the multiplication of the closing price of the year (€6.04) times the number of shares outstanding (872.31 million), leading to a value of €m5,265.25.

The resulting total D/E ratio by the end of 2016 corresponds to 65%, which is unquestionably below the industry's average of 174%[27], which confirms the unique capital structure of the company and the success of its self-funding business strategy.

Even though the company intends to reduce its debt level further, the previous capital structure is used throughout the valuation process since there is no absolute and concrete evidence about the needs of financing in the long-run, especially with the expected introduction of the wind offshore technology.

4.2.4.2.Cost of Equity

This section will be based on the Capital Asset Pricing Model, which assumes that the required return on equity corresponds to the risk-free rate plus beta multiplied by the market risk premium, as in equation (3). From now on, the assessment of its components is described.

4.2.4.2.1. Risk-free rate

Given the impossibility of finding entirely risk-free securities, some high liquidity government long-term bonds can be considered, since they are backed by nearly default-free governments. Therefore, when valuing the european business platforms, the 10-year German government bond (Bloomberg ticker: GDBR10 Index) can be considered, while the United States 10-year bond yield (USGG10YR Index) is used as a reference for North America and Brazil.

Since one value for the risk-free rate is used throughout all of the valuation periods, it should be assumed to converge to a long-term normalized value, practice promoted by Duff & Phelps in order to "capture the sustainable average return of long-term bonds issued by a government considered safe or free of default risk" (Grabowski *et al*., 2017). Therefore, the historical arithmetic averages of long-term government yields were calculated based on daily observations over the last five years.

It is important to realise that the risk-free rate used in the process should be consistent with the currency in which the cash-flows are estimated. As such, as suggested by Damodaran (2008), the risk-free rate of Brazil is based on the rate of a mature market (United States), adjusted for the expected differential inflation between the dollar ($) and the Brazilian real (R$), as follows.

$$\text{risk-free}_{BR} = (1+\text{risk-free}_{US}) \times \frac{(1+\text{expected inflation}_{BR})}{(1+\text{expected inflation}_{US})} - 1 \qquad (27)$$

[27] Damodaran's "Green and Renewables" sample composed of 174 companies

All things considered, the projected risk-free rates are then of 0.88% in Europe, 2.17% in North America and 3.87% in Brazil.

4.2.4.2.2. Beta Estimation

Traditionally, the beta arises from the regression of company's stock returns against the returns of the market. However, constant large standard errors in the regression suggest that industry betas "are more precise" than the regressive betas (Damodaran, 2009). In this way, it was necessary to estimate it based on a bottom-up approach through the analysis of a complete range of comparable companies.

Therefore, to estimate equity beta, it was first necessary to collect a set of data from traded comparable companies (sample composed of 14 firms) and compute their implicit unlevered betas.

Afterwards, the median of the peers was calculated to eliminate possible outliers, yielding a value of 0.43 (value in line with the "Green and Renewables" average reckoned by Damodaran (2017a), based on a sample of 179 companies). Since all the business units operate in the same industry, regardless of the geographical distribution, this bottom-up estimated beta will be transversal to all.

Finally, in order to reflect the company's business structure and financial leverage, the beta was leveraged according to the capital structure, following equation 6, which results in a levered equity beta of 0.64 for EDP Renováveis.

Table 5: Bottom-up Beta

Source: Bloomberg

Company	Country	Currency	Market Cap. (m)	Adj. Beta	Tax Rate	Debt (m)	D/E	Unlevered Beta
EDP Renováveis SA	Spain	EUR	5265,3	0,89	25,0%	3406,1	0,65	0,60
Acciona SA	Spain	EUR	4004,2	0,98	25,0%	6770,8	1,69	0,43
Iberdrola SA	Spain	EUR	38498,0	0,91	25,0%	31357,7	0,81	0,56
China Longyuan Power Group	China	HKD	5955,0	0,99	25,0%	10424,4	1,75	0,43
NextEra Energy Inc	US	USD	53007,8	0,78	40,0%	29240,5	0,55	0,58
Pattern Energy Inc	US	USD	1573,8	N/A	40,0%	1482,6	0,94	N/A
Voltalia SA	France	EUR	420,4	0,37	33,3%	432,6	1,03	0,22
TransAlta Renewables Inc	Canada	CAD	2264,4	N/A	26,5%	734,5	0,32	N/A
Boralex Inc	Canada	CAD	882,4	0,78	26,5%	1180,8	1,34	0,39
Falck Renewables SA	Italy	EUR	268,7	0,77	31,4%	760,0	2,83	0,26
Engie Brasil Energia SA	Brazil	BRL	6655,5	0,81	34,0%	899,8	0,14	0,75
Alerion Cleanpower SpA	Italy	EUR	128,2	0,45	31,4%	214,7	1,67	0,21
Infigen Energy	Australia	AUD	522,1	0,75	30,0%	499,4	0,96	0,45
Huaneng Renewables Corp Ltd	China	HKD	2997,6	1,06	25,0%	7234,7	2,41	0,38
Median			2631,0	0,79	28,3%	1331,7	0,99	**0,43**
Average			8746,0	0,79	29,9%	6759,9	1,22	0,44
Damodaran's Industry Average				1,14	4,2%		1,74	0,43
Levered Beta EDPR								**0,64**

4.2.4.2.3. Market Risk Premium

KPMG's Market Risk Premium Research Summary (2017) provides an insightful analysis of the market risk premium based on the implied equity market risk premium approach. As such, based on implied equity returns for several major diversified global markets (e.g., FTSE, Stoxx600, S&P 500) and the yield on long-term government bonds over time, it is recommended the use of a global equity risk premium of 6%[28].

Likewise, and also taking into consideration the studies of Fernández, Pershin and Acín (2017) regarding common practices across academics, financial analysts and business managers, it was assumed a value of 6% for equity market risk premium (MRP).

Nevertheless, since the valuation is broken down by business unit, an additional premium should be added to the market risk premium, based on the potential risk exposure in that region. These values are grounded in the recent studies of Damodaran (2017b), corresponding to the local default spread (based on Moody's rating) adjusted by the relative market volatility. Therefore, the values presented below should be used.

Table 6: Country Risk Premium

France	Belgium	Poland	Romania	Italy	US	Canada	Mexico
0,71%	0,86%	1,21%	3,13%	2,71%	0,00%	0,00%	1,71%

Spain	Portugal	Brazil	Rest of Europe	North America
2,71%	3,55%	4,27%	1,86%	0,07%

Source: A. Damodaran

It should also be noticed that in regions involving more than one country (Rest of Europe and North America), the average country risk premium is weighted according to the installed productive capacity.

4.2.4.3.Tax Rate

Concerning the tax rates, all the individual current marginal tax rates of the countries where EDP Renováveis is incorporated were collected and assumed to remain constant throughout the valuation timeline. For Portugal, the marginal tax rate corresponds to the sum of the income rate (21%), a municipal surtax (1.5%) and a state surtax (5%). The aggregated rate estimates for the Rest of Europe and North America are based on the individual marginal tax rates, weighted by the current productive capacity (MW).

Table 7: Corporate marginal tax rates Source: KPMG (2017)

	Spain	Portugal	RoE	North America	Brazil
tax rate	25%	27,5%	22,3%	39,4%	34%

[28] Data collection and reference value as per 31 December 2016

4.2.4.4. Cost of Debt

An item of relevance is the fact that EDP Renováveis does not have any bonds outstanding. Thus, the calculation of the cost of debt follows the structure of equation 2, where a default spread is added to the risk-free rate. In this way, each business unit undertakes a different cost of debt, which is not expected to change throughout the valuation process.

Since there is no available rating to get the cost of debt, it is necessary to estimate a "synthetic" rating, which will be based on the interest coverage ratio and the rating for each traded bond (see appendix S).

The computation of the default spread for EDPR relies on an Interest Coverage ratio (EBIT/Net Interest Expensed) of 1.61 as of the end of 2016. This corresponds to an implied B2 credit rating on the Moody's grading system (equivalent to B from Standard &Poor's) and consequently, a global default spread of 4.5%.

Table 8: Synthetic rate estimation

Source: Damodaran

Interest Coverage Ratio	Implied rating	Spread
1,611	B2/B	**4,50%**

Concluding, the company's pre-tax cost of debt results from the addition of the 4.5% default spread to the individual risk-free rates of the business units. After adjusting for the tax benefits generated, the final after-tax cost of debt can be consulted in table 9. These values are pretty much in line with the average cost of Debt of 4.0% reported by the management of EDP Renováveis on its 2016 annual statements.

Table 9: Cost of Debt

	Spain	Portugal	RoE	North America	Brazil
Risk-free	0,9%	0,9%	0,9%	2,2%	3,9%
Default spread	4,5%	4,5%	4,5%	4,5%	4,5%
Cost of Debt	**5,4%**	**5,4%**	**5,4%**	**6,7%**	**8,4%**
tax rate	25,0%	27,5%	22,3%	39,4%	34,0%
After-tax Cost of Debt	**4,0%**	**3,9%**	**4,2%**	**4,0%**	**5,5%**

Source: Own estimates

4.2.4.5. Summary

Taking into consideration all inputs detailed above, the final discount rate can be calculated as presented in table 10.

It is important to remind that in the United States there are also institutional partnerships with "Tax Equity" Investors, who require an agreed targeted rate of return, the cost of TEI (Tax

Equity Investors). This value corresponded to 7.1% as of December 2016, as reported by EDP Renováveis on its roadshow presentation (March 2017). Proceeding to this adjustment, the total cost of debt for North America is assumed to be weighted between tax equity financing and financial debt.

Table 10: WACC per Business Unit

WACC Calculation	Spain	Portugal	RoE	North America	Brazil
Capital Structure					
Debt-to-Total Capitalization	39,3%	39,3%	39,3%	39,3%	39,3%
Equity-to-Total Capitalization	60,7%	60,7%	60,7%	60,7%	60,7%
Cost of tax-equity financing	-	-	-	7,1%	-
Cost of Financial Debt	5,4%	5,4%	5,4%	6,7%	8,4%
Tax Rate	25,0%	27,5%	22,3%	39,4%	34,0%
After-tax Cost of Debt	**4,0%**	**3,9%**	**4,2%**	**4,2%**	**5,5%**
Risk-free Rate	0,9%	0,9%	0,9%	2,2%	3,9%
Levered Beta	63,7%	63,7%	6,0%	6,0%	6,0%
Market Risk Premium	6,0%	6,0%	63,7%	63,7%	63,7%
Country Premium	2,7%	3,6%	1,9%	0,1%	4,3%
Cost of Equity	**7,4%**	**8,3%**	**6,6%**	**6,1%**	**12,0%**
WACC	**6,1%**	**6,5%**	**5,6%**	**5,3%**	**9,4%**

Source: Own estimates

4.3. Discounted Free Cash Flow Valuation

After detailing all the assumptions and getting the necessary drivers and forecasting ratios for the valuation framework, it is now possible to proceed with the Enterprise value estimation for each of the EDP Renováveis' regional business units (see Appendix T).

It is important to recall that the explicit forecasting period was considered until 2020, being thereinafter assumed general conditions about the activity of the company.

4.3.1. Continuing Value

As previously explained, the company is being valued as a "going concern," i.e., it is assumed to continue its operations uninterruptedly over an extended period of time. In the computation of the perpetuity value, two inputs were taken into consideration: The Free Cash Flow for the first year after the explicit forecast period (n+1) and the sustainable growth rate assumed for the company's business.

Regarding the first cash-flow of the perpetuity (starting in 2021), it implies that, by reaching a stable growth, EDPR will assume capital expenditures in line with the expected depreciation. In this way, it was measured according to equation (10).

In what pertains to the sustainable growth rate, since the company is not expected to focus much of its expansion plans in the European mature electricity market, this business was assumed to grow, but without exceeding the growth rate of the economy. As such, a residual growth rate of 0.75% was defined, around half of the expected inflation rate in Europe for 2021.
In what concerns to Brazil and North America, the growth rate was set to capture the intended inflation for 2021, as presented in the table below.

Table 11: Perpetuity growth rates

Source: IMF

	Spain	Portugal	RoE	North America	Brazil
g	0,75%	0,75%	0,75%	2,20%	4,52%

4.3.2. EDP Renováveis' fair value

By summing all the individual business units' values, it is possible to achieve an aggregated Enterprise Value of €m12,798, which represents an implied EV/MW multiple of €m1.22.
As such, the activity in Europe is expected to represent nearly half of this value by the end of the year, while North America's business value weights around 47%, with Brazil being responsible for the remaining 3%.

Table 12: Sum-of-the-parts FCFF

	Total EV (€m)	WACC	2017 MW's	% EV	Implicit EV/MW
Spain	2228	6,1%	2194	17%	1,02
Portugal	2235	6,5%	1254	17%	1,78
Rest of Europe	1908	5,6%	1563	15%	1,22
Europe	**6372**	**6,1%**	**5011**	**50%**	1,27
North America	**6018**	**5,3%**	**5237**	**47%**	1,15
Brazil	**408**	**9,4%**	**204**	**3%**	2,00
TOTAL	**12798**	**5,8%**	**10453**	**100%**	**1,22**
Cash and Equivalents	519				
Other Non-Operating Assets	348				
Financial Debt	3450				
Debt Equivalents	275				
Non-controlling Interests	1586				
Tax Equity Investors	1523				
Equity Value	**6831**				
Shares Outstanding	872				
Fair Value (YE 2017)	**7,83 €**				
Close Price (31/03/2017)	6,93 €				
Up/Downside Potential	13%				

Nevertheless, to achieve the Equity value of the company, the following adjustments were considered:

- Deduction of expected Financial Debt and Equivalents (e.g., provisions which are mostly related to the decommissioning of wind turbines), assuming the book values match the market values.
- Addition of the expected values of Cash and other non-operating assets, such as financial investments and financial assets available for sale, by the end of December 2017.
- Subtraction of the values for Institutional Partnerships and Non-controlling interests. According to Damodaran (2009), "the standard practice is to report the book value of the minority interest, rather than an estimate of the fair value."

To conclude, in order to get the fair value per share, this dissertation's main goal, the estimated Equity Value (€m 6831) is divided by the total number of undiluted shares outstanding, generating a target value of €7.83 per share, as of 31 December 2017.

4.3.3. Sensitivity and Scenario Analysis

To better recognise which variables mostly impact the cash-flow forecasts and therefore the equity value of EDP Renováveis, it is fundamental to run a sensitivity analysis based on potential deviations on the most critical valuation elements.

In this way, it was conducted a test to appraise the sensitivity of EDPR's share target price to fluctuations in the discount rate (WACC) and the sustainable growth rate (g).

		Sustainable growth rate (g)				
		-0,5%	**-0,1%**	**Base**	**+0,1%**	**+0,5%**
Discount rate (WACC)	**-0,5%**	7,93 €	9,79 €	10,33 €	10,91 €	13,68 €
	-0,1%	6,37 €	7,85 €	8,27 €	8,72 €	10,81 €
	Base	6,03 €	7,43 €	**7,83 €**	8,25 €	10,21 €
	+0,1%	5,70 €	7,04 €	7,41 €	7,81 €	9,65 €
	+0,5%	4,54 €	5,64 €	5,95 €	6,27 €	7,73 €

Table 13: Target Price (€)

		Sustainable growth rate (g)				
		-0,5%	**-0,1%**	**Base**	**+0,1%**	**+0,5%**
Discount rate (WACC)	**-0,5%**	1,2%	-28,0%	31,9%	39,3%	74,7%
	-0,1%	-18,7%	0,2%	5,6%	11,3%	38,0%
	Base	-23,0%	-5,1%	-	5,3%	30,4%
	+0,1%	-27,2%	-10,1%	-5,4%	-0,3%	23,2%
	+0,5%	-42,0%	-28,0%	-24,0%	-19,9%	-1,3%

Table 14: Target Price Variation (%)

As it is possible to conclude based on the adjustments on the tables above, the target price per share widely fluctuates from 4.54€ (-42%) to a maximum of €13.68 (+74.7%), which confirms the robust significance of these variables on this valuation process and their need to be accurately estimated in order to avoid unclearness and uncertainty.

Furthermore, it was also appraised the sensitivity of the target price to changes only in the estimates from North America. It was possible to conclude that this Business Unit is responsible for more than 50% of the total impact on the equity price per share. (see Appendix U).

In addition, two different scenarios were also tested:

- Following an average yearly increase in capacity of 700MW (+3.5GW until 2020), as targeted by EDPR in its business plan 2016-2020, the target price would be adjusted to €8.26;
- Since there are cash-flows estimated in three different currencies, the business of the company is exposed to some exchange rate risk. Assuming flat expected exchange rates for EUR/USD and EUR/BR, i.e., at 2016 levels and no euro appreciation expected, the target price at the end of 2017 would rise to 8.27€.

4.3.4. Other DCF approaches

Even though the discounted FCFF was considered as the central method of this project, other discounted cash-flow models, such as the discounted FCFE and the Adjusted present value, were also performed in order to provide support and comparative analysis. Hereinafter, they are briefly detailed.

4.3.4.1.Discounted FCFE

Based on the estimation of the individual equity cash flows, detailed in Appendix V, it was possible to reach an aggregated Equity value of €m 6842 for the end of 2017, which originates an equity value per share of €7.84.

Table 15: FCFE Valuation

	(€m)	Re	2017 MW's	%	Implicit EQV/MW
Spain	1354	7,4%	2194	20%	0,62
Portugal	1429	8,3%	1254	21%	1,14
Rest of Europe	1116	6,6%	1563	16%	0,71
Europe	**3899**	**7,5%**	**5011**	**57%**	0,78
North America	**2817**	**6,1%**	**5237**	**41%**	0,54
Brazil	**126**	**12,0%**	**204**	**2%**	0,62
Equity Value	**6842**	**7,0%**	**10453**	**100%**	**0,65**
Shares Outstanding	872				
Fair Value (YE 2017)	**7,84 €**				
Close Price (31/03/2017)	6,93 €				
Up/Downside Potential	13%				

This target price is relatively close to the one calculated using FCF discounting (7.83€), which provides a solid support to the previous valuation performed.

In this specific case, the differences might have arisen due to difficulties in estimating some accounts at the regional level, since they are traditionally consolidated at the company level. As such, to get the variations by business unit, the debt decomposition was weighted on current EBITDA levels, which might not be totally accurate.

Moreover, to simplify, it was assumed the same sustainable long-term growth rate as in the FCFF methodology. However, this rate is not frequently the same, since the FCFE growth should be adjusted to account for its leverage effect.

4.3.4.2. Adjusted Present Value

In the first step of this valuation method, future cash-flows are discounted at the unlevered cost of equity, which originates an unlevered firm value of €m 14104 (see Appendix W).

The present value of the interest tax shields was then calculated according to equation (19) and discounted at the cost of debt, yielding an aggregated value of €m187.

Finally, it was necessary to assess the present value of expected bankruptcy costs, which results from the probability of default and the direct and indirect cost of bankruptcy.

The first is based on the synthetic bond rating estimated (B2/B), as explained when describing the discount rate, which yields a probability of default of 26.36% (Damodaran, 2012).

Table 16: Adjusted Present Value Valuation

	(€m)	Ru	2017 MW's	%
Spain	2199,6	6,2%	2194	16%
Portugal	2075,3	7,0%	1254	15%
Rest of Europe	2047,9	5,3%	1563	15%
Europe	**6322,8**	**6,2%**	**5011**	**45%**
North America	**7505,8**	**4,8%**	**5237**	**53%**
Brazil	**274,9**	**10,7%**	**204**	**2%**
Value of Unlevered Firm	**14103,6**	**5,5%**	**10453**	**100%**

Spain	24,06
Portugal	21,67
Rest of Europe	18,95
Europe	**64,68**
North America	**113,23**
Brazil	**8,67**
PV Interest Tax Shields	**186,6**

Probability of default	26,36%
Bankrupty Costs	40%
PV of expected Bankruptcy Costs	**1487,1**

Enterprise Value	**12803**
Cash and Equivalents	519
Other Non-Operating Assets	348
Financial Debt	3450
Debt Equivalents	275
Non-controlling Interests	1586
Tax Equity Investors	1523
Equity Value	**6836**
Shares Outstanding	872,31
Fair Value (YE 2017)	**7,84 €**
Close Price (31/03/2017)	6,93 €
Up/Downside Potential	13%

As presented before, empirical studies are proofing direct costs to be between 5% and 10% of firm's value. Additionally, Shapiro and Titman (1985) defend that the indirect costs can add up to 25% to 30%. Due to the expected difficulties in finding accurate values, a conservative value of 40% (10% + 30%) was assumed.

To conclude, the final enterprise value of the company corresponds to the unlevered value of EDP Renováveis plus the present value of interest tax shields, deducted from the value of expected bankruptcy costs. This will result in a final target price (YE2017) of €7.84, which is pretty much in line with the values derived from the other discounted cash flows approaches.

4.4. Relative Valuation

Due to the difficulty in finding companies with similar geographical distribution as EDPR's business units, the fair value of the company was estimated at an aggregated level. In this section, the two most widely used and accepted multiples were computed, allowing the fair value estimation for the company and the comparison of EDP Renováveis' financial health and growth prospects with its peers.

4.4.1. Enterprise Value to EBITDA

After collecting data on Bloomberg regarding a peer group composed of 13 companies operating in the same industry as EDP Renováveis, it was possible to build the table below, comprising the 2016 historical EV/EBITDA value and the forward values for 2017 and 2018.

Table 17: EV/EBITDA multiples Source: Bloomberg

Company	Country	Currency	EV/EBITDA		
			2016	2017E	2018E
EDP Renováveis SA	Spain	EUR	8,0	8,2	7,8
Acciona SA	Spain	EUR	5,0	8,0	7,6
Iberdrola SA	Spain	EUR	9,0	9,4	8,6
China Longyuan Power Group	China	HKD	9,2	8,1	7,3
NextEra Energy Inc	US	USD	10,8	11,5	10,9
Pattern Energy Inc	US	USD	23,1	12,2	10,7
Voltalia SA	France	EUR	15,9	12,6	8,1
TransAlta Renewables Inc	Canada	CAD	24,3	9,7	9,3
Boralex Inc	Canada	CAD	15,5	12,2	10,7
Falck Renewables SA	Italy	EUR	6,5	6,9	6,6
Engie Brasil Energia SA	Brazil	BRL	7,9	7,2	6,9
Alerion Cleanpower SpA	Italy	EUR	8,8	6,8	6,8
Infigen Energy	Australia	AUD	11,4	9,5	9,2
Huaneng Renewables Corp Ltd	China	HKD	8,7	7,7	6,9
Median			**9,2**	**9,4**	**8,1**
Average			12,0	9,4	8,4

It is important to highlight that EDP Renováveis constantly presents an EV/EBITDA multiple moderately below its peers, which might indicate that the company might be relatively undervalued.

Taking into consideration that the value of the company is being estimated at the end of 2017, we can then multiply the median EV/EBITDA expected for the year with the forecasted EBITDA (€m1 205), which results in a total enterprise value of €m11,354. After all the necessary adjustments to calculate the equity value, it is possible to achieve an implied target price (YE2017) of €6.18 (see Appendix X).

For 2018, and based on the estimated 2018 EBITDA levels, the implied fair value of the share is expected to decrease to €5.

4.4.2. Price-Earnings Ratio

Regarding the PER estimation, which shows the relation between market price and earnings per share, it also assigns a value for EDPR clearly above its market peers, particularly when looking at 2016 values. This might be a result of investors' optimistic beliefs about the company's financial health and future growth expectations.

In the final analysis, by looking at the median P/E expected for 2017, a total equity value of €m4,072 is estimated for EDP Renováveis, resulting in a target price of €4.67, which is misaligned with the estimates arising from the DCF Models.

Table 18: Price-Earnings multiple Source: Bloomberg

Company	Country	Currency	P/E		
			2016	2017E	2018E
EDP Renováveis SA	Spain	EUR	100,6	32,0	28,4
Acciona SA	Spain	EUR	11,3	16,9	15,0
Iberdrola SA	Spain	EUR	14,7	15,6	14,5
China Longyuan Power Group	China	HKD	12,8	10,4	8,8
NextEra Energy Inc	US	USD	20,8	21,9	20,4
Pattern Energy Inc	US	USD	N/A	82,4	42,7
Voltalia SA	France	EUR	156,2	51,3	24,4
TransAlta Renewables Inc	Canada	CAD	N/A	16,4	14,5
Boralex Inc	Canada	CAD	1328,3	65,2	35,4
Falck Renewables SA	Italy	EUR	N/A	41,2	28,9
Engie Brasil Energia SA	Brazil	BRL	14,8	13,0	13,7
Alerion Cleanpower SpA	Italy	EUR	141,9	23,4	22,5
Infigen Energy	Australia	AUD	91,4	28,6	17,8
Huaneng Renewables Corp Ltd	China	HKD	8,3	6,5	5,9
Median			**17,8**	**21,9**	**17,8**
Average			180,0	30,2	20,3

4.4.3. Enterprise Value to Megawatt

To complement the analysis, it is important to examine EDPR's value based on one of the most relevant multiples for renewable companies, the Enterprise Value to megawatt (EV/MW), in which some market transactions are grounded.

In this way, taking into consideration all the asset rotation transactions of the company since 2012, in which minority positions were sold to strategic partners, it was possible to attain an average EV/MW multiple of €m1.5 (table 19).

Consequently, by multiplying this value with the expected installed capacity by the end of 2017, the implied fair value of EDPR corresponds to €11.33, implying an upside of 63% from current[29] market price.

This value suggests not only the quality of company's assets but also that investors believe EDP Renováveis will continue to pursue worthwhile projects, allowing the fair value estimated through DCF to be perceived as conservative.

Table 19: Fair Value at asset rotation multiples

Transation	Implied EV/MW (€m)	Year	Country	Stake Sold (%)	MW Sold
Borealis	1,00	2012	US	49%	294
CTG	1,57	2012	Portugal	49%	301
Fiera	0,88	2013	US	49%	48
Axpo	1,26	2013	France	49%	49
Fiera	1,36	2014	US	36%	396
EFG Hermes	1,27	2014	France	49%	132
Northleaf CP	2,34	2014	Canada	49%	15
CTG	1,48	2014	Portugal	49%	262
CTG	1,50	2014	Brazil	49%	157
DIF III	2,74	2015	US	49%	15
Axium	1,87	2015	US	34%	340
CTG	1,74	2015	Poland/Italy	49%	290
EFG Hermes	1,73	2016	ES/PT/BE/FR	49%	325
Total	**1,5 €**				
EDPR MW	**10453**				
Implicit Enterprise Value	**15850**				
Cash and Equivalents	519				
Other Non-Operating Assets	348				
Financial Debt	3450				
Debt Equivalents	275				
Non-controlling Interests	1586				
Tax Equity Investors	1523				
Total Equity Value	**9882**				
Shares Outstanding	872,3				
Fair Value (YE 2017)	**11,33 €**				
Close Price (31/03/2017)	6,93 €				
Up/Downside Potential	63%				

[29] As of 31/03/2017

5. Comparative Analysis

When performing the valuation of a given company, a major and fruitful way of assessing whether the valuation is accurate is by comparing it to other valuation analysis, of the same firm. As the objective is the same, but the many assumptions are chosen in the process naturally differ, a comparative analysis is particularly useful in assessing the validity of the specific assumptions used for each variable.

Table 20 compares the overall values achieved for the major variables in this dissertation's research, two others performed by independent parties – BPI and Santander - and what EDPR has set as its target values for the considered period (2015-2020). It is possible to ascertain that, regarding revenues and profit measures such as EBITDA and Net Profit, the values achieved are consistent with those suggested by the other valuations subject to analysis, without the presence of significant outliers or striking differences, for both revenue indicators and assumptions for production levels.

Table 20: Comparative Analysis of valuation estimates

Targets: CAGR 2015-20	EDPR	GH	BPI	Santander
Revenues 2020	N/A	**2147**	2145	N/A
EBITDA	1550	**1541**	1542	1543
CAGR	8%	**8%**	8%	8%
Net Profit	292	**286**	340	282
CAGR	22%	**21,5%**	25,8%	21,2%
Installed Capacity (MW)	12781	**12580**	12546	12516
CAGR	6,6%	**6,3%**	6,2%	6,2%
Additions/Year(MW)	700	**660**	653	647
Core OPEX/MW	-1%	**-2%**	0%	-1%

Source: EDPR, BPI, Santander and own estimates

It is relevant to note that both BPI and Santander, in their valuations, elect the discounted FCFF sum-of-the-parts approach as the best one for the analysis of renewable companies, which is consistent with this study. The only exception comes from BPI, in which the average EV/MW multiple (€m1.5) is used to estimate the value for Brazil rather, than using discount cash-flow valuation.

In what pertains to discount rate estimation, the assumptions appear to be in line with peer choices for similar valuations, although with the presence of a couple of outliers which deserve a more detailed analysis. Information detailing WACC computation steps was only made

available for BPI, with Santander's valuation serving as a reference for the final rate. (see Appendix Y for detailed comparison).

Regarding the WACC discount rate differences, certain assumptions differ, with the most visible one being regarding Debt-to-Equity ratio. While this analysis proposes a D/(E+D) ratio of 39%, in line with the most recent capital structure of EDPR, BPI's valuation is performed assuming a ratio of 60%.

The value utilised by the peer is close to the average 64% for "Green and Renewable Energy industry" defended by Damodaran (2017), which might indicate the use of a sector average, rather than the actual financial structure of the company being analysed. Although, the unique financing structure of EDP Renováveis (institutional equity financed) supports the decision to use a lower current rate.

All things considered, the Enterprise values for EDPR are estimated at €m 12,881 (BPI) and €m12,513 (Santander), against the proposed value of €m 12,798.

6. Final Recommendation

Table 21 discriminates the most recent recommendations for the target share price of the company, from several institutions and analysts, as of 31 March 2017. As it is possible to conclude, most of them advise that EDP Renováveis would outperform the market.

The valuation conducted for EDP Renováveis on this research report yields a Target Price of €7.83, which is slightly above the median value of €7.60. This value is even closer when looking only for target prices reported at the end of March.

Table 21: Target price consensus

Institution	Target Price (2017E)	Analyst	Recommendation	Date
Bryan, Garnier & Co	6,30 €	Xavier Caroen	Neutral	01/03/2017
Grupo CIMD	6,40 €	António Seladas	Neutral	08/03/2017
Exane BNP	6,40 €	Manuel Palomo	Neutral	20/03/2017
Citigroup	6,85 €	Akhil Bhattar	Neutral	31/03/2017
Natixis	6,90 €	Philippe Ourpatian	Neutral	01/03/2017
BBVA	7,25 €	Daniel Ortea	Outperform	23/03/2017
BiG	7,40 €	João Lampreia	Buy	21/03/2017
Deutsche Bank	7,60 €	Virginia Sanz de Madrid	Buy	27/02/2017
Caixa BI	7,60 €	Helena Barbosa	Buy	28/02/2017
Bank of America Merrill Lynch	7,70 €	Pinaki Das	Buy	01/03/2017
Kepler Cheuvreux	7,70 €	Jose Porta	Buy	01/03/2017
Santander	7,70 €	Bosco Mugiro	Buy	27/03/2017
ISCTE Business School	**7,83 €**	**Gonçalo Heitor**	**Buy**	**31/03/2017**
Haitong	7,90 €	Jorge Guimarães	Buy	30/03/2017
BPI	8,00 €	Gonzalo Sanchez-Bordoña	Buy	27/03/2017
Morgan Stanley	8,10 €	Carolina Dores	Overweight	14/03/2017
Sabadell	8,20 €	Felipe Echevarría	Buy	27/02/2017
Average	**€ 7,40**			
Median	**€ 7,60**			
Highest Price	**€ 8,20**			
Lowest Price	**€ 6,30**			

In order to provide a recommendation to all investors, a guide was defined based on current market practices around the world. In this way, based on company's total return (including dividends) within next 12 months, the final recommendation of this research will follow the structure of table 22.

Table 22: Recommendation guideline

Reccomendation	Expected Total Return
Buy	≥ 10%
Hold /Neutral	0 ≤ 10%
Sell	≤ 0%

Concluding, an estimated price appreciation of 13% plus an expected dividend yield of 0.7% results in a total expected return of 13.7% for EDP Renováveis' stock.

As a result, a Buy recommendation[30] is given away as the end-point of this research for potential investors, taking into consideration that there is an expectation of positive returns within next months.

Bearing in mind the tender offer of EDP over its EDP Renováveis' remaining shares, the acceptance would be not suggested to equity holders as of March 31 2017, since the proposed value does not recognise the correct fair value of the shares regarding its long-term potential.

[30] Disclaimer: This recommendation is exclusively provided for academic purposes

7. Conclusion

The main objective of this dissertation has been the estimation of the fair value for EDP Renováveis, a renewable energy company operating in 12 countries and focused on the electricity generation from clean sources, mainly wind and solar power.

Therefore, as of 31 March 2017, this project presents an Equity Valuation of the company by estimating a target share price for the year-end 2017. In addition, besides providing a recommendation to potential investors, this research enables the analysis of EDP - Energias de Portugal's public tender offer over EDPR, aiming to buy-out all the remaining shares outstanding (22.47%) at a price of €6.75 per share.

Initially, a comprehensive analysis of all the main literature concerning equity valuation was presented, from which it was possible to conclude that there is no perfect or entirely accurate method to value a company. As such, it is dependent on the quantity and reliance of the information available and the truthful definition of assumptions about the business and the macro-environment.

Likewise, an in-depth analysis of the renewable energy sector was presented, which is under an ongoing transformation and expansion around the globe, as well as an overview of EPDR's business operations and strategic drivers over the next years.

Nonetheless, in accordance with company's features and widespread practices among financial analysts, EDP Renováveis' fair value was primarily estimated through a FCFF discounted model. Consequently, based mainly on the company's historical performance, its business-plan 2016-2020 and other relevant macroeconomic information, it was possible to achieve a total equity value of €6,831 million, which results in a target price of €7.83 per share.

To reinforce the analysis, the valuation was also performed using other DCF methodologies, namely the discounted FCFE and the APV, both also relying on a sum-of-the-parts approach. Despite some possible uncertainty in estimates, all the resulting target prices are consistent and aligned, suggesting that the company might be undervalued. As such, a buy recommendation is provided to the market, since all investors are expected to get a positive return on their investment.

In the same way, given the final valuation results, as of 31 March 2017 it was possible to predict that EDP's market operation for the acquisition of EDP Renováveis' shares would not be as successful as intended by the offeror, considering the relatively low offer price of €6.75.

Additionally, MFS Investment Management, the largest shareholder after EDP (controlling 3.11% of total outstanding shares) issued an open letter stating that they were "very disappointed with the price of 6.75€ offered", recommending other minority shareholders also to reject the proposal.

By the end of the acceptance period (August 3rd, 2017), the Euronext's system registered a total of 43,907,516 shares sold to EDP, representing an investment of €296 million, short from the possible €1,332 million, as predicted.

As a result, EDP currently holds 720,191,372 shares of EDP Renováveis, which corresponds to only 82.56% of total capital and voting rights, not allowing the company to reach the desired 90% and consequent delisting from the stock exchange.

As previously clarified, the main limitations of this dissertation rely on the fact that the company valuation is based on projections which are dependent on assumptions that might not be truly verified in the future. As such, the sensitivity analysis indicates that small variations in the major variables might strongly impact the results of the valuation exercise, which can also be affected by the limited explicit forecasting period.

Therefore, in order to make longer projections and enhance their robustness, it would be fundamental to have further insight into EDPR's business plan over a longer period, especially for the period after 2020. In this way, some underlying investment and operational decisions regarding the future of the company, such as the timing of the diversification into the wind offshore technology, do not seem totally clear and foreseeable.

The increasing attractiveness of the renewable energy sector has been responsible for the sharp increase in the number of market players, which arises as one of the main challenges for the future of the company. In the meantime, EDP Renováveis is expected to focus its growth principally in the United States, where it can benefit from increases in demand and expected fiscal incentives.

Concluding, it is expected that, shortly, EDP will continue its acquisition attempts to reintegrate EDP Renováveis as the renewable energy division of the parent company, as it happened to Iberdrola Renewables in July 2011. In this way, regarding future research, it would be interesting to examine and estimate what would have been the impact on the company's fair value if EDP had been able to achieve the necessary 90% and proceeded to the delisting from Euronext Lisbon.

8. Bibliography

Bloomberg Finance L.P. 2016. ***Bloomberg New Energy Outlook 2017***

Copeland, T., Koller, T., and Murrin, J. 2008. ***Valuation: Measuring and managing the value of companies***, 3rd ed., John Wiley & Sons, Inc., New York

Damodaran, A. 2017. ***Working Capital Ratios by Sector,*** retrieved from *http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/wcdata.html*

Damodaran, A. 2017a. ***Betas by Sector,*** retrieved from *http://www.stern.nyu.edu/~adamodar/pc/datasets/betas.xls*

Damodaran, A. 2017b. ***Equity Risk Premiums (ERP): Determinants, Measures and Implications***. Working paper. New York Stern School of Business.

Damodaran, A. 2012. ***Investment Valuation: Tools and Techniques for Determining the Value of Any Asset*** **(**3rd Ed.) John Wiley & Sons, New York

Damodaran, A. 2009. ***The Octopus: Valuing Multi-business, Multi-national companies***. Working paper, Stern School of Business, New York.

Damodaran, A. 2008. ***What is the risk-free rate? A Search for the Basic Building Block***. Working paper, Stern School of Business, New York.

Damodaran, A. 1999. ***Estimating equity risk premiums***. Working paper, Stern School of Business, New York

Damodaran, A. 1999a. ***Estimating Risk Parameters***. Working paper, Stern School of Business, New York

Damodaran, A. 1994. ***Damodaran on Valuation: Security Analysis for Investment and Corporate Finance***. John Wiley &Sons, Inc, New York

EDP Renováveis S.A. (EDPR). 2017. ***Consolidated and individual management report and accounts***

EDP Renováveis S.A. (EDPR). 2016. ***Investors Day Presentation***

Elbannan, M. 2014. The Capital Asset Pricing Model: An Overview of the Theory. ***International Journal of Economics and Finance***, 7:216-228

Fama, E. F. and French, K. R. 1993. Common risk factors in the returns on stocks and bonds. ***Journal of financial economics***, 33: 3-56.

Fernández, P., Pershin, V. and Acín, I. 2017. ***Discount Rate (Risk-Free Rate and Market Risk Premium) used for 41 countries in 2017: a survey.*** Working paper

Fernández, P. 2015. ***Company valuation methods*****.** Working paper, IESE Business School

Fernández, P. 2011. WACC: Definition, Misconceptions, and Errors. ***Business Valuation Review***, 29: 138-144.

Fernández, P. 2006. **Equity Premium: Historical, Expected, Required and Implied?** Working paper, IESE Business School.

Fernández, P. 2006a. **Levered and Unlevered Beta**. Working paper no.488, IESE Business School

Fernández, P. 2005. **Discounted Cash Flow Valuation Methods: Examples of perpetuities, constant growth and general case**. Working paper no.604, IESE Business School

Fernández, P. 2002. ***Company valuation methods. The most common errors in valuations***. Working paper no. 449, IESE Business School

Fernández, P. 2001. ***Valuation using multiples. How do analysts reach their conclusions*****?** Working paper, IESE Business School.

Froot, K. A., and Kester, W. C. 1995. ***Cross-Border Valuation***. Harvard Business School Background Note, 295-100

Global Solar Council. 2017. ***Quarterly Report***

Global Wind Energy Council. 2017. ***Global Wind Report 2016***

Goedhart, M., Koller, T., and Wessels, D. 2015. The right role for multiples in valuation**.** ***McKinsey on Finance***, 15

Gordon, M. J. 1959. Dividends, Earnings and Stock Prices**.** ***The review of Economics and Statistics***, 41: 99-105

Grabowski, R., Nunes, C., and Harrington, J. 2017. ***2016 Valuation Handbook - Industry Cost of Capital – Duff & Phelps.*** John Wiley & Sons, Inc., New York

Harris, R. S. and Pringle J. J. 1985. Risk-adjusted discount rates: extensions from the average risk case. ***Journal of Financial Research***, 8:237–244

International Energy Agency. 2016. ***World Energy Outlook 2017***

IRENA - International Renewable Energy Agency. 2017. ***Renewable Energy and jobs – Annual Review 2017***

James, M. and Koller, T. 2000. Valuation in emerging markets. ***The McKinsey Quarterly***, 4: 78-85

Koller, T., Goedhart, M., and Wessels, D. 2005. ***Valuation: Measuring and managing the value of companies***, 4th ed., John Wiley & Sons, Inc., New York

KPMG. 2017. ***Corporate tax rates table***, retrieved from *https://home.kpmg.com/xx/en/home/services/tax/tax-tools-and-resources/tax-rates-online/corporate-tax-rates-table.html*

KPMG Advisory N.V. 2017. ***Market Risk Premium – Research Summary***

Koller, T., Goedhart, M., and Wessels, D. 2005. ***Valuation: Measuring and managing the value of companies***, 4th ed., John Wiley & Sons, Inc., New York

Lazard. 2016. ***Lazard´s Levelized Cost of Energy Analysis – Version 10.0,*** retrieved from *https://www.lazard.com/media/438038/levelized-cost-of-energy-v100.pdf*

Lesser, J. 2003. "DCF Utility Valuation: Still the Gold Standard?". ***Public Utilities Fortnightly***, 141:14–21.

Lie, E. and Lie, H. J. 2002. Multiples used to estimate corporate value. ***Financial Analysts Journal***, 58: 44-54.

Luehrman, T. A. 1997. What's it worth: A General Manager's guide to valuation. ***Harvard Business Review,*** 75: 132-142

Luehrman, T. A. 1996. Using APV (adjusted present value): a better tool for valuing operations. ***Harvard Business Review***, 75.3: 145-6.

Mota, A. and Custódio, C. 2012. ***Finanças da Empresa -Manual de informação, análise e decisão financeira para executivos,*** 7th ed., Bnomics, Lisbon

Myers, S. 1974. Interactions of corporate financing and investment decisions – implications for capital budgeting. ***The Journal of Finance***, 29:1-25

Renewable Energy Policy Network for the 21st Century (REN 21). 2017. ***Renewables Global Status Report (GSR)***

Shapiro, A. C., and Titman, S. 1985. An integrated approach to corporate risk management. ***Midland Corporate Finance Journal***, 3:41-56

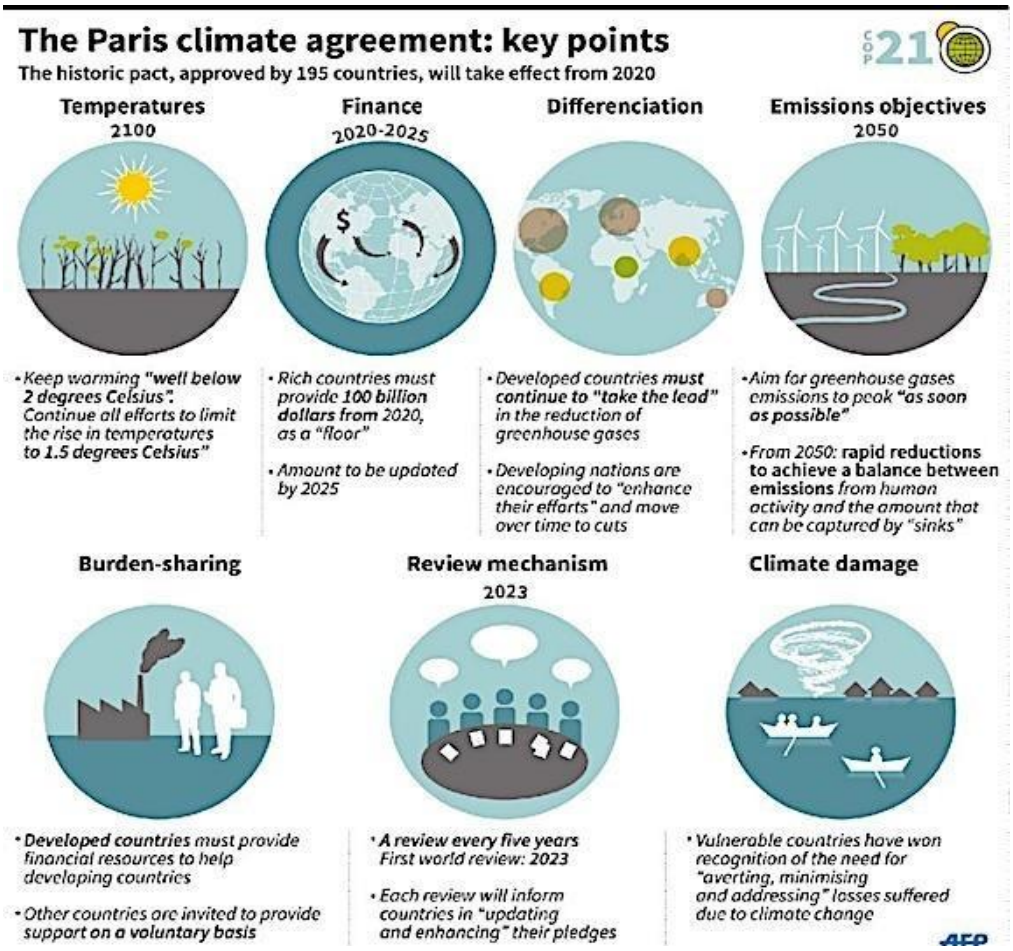
Sharpe, W. F. 1964. Capital asset prices: A theory of market equilibrium under conditions of risk. ***The Journal of Finance***, 19: 425-441.

Solar Power Europe. 2017. ***Global Market Outlook 17-21***

9. Appendices

Appendix A – Paris Climate Change Agreement

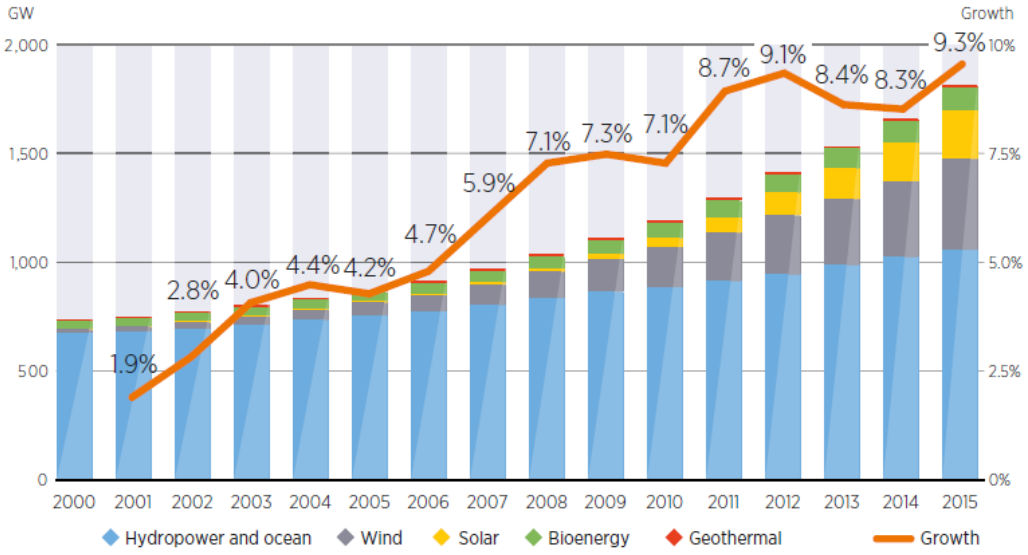
The Paris climate change agreement was signed in December 2015 by 195 countries, with the main objective of bringing a significant reduction in greenhouse gas emissions to keep global temperature increase well below 2 degrees Celsius, and if possible, below 1.5.



Source: World Economic Forum, 2016

Appendix B – Global Energy Outlook

Appendix B.1: Global renewable power capacity 2000-2015



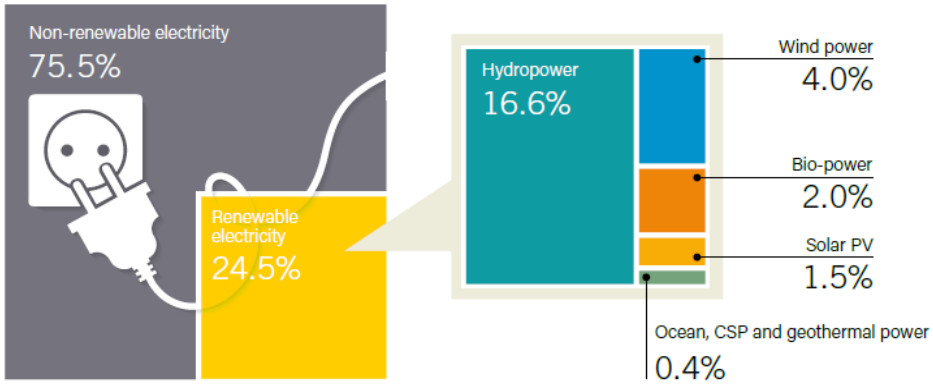
Source: IRENA (2017)

Appendix B.2: Global renewable power capacity (2015-2016)

Source: REN21 (2017)

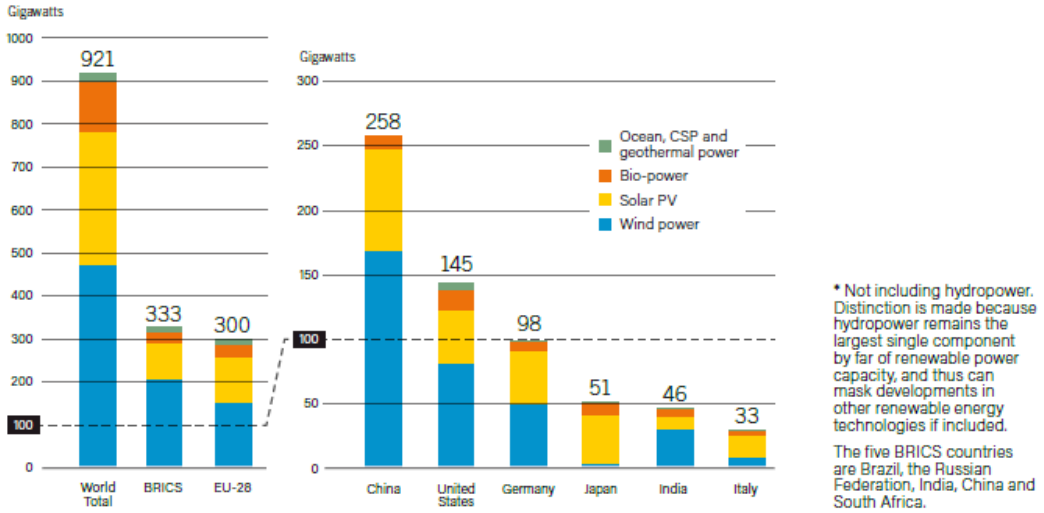
		2015	2016
INVESTMENT			
New investment (annual) in renewable power and fuels[1]	billion USD	312.2	**241.6**
POWER			
Renewable power capacity (total, not including hydro)	GW	785	**921**
Renewable power capacity (total, including hydro)	GW	1,856	**2,017**
Hydropower capacity[2]	GW	1,071	**1,096**
Bio-power capacity	GW	106	**112**
Bio-power generation (annual)	TWh	464	**504**
Geothermal power capacity	GW	13	**13.5**
Solar PV capacity	GW	228	**303**
Concentrating solar thermal power capacity	GW	4.7	**4.8**
Wind power capacity	GW	433	**487**

Appendix B.3: Share of renewables in global electricity generation (%), 2016



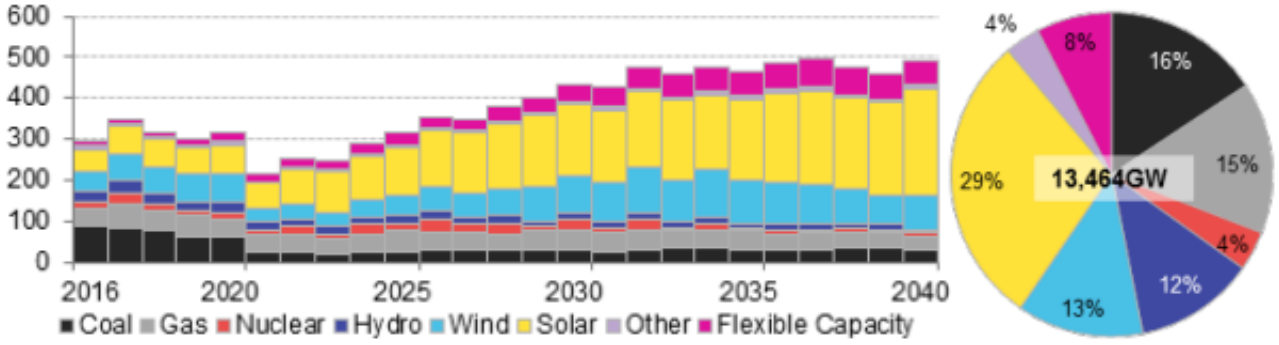
Source: REN21 (2017)

Appendix B.4: Renewable power capacities in World, BRICS and EU, 2016



Source: REN21 (2017)

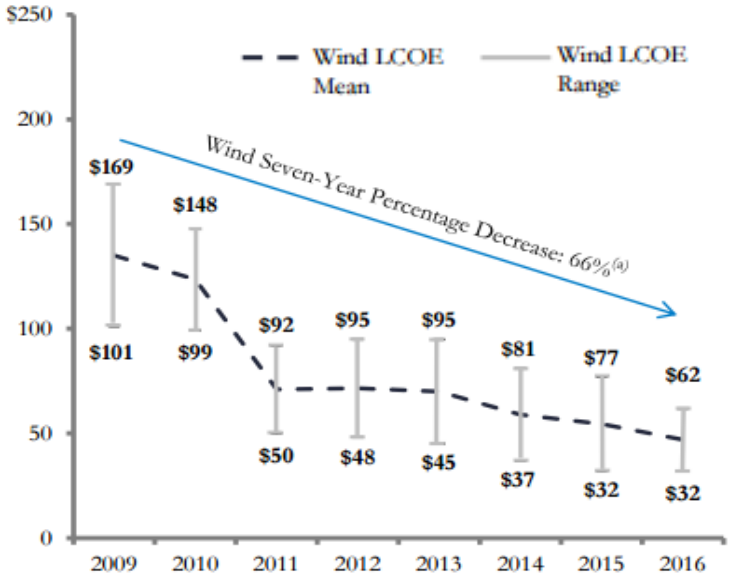
Appendix B.5: Annual capacity additions, 2016-2040 (GW)



Source: Bloomberg New Energy Outlook (2016)

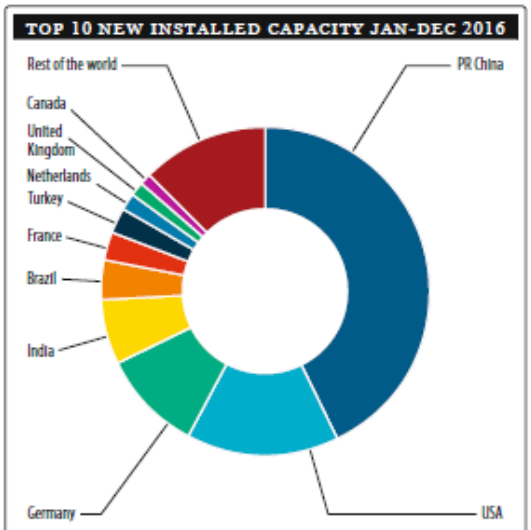
Appendix C - Global Wind Outlook

Appendix C.1: Global Wind LCOE ($/MWh)



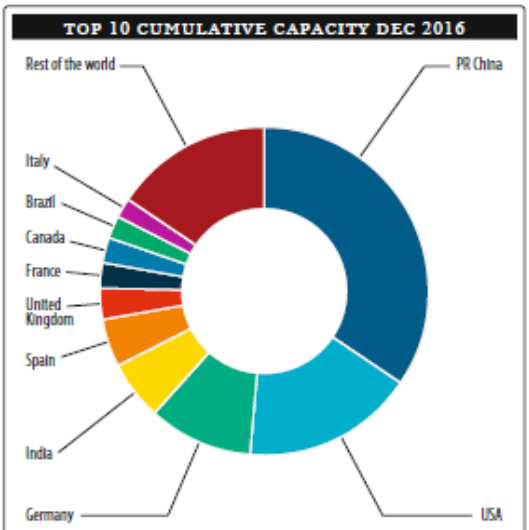
Source: Lazard Estimates, December 2016

Appendix C.2: Wind installed capacity worldwide (MW)



Country	MW	% Share
PR China	23,370	42.8
USA	8,203	15.0
Germany	5,443	10.0
India	3,612	6.6
Brazil*	2,014	3.7
France	1,561	2.9
Turkey	1,387	2.5
Netherlands	887	1.6
United Kingdom	736	1.3
Canada	702	1.3
Rest of the world	6,727	12.3
Total TOP 10	**47,915**	**88**
World Total	**54,642**	**100**

Source: GWEC



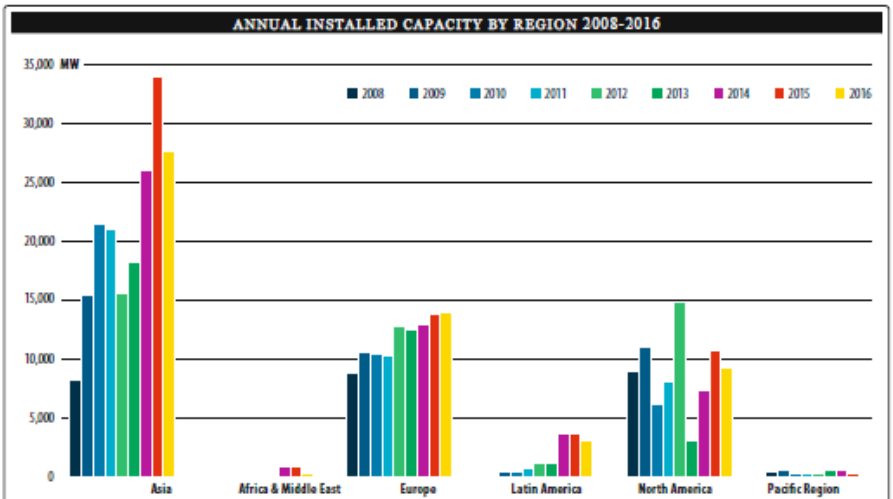
Country	MW	% Share
PR China	168,732	34.7
USA	82,184	16.9
Germany	50,018	10.3
India	28,700	5.9
Spain	23,074	4.7
United Kingdom	14,543	3.0
France	12,066	2.5
Canada	11,900	2.4
Brazil*	10,740	2.2
Italy	9,257	1.9
Rest of the world	75,576	15.5
Total TOP 10	**411,214**	**84**
World Total	**486,790**	**100**

Source: GWEC

* Projects fully commissioned, grid connections pending in some cases

Source: Global Wind Energy Council (2017)

Appendix C.3: Wind installed capacity worldwide, by region (MW)

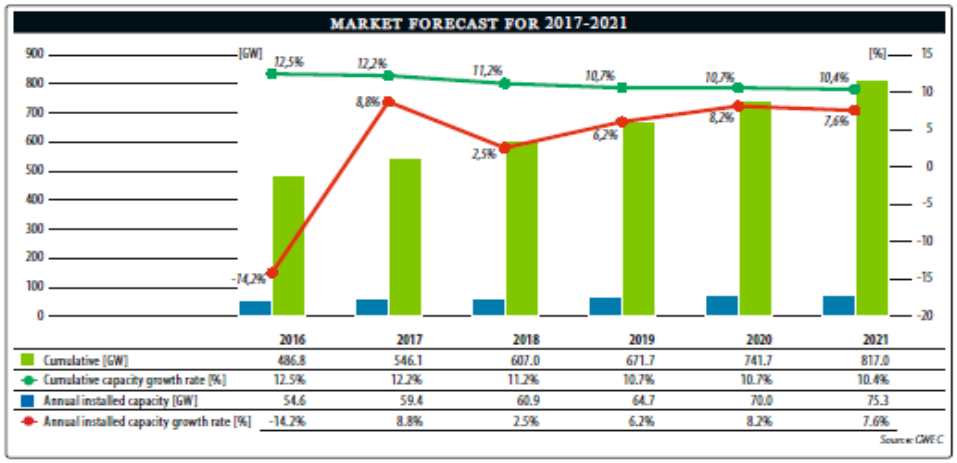


	2008	2009	2010	2011	2012	2013	2014	2015	2016
Asia	8,320	15,507	21,481	20,981	15,624	18,252	26,058	33,962	27,721
Africa & Middle East	96	251	153	8	131	240	934	953	418
Europe	8,851	10,660	10,466	10,393	12,862	12,524	12,988	13,831	13,926
Latin America	128	471	459	771	1,248	1,240	3,744	3,678	3,079
North America	8,969	11,008	6,208	8,137	14,807	3,112	7,382	10,829	9,359
Pacific Region	482	578	294	345	358	655	568	381	140
	28,854	**38,475**	**39,061**	**40,635**	**45,030**	**36,023**	**51,674**	**63,634**	**54,642**

Source: GWEC

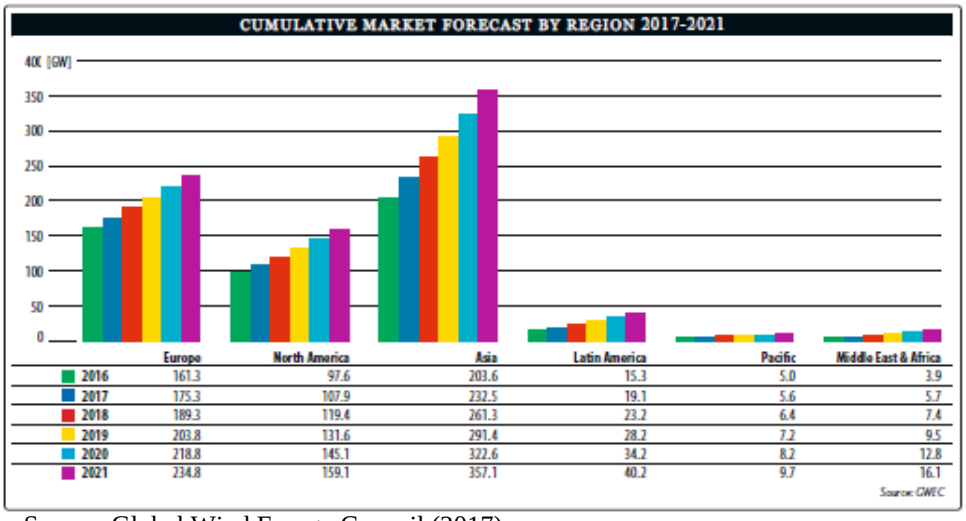
Source: Global Wind Energy Council (2017)

Appendix C.4: Wind market forecast, by region (MW)



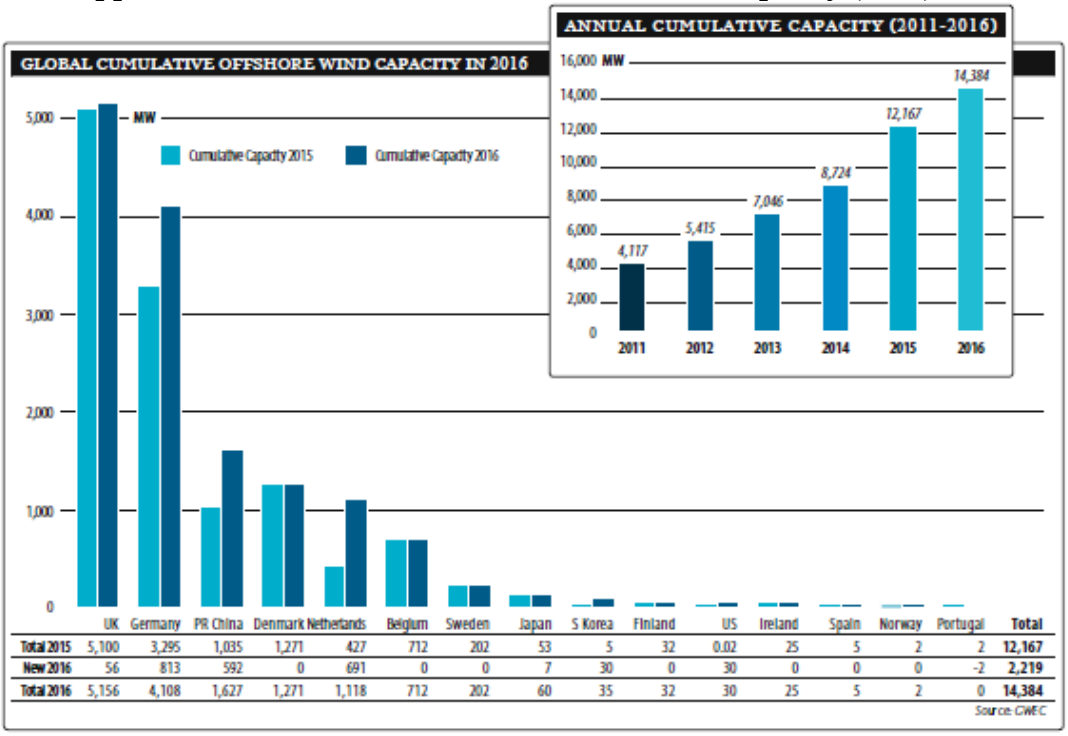
Source: Global Wind Energy Council (2017)

Appendix C.5: Installed Capacity Forecasts, by region, until 2021



Source: Global Wind Energy Council (2017)

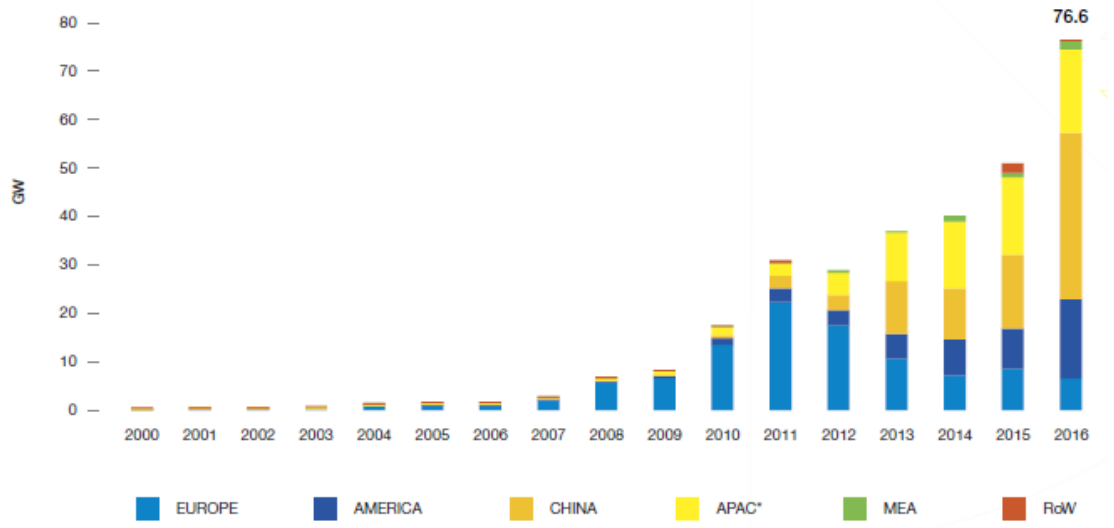
Appendix C.6: Global Offshore Wind Installed Capacity (MW)



Source: Global Wind Energy Council (2017)

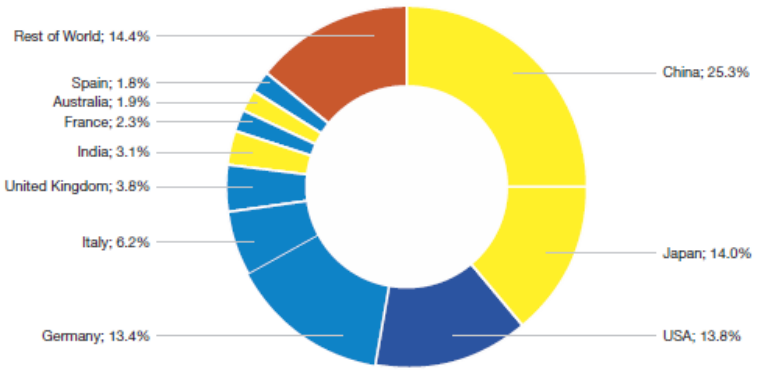
Appendix D - Global Solar Outlook

Appendix D.1: Global Solar Installed Capacity (GW)



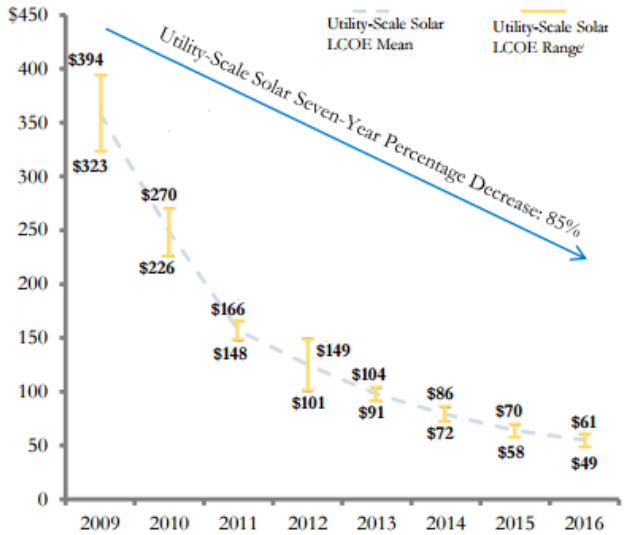
Source: Solar Power Europe (2017)

Appendix D.2: Solar Market Segmentation (% of global installed capacity)



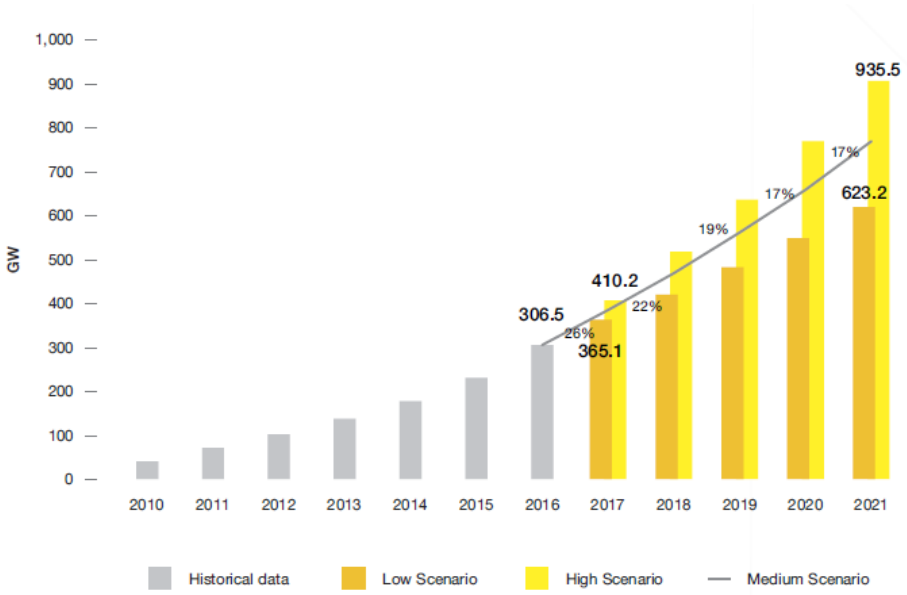
Source: Solar Power Europe (2017)

Appendix D.3: Global Solar LCOE Evolution ($/MWh)



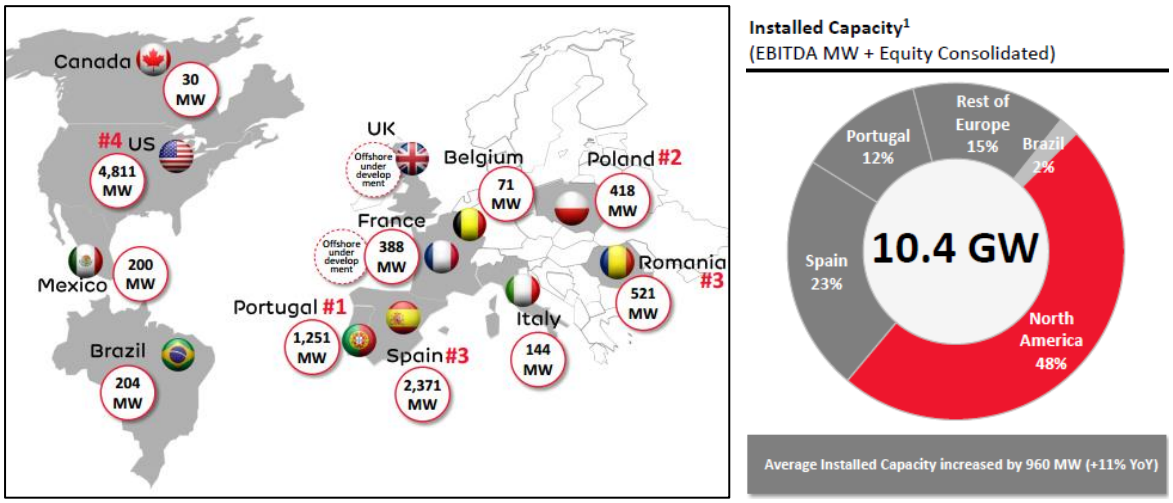
Source: Lazard Estimates, December 2016

Appendix D.4: Solar Market Evolution (GW of installed capacity)



Source: Solar Power Europe (2017)

Appendix E – Geographical Distribution of EDPR



Source: EDPR's Investors Day Presentation (2016)

Appendix F – Operational data detail for the term 2013-2016

Operating Data	2013	2014	2015	2016
Installed Capacity	**8 565**	**9 036**	**9 637**	**10 408**
Europe	4 796	4 938	5 141	5 163
North America	3 685	4 014	4 412	5 041
Brazil	84	84	84	204
Electricity Generated (GWh)	**19 187**	**19 763**	**21 388**	**24 473**
Europe	9 187	9 323	10 062	11 230
North America	9 769	10 204	11 103	12 576
Brazil	230	236	222	666
Load Factor (%)	**30%**	**30%**	**29%**	**30%**
Europe	28%	27%	26%	26%
North America	32%	33%	32%	33%
Brazil	31%	32%	30%	35%
Average Selling Price (€/MWh)	**62,6**	**58,9**	**64,0**	**60,5**
Europe (€/MWh)	89,3	80,3	83,0	81,5
North America ($/MWh)	48,4	50,8	51,0	46,4
Brazil (R$/MWh)	309,2	346,4	370,4	216,1
Employees	**890**	**919**	**1 018**	**1 083**
Europe	467	434	445	455
North America	298	316	383	422
Brazil	23	26	32	34
Holding	102	143	158	172

Appendix G – Regulatory framework on EDPR's geographies

Appendix G.1 – Renewable Energy Remuneration Schemes

The support mechanisms for renewable energy can be divided into three main categories; tariff-based instruments, quantity-based instruments and hybrid instruments. (IRENA, 2015)

Tariff-based instruments are awarded to energy producers in the form of investment subsidies or as payment for the energy generated, like feed-in tariffs (FITs) and feed-in premiums (FIPs). FIT is the most common remuneration scheme and provides a fixed incentive for energy generators, based on the quantity of energy fed into the electricity grid. The FIP consists of a pre-determined premium payment on top of the electricity market price.

Conversely, quantitative instruments are used to define minimum targets for renewable energy in the energy mix. An example of a quantity-based instrument is a Renewable Portfolio Standard (RPS), which sets out a minimum quota of renewable power generation for suppliers, often supplemented by renewable energy certificates (REC's).

Lastly, the hybrid instruments are support mechanisms that combine aspects from the previous two. Auctions are the most common hybrid instrument, in which price and quantity are determined through a competitive bidding process.

In this scheme, the government evaluates the offers submitted by energy generators (price per unit of energy), guaranteeing stable revenues for producers (similar to FIT), while ensuring that the renewable targets are achieved (like RPS).

Adapted from "Renewable Energy Policies and Auctions" IRENA (2015)

Appendix G.2 - Regulatory Framework across EDPR's geographies

Country	Short Description
US	• Sales can be agreed under PPAs (up to 20 years), Hedges or Merchant prices • Renewable Energy Credits (REC) subject to each state regulation • PTC (wind-projects): collected for 10-years since COD ($23/MWh in 2016). Phase out for projects that start construction post 2016 (no PTC post 2019 projects). Projects have 4 years to be placed in service in order to qualify. • ITC: 30% ITC for solar projects and new wind-projects can opt for ITC instead of PTC. Phase out for wind projects follows a similar scheme of the PTC. Phase out for solar projects (projects put in place after 2023 will qualify for just 10% ITC)
Canada	• Feed-in Tariff (Ontario) • Duration: 20-years
Spain	• Wind energy receives pool price and a premium per MW, if necessary, in order to achieve a target return established as the Spanish 10-year Bond yields plus 300bps • Premium calculation is based on standard assets (standard load factor, production and costs) • New assets are remunerated by a premium awarded through competitive auctions
Portugal	• Old regime (before 2006): feed-in Tariff inversely correlated with load factor throughout the year. Duration: 15 years (Feed-in tariff updated monthly with inflation) and possibility to obtain an extension in exchange of upfront payments or discounts on existing tariffs • New regime (after 2006): price defined through competitive tenders

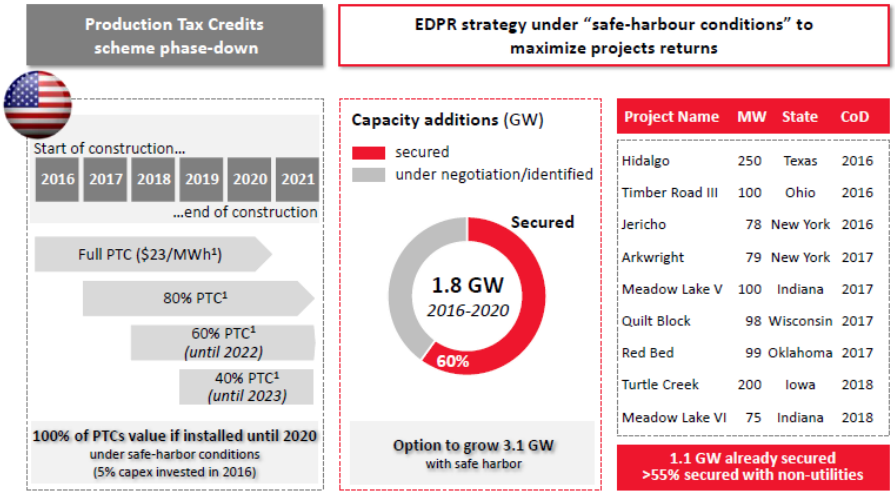
France	• Feed-in tariff for 15 years:
	  • First 10 years: receive €82/MWh; inflation type indexation
	  • Years 11-15: depending on load factor receive €82/MWh @2,400 hours decreasing to €28/MWh @3,600 hours; inflation type indexation
	  • New assets will be remunerated through a Contract-for-Difference scheme

United Kingdom	• Market price plus Green Certificate ("Renewable Obligation Certificate") system in place since 2002 • The GC system will be closed in 2017 and is being gradually replaced by a Contract-for-difference scheme awarded through competitive tenders

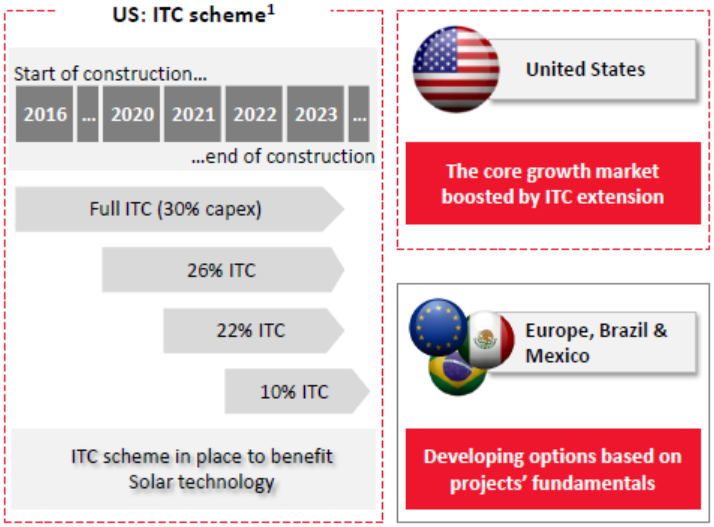
Country	Short Description
Belgium	• Market price plus green certificate (GC) system • Separate GC prices with cap and floor for Wallonia (€65/MWh-100/MWh) • System to adjust the number of GC per MWh according to a predefined profitability level • Option to negotiate long-term PPAs
Poland	• Electricity price can be established through bilateral contracts or selling to distributor at regulated price (PLN 171.14/MWh in 4Q 2016) • Wind receive 1 GC/MWh which can be traded in the market. Electric suppliers have a substitution fee for non compliance with GC obligation. In 2016, the substitution fee was set at PLN300/MWh • New assets will be remunerated by a Contract-for-Difference awarded through competitive auctions
Romania	• Wind assets (installed until 2013) receive 2 GC/MWh until 2017 and 1 GC/MWh after 2017 until completing 15 years. 1 out of the 2 GC earned until Mar-2017 can only be sold from Jan-2018 and until Dec-2020. Solar assets receive 6 GC/MWh for 15 years. 2 out of the 6 GC earned until Mar-2017 can only be sold after Apr-2017 and until Dec-2020. GC are tradable on market under a cap and floor system • Wind assets (installed after 2013) receive 1.5 GC/MWh until 2017 and after 0.75 GC/MWh until completing 15 years.
Italy	• Wind farms in operation prior to the end of 2012 are remunerated under a pool + premium scheme applicable for the first 15 years of operation • Wind farms commissioned from 2013 onwards: competitive tenders with a 20-year PPA
Brazil	• Old installed capacity under a feed-in tariff program ("PROINFA") • Since 2008, competitive auctions awarding 20-years PPAs

Source: EDPR 2016 Annual Report

Appendix H – PTC and ITC framework

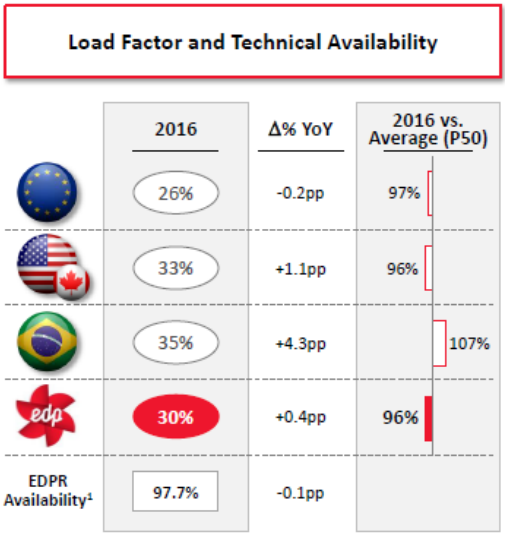


Source: EDPR's Investors Day Presentation (2016)



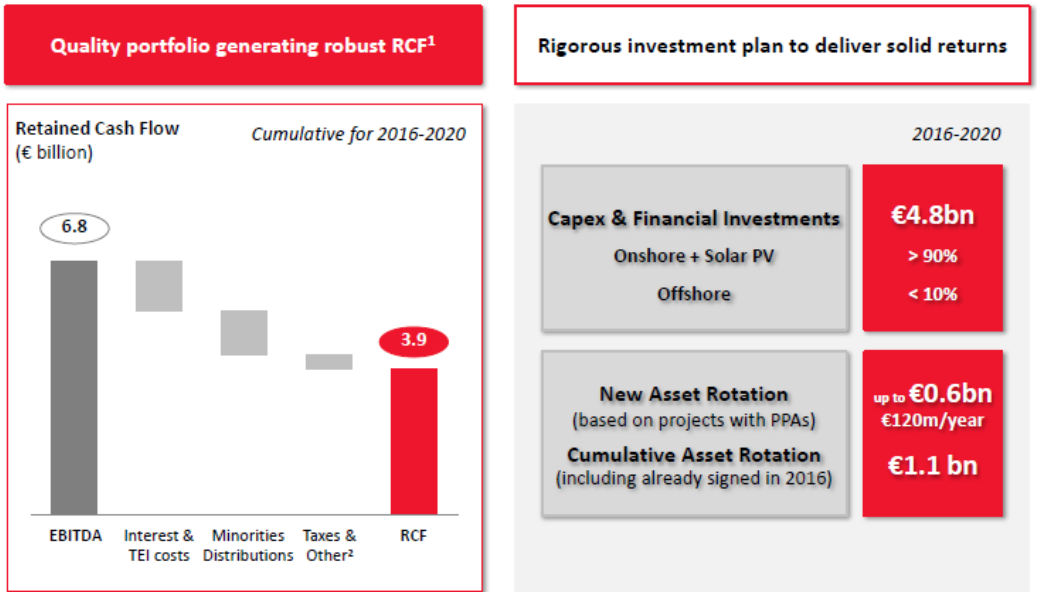
Source: EDPR's Investors Day Presentation (2016)

Appendix I – EDPR's load factor and availability



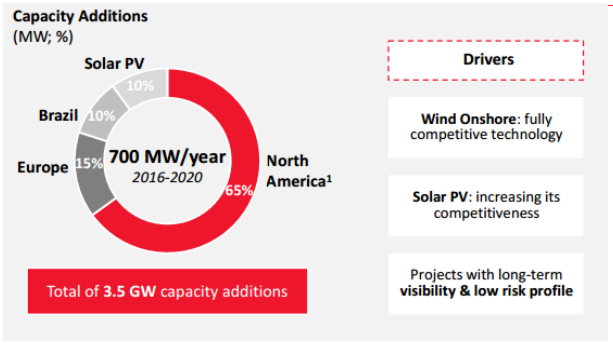
Source: EDPR 2016 Annual Report

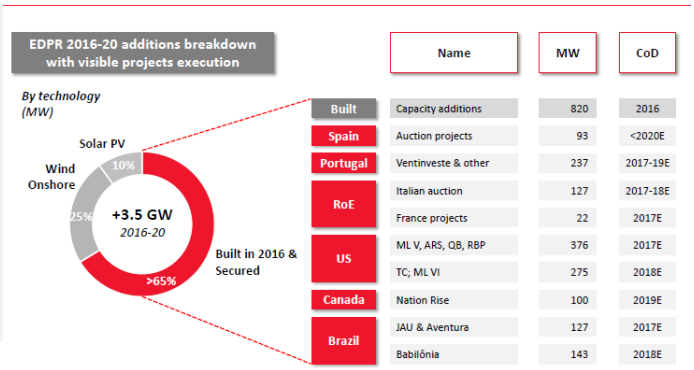
Appendix J – Self-Funding Business Model description



Source: EDPR's Investors Day Presentation (2016)

Appendix K – Installed capacity additions for the term 2016-2020 -EDPR Plans





Source: EDPR's Investors Day Presentation (2016)

Appendix L – Individual Income Statements

Europe

SPAIN (€m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F
Installed Capacity (MW)	2 310	2 194	2 194	2 194	2 194	2194	2194	2287	2287
Revenues	**445,0**	**438,3**	**344,8**	**375,4**	**348,6**	**370,7**	**376,0**	**398,0**	**404,6**
Operating costs and Other operating income	**(98,5)**	**(136,3)**	**(118,1)**	**(126,0)**	**(122,6)**	**(130,3)**	**(132,2)**	**(139,9)**	**(142,2)**
Other operating income						18,3	18,6	19,6	20,0
Operating costs						(148,6)	(150,7)	(159,6)	(162,2)
Supplies and services						(85,7)	(86,9)	(92,0)	(93,5)
Personnel costs and employee benefits						(16,0)	(16,2)	(17,2)	(17,5)
Other operating costs						(47,0)	(47,6)	(50,4)	(51,2)
EBITDA	**346,5**	**302,0**	**226,7**	**249,4**	**226,0**	**240,4**	**243,8**	**258,1**	**262,3**
EBITDA / Revenues	78%	69%	66%	66%	65%	65%	65%	65%	65%
Depreciation, amortisation and provisions	(180,1)	(141,7)	(133,3)	(132,6)	(132,6)	(113,3)	(114,9)	(121,6)	(123,6)
EBIT	**166,4**	**160,2**	**93,4**	**116,8**	**93,5**	**127,1**	**128,9**	**136,4**	**138,7**

PORTUGAL (€m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F
Installed Capacity (MW)	615	619	624	1 247	1 251	1254	1254	1491	1491
Revenues	**149,3**	**160,5**	**165,7**	**190,2**	**267,7**	**232,6**	**235,8**	**284,5**	**289,1**
Operating costs and Other operating income	**(30,7)**	**(31,1)**	**(31,4)**	**87,6**	**(44,5)**	**(43,9)**	**(44,5)**	**(53,7)**	**(54,5)**
Other operating income						6,2	6,2	7,5	7,7
Operating costs						(50,0)	(50,7)	(61,2)	(62,2)
Supplies and services						(28,8)	(29,2)	(35,3)	(35,8)
Personnel costs and employee benefits						(5,4)	(5,5)	(6,6)	(6,7)
Other operating costs						(15,8)	(16,0)	(19,3)	(19,6)
EBITDA	**118,7**	**129,4**	**134,4**	**277,8**	**223,2**	**188,7**	**191,3**	**230,9**	**234,6**
EBITDA / Revenues	79%	81%	81%	146%	83%	81%	81%	81%	81%
Depreciation, amortisation and provisions	(26,3)	(25,5)	(27,3)	(43,5)	(72,2)	(48,3)	(49,0)	(59,1)	(60,0)
EBIT	**92,4**	**103,9**	**107,1**	**234,3**	**151,0**	**140,4**	**142,4**	**171,8**	**174,6**

REST OF EUROPE (€m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F
Installed Capacity (MW)	951	1 353	1 413	1 523	1 541	1563	1690	1690	1690
Revenues	**183,0**	**217,4**	**233,8**	**272,0**	**268,1**	**280,5**	**308,6**	**314,3**	**320,3**
Operating costs and Other operating income	**(10,9)**	**(56,5)**	**(65,0)**	**(93,0)**	**(73,7)**	**(77,1)**	**(84,8)**	**(86,4)**	**(88,0)**
Other operating income						10,8	11,9	12,1	12,4
Operating costs						(87,9)	(96,7)	(98,5)	(100,4)
Supplies and services						(50,7)	(55,7)	(56,8)	(57,8)
Personnel costs and employee benefits						(9,5)	(10,4)	(10,6)	(10,8)
Other operating costs						(27,8)	(30,5)	(31,1)	(31,7)
EBITDA	**172,1**	**160,9**	**168,8**	**179,0**	**194,4**	**203,4**	**223,8**	**227,9**	**232,3**
EBITDA / Revenues	94%	74%	72%	66%	73%	73%	73%	73%	73%
Depreciation, amortisation and provisions	(48,6)	(62,9)	(103,9)	(108,7)	(98,2)	(89,5)	(98,5)	(100,3)	(102,2)
EBIT	**123,5**	**98,0**	**64,9**	**70,3**	**96,2**	**113,9**	**125,3**	**127,6**	**130,0**

North America

Income Statement (US$m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F
Installed Capacity (EBITDA MW)	3 637	3 506	3 835	4 233	4 861	5237	5512	5938	6638
Electricity sales and other	456,8	461,9	507,6	553,0	561,9	**661,9**	**713,2**	**788,5**	**902,0**
Income from Institutional Partnerships	163,6	166,2	164,2	219,2	218,7	242,7	262,1	285,6	328,7
Revenues	**620,4**	**628,0**	**671,8**	**772,1**	**780,5**	**904,6**	**975,3**	**1074,1**	**1230,7**
Other operating income	25,4	39,9	22,6	21,8	25,7	28,6	37,0	35,5	40,6
Operating costs	(237,7)	(230,3)	(217,1)	(281,2)	(251,1)	**(318,0)**	**(318,0)**	**(342,6)**	**(378,8)**
Supplies and services	(149,6)	(143,4)	(144,5)	(149,0)	(154,4)	(194,2)	(194,2)	(209,3)	(231,4)
Personnel costs	(37,3)	(38,2)	(37,0)	(44,6)	(48,6)	(53,5)	(53,5)	(57,7)	(63,7)
Other operating costs	(50,8)	(48,7)	(35,6)	(87,6)	(48,2)	(70,3)	(70,3)	(75,7)	(83,7)
EBITDA	**408,1**	**437,6**	**477,4**	**512,7**	**555,1**	**615,2**	**694,3**	**766,9**	**892,5**
EBITDA / Revenues	66%	70%	71%	66%	71%	68%	71%	71%	73%
Provisions	-	(1,55)	-	0,21	0,1	-	-	-	-
Depreciation and amortisation	(299,9)	(287,9)	(292,1)	(319,6)	(343,1)	(327,8)	(353,2)	(390,5)	(446,7)
Amortisation of deferred income (government grants)	18,1	23,1	23,1	23,1	23,1	23,1	23,1	23,1	23,1
EBIT	**126,3**	**171,2**	**208,4**	**216,4**	**235,2**	**310,5**	**364,2**	**399,5**	**468,9**

USD/EUR exchange rate for the period	1,28	1,33	1,33	1,11	1,11	**1,13**	**1,15**	**1,20**	**1,20**

Brazil

Income Statement (R$m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F
Installed Capacity (EBITDA MW)	84	84	84	84	204	**204**	**331**	**474**	**474**
Revenues	**62,1**	**69,7**	**78,5**	**79,1**	**132,6**	**169,6**	**287,1**	**429,6**	**448,7**
Other operating income	-	-	0,0	2,3	5,9	2,5	5,1	9,2	11,5
Operating costs	(20,6)	(28,2)	(30,8)	(35,9)	(41,8)	(66,1)	(111,9)	(167,4)	(174,9)
Supplies and services	(15,5)	(22,5)	(19,1)	(20,5)	(28,3)	(44,0)	(74,5)	(111,5)	(116,5)
Personnel costs	(3,1)	(3,3)	(4,2)	(5,8)	(8,0)	(9,6)	(16,2)	(24,3)	(25,4)
Other operating costs	(2,0)	(2,5)	(7,5)	(9,6)	(5,6)	(12,5)	(21,1)	(31,6)	(33,0)
EBITDA	**41,5**	**41,4**	**47,7**	**45,5**	**96,7**	**106,0**	**180,3**	**271,3**	**285,3**
EBITDA / Revenues	67,0%	59,0%	61,0%	58,0%	73,0%	62,5%	62,8%	63,2%	63,6%
Provisions	-	(0,1)	-	-	-	-	-	-	-
Depreciation and amortisation	(15,9)	(18,4)	(18,5)	(18,9)	(31,0)	**(33,4)**	**(56,5)**	**(84,5)**	**(88,3)**
Amortisation of deferred income (government grants)	-	-	0,1	0,1	0,2	-	-	-	-
EBIT	**25,7**	**23,0**	**29,3**	**26,7**	**65,9**	**72,6**	**123,8**	**186,8**	**197,0**

R$/EUR exchange rate for period	2,7	3,26	3,22	4,31	3,43	**3,76**	**3,91**	**4,24**	**4,16**

Appendix M – Consolidated Income Statement

Consolidated Income Statement (€m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F
Electricity sales and other	1 157,80	1 191,25	1 153,13	1 349,61	1 453,21	1 514,59	1 613,99	1 755,21	1 873,45
Income from institutional partnerships	127,35	125,10	123,58	197,44	197,54	214,76	227,91	237,99	273,92
Revenues	**1 285,15**	**1 316,35**	**1 276,71**	**1 547,05**	**1 650,76**	**1 729,35**	**1 841,91**	**1 993,20**	**2 147,36**
Other operating income	63,12	41,36	45,67	161,56	53,75	61,26	70,17	71,01	76,58
Operating costs	**-410,68**	**-437,20**	**-419,18**	**-566,31**	**-533,56**	**-585,52**	**-603,29**	**-644,27**	**-682,48**
Supplies and services	-261,81	-255,17	-256,65	-292,73	-304,74	-348,71	-359,77	-384,68	-407,96
Personnel costs and employee benefits	-62,66	-66,47	-66,09	-84,27	-93,89	-80,79	-82,82	-88,19	-94,23
Other operating costs	-86,21	-115,56	-96,44	-189,32	-134,93	-156,02	-160,70	-171,41	-180,29
EBITDA	**937,58**	**920,51**	**903,20**	**1 142,30**	**1 170,95**	**1 205,09**	**1 308,79**	**1 419,93**	**1 541,47**
EBITDA Margin	73%	70%	71%	74%	71%	70%	71%	71%	72%
Provisions	0,00	-1,29	-0,02	0,17	-4,71	0,00	0,00	0,00	0,00
Depreciation and amortisation	-502,71	-464,67	-499,78	-587,47	-624,50	-550,05	-583,94	-626,36	-679,35
Amortisation of deferred income (government grants)	15,23	18,47	19,01	22,84	22,21	20,44	20,09	19,25	19,25
Depreciation, Amortisation and Provisions	-487,48	-447,49	-480,79	-564,46	-606,99	**-529,61**	**-563,85**	**-607,11**	**-660,10**
EBIT	**450,11**	**473,02**	**422,41**	**577,84**	**563,96**	**675,49**	**744,94**	**812,82**	**881,37**
Financial income	76,95	108,38	101,53	61,48	54,24	74,92	64,47	66,40	69,06
Financial expense	-351,80	-370,09	-351,41	-346,96	-404,34	-318,57	-322,72	-325,81	-331,57
Share of profit from associates	6,83	14,73	21,76	-1,52	-0,19	-0,22	-0,24	-0,27	-0,29
Pre-tax profit	**182,09**	**226,03**	**194,29**	**290,84**	**213,68**	**431,62**	**486,44**	**553,14**	**618,58**
Income taxes	-46,04	-56,91	-16,40	-45,35	-37,57	-107,90	-121,61	-138,28	-154,64
Profit of the period	**136,050**	**169,126**	**177,887**	**245,491**	**176,112**	**323,713**	**364,831**	**414,852**	**463,932**
Non-controlling interests	9,784	34,010	51,880	78,877	119,784	138,193	151,518	164,844	178,170
Equity holders of EDPR	**126,266**	**135,116**	**126,007**	**166,614**	**56,328**	**185,521**	**213,313**	**250,008**	**285,762**
EPS basic and diluted (euros)	**0,14**	**0,15**	**0,14**	**0,19**	**0,06**	**0,21**	**0,24**	**0,29**	**0,33**

Appendix N– Consolidated Balance Sheet

Consolidated Balance Sheet (€m)									
Assets (€m)	**2012**	**2013**	**2014**	**2015**	**2016**	**2017 F**	**2018 F**	**2019 F**	**2020 F**
Property, plant and equipment	10241,035	10 095,459	11 012,976	12 612,452	13 437,427	13 923,043	14 463,337	15 070,396	15 732,963
Intangible assets	22,837	87,933	117,704	172,128	210,189	216,658	224,332	233,066	242,323
Goodwill	1259,704	1 213,500	1 287,716	1 362,017	1 385,493	1 385,493	1 385,493	1 385,493	1 385,493
Investments in joint ventures and and associates	349,176	338,646	369,791	333,800	340,120	340,120	340,120	340,120	340,120
Available for Sale Financial Assets	9,407	7,434	6,336	6,257	8,186	8,186	8,186	8,186	8,186
Deferred tax assets	88,42	109,213	46,488	47,088	75,840	75,840	75,840	75,840	75,840
Debtors and other assets from commercial activities	55,153	53,160	41,199	39,573	83,536	61,863	68,675	82,424	81,404
Other Debtors and other assets	263,398	320,435	396,980	75,655	59,845	75,729	80,700	87,761	93,672
Collateral deposits associated to financial debt	34,988	72,206	65,597	65,299	28,974	23,346	40,819	36,444	44,318
Total Non-Current Assets	**12 324,118**	**12 297,986**	**13 344,787**	**14 714,269**	**15 629,610**	**16 110,279**	**16 687,501**	**17 319,729**	**18 004,318**
Inventories	16,145	15,425	21,320	22,762	23,903	26,153	27,213	29,591	31,841
Debtors and other assets from commercial activities	277,965	246,862	182,709	259,958	280,539	274,702	305,064	329,646	348,581
Other Debtors and other assets	328,185	133,174	294,646	66,033	102,491	106,820	113,830	123,790	132,129
Current tax assets	55,079	103,392	89,093	118,658	77,635	110,366	115,246	115,666	131,248
Collateral deposits associated to financial debt	7,416	6,054	15,141	8,054	17,072	155,070	38,115	60,712	7,759
Cash and cash equivalents	221,978	255,462	368,623	436,732	603,219	519,073	534,591	556,079	577,054
Assets held for sale	-	-	-	109,691	-	0,000	0,000	0,000	0,000
Total Current Assets	**906,768**	**760,369**	**971,532**	**1 021,888**	**1 104,859**	**1 192,184**	**1 134,059**	**1 215,484**	**1 228,612**
Total Assets	**13 230,886**	**13 058,355**	**14 316,319**	**15 736,157**	**16 734,469**	**17 302,462**	**17 821,561**	**18 535,213**	**19 232,931**

Equity (€m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F
Share Capital	4 361,541	4 361,541	4 361,541	4 361,541	4 361,541	4 361,541	4 361,541	4 361,541	4 361,541
Share Premium	552,035	552,035	552,035	552,035	552,035	552,035	552,035	552,035	552,035
Reserves	(74,385)	(69,605)	(64,256)	(36,938)	(19,652)	(1,100)	20,231	45,232	73,808
Other reserves and retained earnings	458,202	692,179	806,319	927,748	1 174,710	1 179,025	1 292,665	1 422,145	1 575,712
Consolidated net profit attrib. to equity holders	126,266	135,116	126,007	166,614	56,328	185,521	213,313	250,008	285,762
Total Equity Attributable to Equity Holders	**5 423,659**	**5 671,266**	**5 781,646**	**5 971,000**	**6 124,962**	**6 277,022**	**6 439,786**	**6 630,961**	**6 848,859**
Non-controlling interests	324,993	418,057	549,113	863,109	1 448,052	1 586,245	1 737,763	1 902,607	2 080,776
Total Equity	**5 748,652**	**6 089,323**	**6 330,759**	**6 834,109**	**7 573,014**	**7 863,266**	**8 177,549**	**8 533,568**	**8 929,635**

Liabilities (€m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F
Medium/Long term financial debt	3 628,765	3 520,859	3 716,434	3 832,413	3 292,591	1 610,506	3 035,987	2 975,759	3 308,276
Provisions	59,898	64,536	98,911	120,514	269,531	269,531	269,531	269,531	269,531
Deferred Tax liabilities	361,291	367,184	270,392	316,497	365,086	365,086	365,086	365,086	365,086
Institutional partnerships in US wind farms	1 679,753	1 508,495	1 801,963	1 956,217	2 339,425	2 343,487	2 478,659	2 670,921	3 007,708
Trade and other payables from commercial activities	376,503	418,140	464,367	466,296	463,908	572,420	570,449	608,998	654,135
Other liabilities and other payables	254,178	238,912	431,435	712,505	1 154,437	1 154,437	1 154,437	1 154,437	1 154,437
Total Non-Current Liabilities	**6 360,388**	**6 118,126**	**6 783,502**	**7 404,442**	**7 884,978**	**6 315,467**	**7 874,149**	**8 044,732**	**8 759,173**
Short term financial debt	209,505	145,018	185,489	387,857	113,478	1 839,961	447,559	569,384	84,318
Provisions	-	-	-	0,919	5,531	5,531	5,531	5,531	5,531
Trade and other payables from commercial activities	702,319	474,208	687,904	787,357	810,131	933,208	962,305	1 027,006	1 090,718
Other liabilities and other payables	157,752	134,538	271,961	201,782	258,891	258,891	258,891	258,891	258,891
Current tax liabilities	52,270	97,142	56,704	64,285	88,446	86,138	95,577	96,101	104,664
Liabilities held for sale	-	-	-	55,406	-	-	-	-	-
Total Current Liabilities	**1 121,846**	**850,906**	**1 202,058**	**1 497,606**	**1 276,477**	**3 123,729**	**1 769,862**	**1 956,913**	**1 544,122**
Total Liabilities	**7 482,234**	**6 969,032**	**7 985,560**	**8 902,048**	**9 161,455**	**9 439,196**	**9 644,012**	**10 001,645**	**10 303,296**
Total Equity and Liabilities	**13 230,886**	**13 058,355**	**14 316,319**	**15 736,157**	**16 734,469**	**17 302,462**	**17 821,561**	**18 535,213**	**19 232,931**

Appendix O – Revenues Estimation

Sales(m€)/MW	2014	2015	2016	2017E	2018E	2019E	2020E
Spain	0,16	0,17	0,16	0,17	0,17	0,17	0,18
Portugal	0,27	0,15	0,21	0,19	0,19	0,19	0,19
RoE	0,17	0,18	0,17	0,18	0,18	0,19	0,19
NA	0,10	0,12	0,10	0,11	0,11	0,11	0,11
Brazil	0,29	0,22	0,19	0,22	0,22	0,21	0,23
Inst. Partnerships Revenue per MW (USA)	**2014**	**2015**	**2016**	**2017E**	**2018E**	**2019E**	**2020E**
$m	0,04	0,05	0,05	0,05	0,05	0,05	0,05

Appendix P – Estimated Installed Capacity (MW) Additions

Installed Capacity (MW)	2008	2009	2010	2011	2012	2013	2014	2015	Δ 2016	2016	Δ 2017	2017 F	Δ 2018	2018 F	Δ 2019	2019 F	Δ 2020	2020 F	Total Additions 16-20	%	CAGR 16-20
Spain	1 692	1 861	2 050	2 201	2 310	2 194	2 194	2 194	-	2 194		2 194		2 194	93	2 287		2 287	93		1%
Portugal	553	595	599	613	615	619	624	1 247	4	1 251	3	1 254		1 254	237	1 491		1 491	244		4%
France	185	220	284	306	314	322	340	364	24	388	22	410		410		410		410	46		1%
Belgium	47	57	57	57	57	71	71	71	-	71		71		71		71		71	-		0%
Poland		120	120	190	190	370	392	468	(50)	418		418		418		418		418	(50)		0%
Romania			90	285	350	521	521	521	-	521		521		521		521		521	-		0%
Italy	-	-	-	-	40	70	90	100	44	144		144	127	271		271		271	171		17%
Europe	**2 477**	**2 853**	**3 200**	**3 652**	**3 876**	**4 167**	**4 231**	**4 965**	**22**	**4 986**	25	**5 011**	127	**5 138**	330	**5 468**	-	**5 468**	**504**	**15%**	**2%**
US	1 923	2 624	3 224	3 422	3 637	3 476	3 805	4 203	429	4 631	376	5 007	275	5 282	326	5 608	700	6 308	2 105		8%
Canada	-	-	-	-	-	30	30	30	-	30		30		30	100	130		130	100		44%
Mexico	-	-	-	-	-	-	-	-	200	200		200		200		200		200	200		0%
North America	**1 923**	**2 624**	**3 224**	**3 422**	**3 637**	**3 506**	**3 835**	**4 233**	**629**	**4 861**	376	**5 237**	275	**5 512**	426	**5 938**	700	**6 638**	**2 405**	**73%**	**8%**
Brazil		**14**	**14**	**84**	**84**	**84**	**84**	**84**	**120**	**204**	-	**204**	127	**331**	143	**474**	-	**474**	**390**	**12%**	**23%**
Total EBITDA MW	**4 400**	**5 491**	**6 437**	**7 157**	**7 597**	**7 756**	**8 149**	**9 281**	**770**	**10 052**	401	**10 453**	529	**10 982**	899	**11 880**	700	**12 580**	**3 299**	**100%**	**6%**
Equity Consolidated (MW)	**-**	**85**	**239**	**326**	**390**	**808**	**886**	**356**		**356**		**356**		**356**		**356**		**356**	-		0%
ENEOP - Eólicas de Portugal	-	85	239	326	390	455	533	-		-	-	-	-	-	-	-	-	-	-		-
Spain	-	-	-	-	-	174	174	177		177	-	177	-	177	-	177	-	177	-		0%
United States	-	-	-	-	-	179	179	179		179	-	179	-	179	-	179	-	179	-		0%
Total EBITDA MW + Eq. Consolidated	**4 400**	**5 576**	**6 676**	**7 483**	**7 987**	**8 565**	**9 036**	**9 637**	**770**	**10 408**	401	**10 809**	529	**11 338**	899	**12 236**	700	**12 936**	**3 299**		**6%**

Appendix Q – Consolidated Working Capital

WORKING CAPITAL (€m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F
Current Assets									
Debtors and other assets from commercial activities	278,0	246,9	182,7	260,0	280,5	274,7	305,1	329,6	348,6
Inventories	16,1	15,4	21,3	22,8	23,9	26,2	27,2	29,6	31,8
Current Tax Assets	55,1	103,4	89,1	118,7	77,6	110,4	115,2	115,7	131,2
Total	**349,2**	**365,7**	**293,1**	**401,4**	**382,1**	**411,2**	**447,5**	**474,9**	**511,7**
Current Liabilities									
Trade and other payables from commercial activities	702,3	474,2	687,9	787,4	810,1	933,2	962,3	1 027,0	1 090,7
Current Tax Liabilities	52,3	97,1	56,7	64,3	88,4	86,1	95,6	96,1	104,7
Total	**754,6**	**571,4**	**744,6**	**851,6**	**898,6**	**1019,3**	**1057,9**	**1123,1**	**1195,4**
Net Working Capital	**-405,4**	**-205,7**	**-451,5**	**-450,3**	**-516,5**	**-608,1**	**-610,4**	**-648,2**	**-683,7**
% sales	-31,5%	-15,6%	-35,4%	-29,1%	-31,3%	-35,2%	-33,1%	-32,5%	-31,8%
Increase / Decrease in NWC		**199,7**	**(245,8)**	**1,2**	**(66,2)**	**(91,6)**	**(2,2)**	**(37,8)**	**(35,5)**
Assumptions									
Days Sales Outstanding (Receivables)	88	76	58	70	70	66	69	69	68
Inventory to Sales Ratio	1,39%	1,29%	1,85%	1,69%	1,64%	1,7%	1,7%	1,7%	1,7%
Current Tax Assets (% Sales)	4,76%	8,68%	7,73%	8,79%	5,34%	7,3%	7,1%	6,6%	7,0%
Accounts Payable (Days)	979	678	978	982	970	977	976	974	976
Current Tax Liabilities (% of sales)	4,5%	8,2%	4,9%	4,8%	6,1%	5,7%	5,9%	5,5%	5,6%

Appendix R – Debt Map

DEBT MAP	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F
Short term financial debt	**209,505**	**145,018**	**185,489**	**387,857**	**113,478**	**1839,961**	**447,559**	**569,384**	**84,318**
Old Medium/Long term financial debt	3628,765	3520,859	3716,434	3832,413	3292,591	1452,630	1162,947	2466,603	2891,441
New Medium/Long term Debt	-	-	-	-	-	157,876	1873,040	509,156	416,835
Total M/L term financial debt	**3628,77**	**3520,86**	**3716,43**	**3832,41**	**3292,59**	**1610,51**	**3035,99**	**2975,76**	**3308,28**
Total Financial Debt	**3838,27**	**3665,88**	**3901,92**	**4220,27**	**3406,07**	**3450,47**	**3483,55**	**3545,14**	**3392,59**
(Debt payments)						113,478	1839,961	447,559	569,384
Net Debt	**3616,29**	**3410,42**	**3533,30**	**3783,54**	**2802,85**	**2931,39**	**2948,96**	**2989,06**	**2815,54**

Appendix S – Synthetic rating estimation

Companies with market cap > $ 5 billion (Data as of January 2017)

If interest coverage ratio is		Rating is	Spread is	Probability of default
>	≤ to			
8.50	100000	Aaa/AAA	0.60%	0,01%
6.5	8.499999	Aa2/AA	0.80%	0,28%
5.5	6.499999	A1/A+	1.00%	0,4%
4.25	5.499999	A2/A	1.10%	0,5%
3	4.249999	A3/A-	1.25%	1,4%
2.5	2.999999	Baa2/BBB	1.60%	2,3%
2.25	2.49999	Ba1/BB+	2.50%	12,2%
2	2.2499999	Ba2/BB	3.00%	12,2%
1.75	1.999999	B1/B+	3.75%	19,3%
1.5	1.749999	B2/B	4.50%	26,4%
1.25	1.499999	B3/B-	5.50%	32,5%
0.8	1.249999	Caa/CCC	6.50%	46,6%
0.65	0.799999	Ca2/CC	8.00%	65,0%
0.2	0.649999	C2/C	10.50%	80,0%
-100000	0.199999	D2/D	14.00%	100,0%

http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ratings.htm

Appendix T– FCFF valuation

Spain

SPAIN (€m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F	2021F
EBIT	**166,4**	**160,2**	**93,4**	**116,8**	**93,5**	**127,1**	**128,9**	**136,4**	**138,7**	
tax rate (%)	25,0%	25,0%	25,0%	25,0%	25,0%	25,0%	25,0%	25,0%	25,0%	
NOPLAT	**124,8**	**120,2**	**70,0**	**87,6**	**70,1**	**95,3**	**96,7**	**102,3**	**104,0**	
D&A	180,1	141,7	133,3	132,6	132,6	113,3	114,9	121,6	123,6	
Operational Cash-flow	**304,9**	**261,9**	**203,3**	**220,2**	**202,7**	**208,6**	**211,6**	**223,9**	**227,6**	
Changes in Working Capital		71,90	-53,46	12,68	-8,3	-12,76	5,76	-4,84	0,62	
CAPEX		4,9	4,6	4,5	11,1	6,7	6,7	7,0	7,0	
Free Cash Flow to the Firm		**185,1**	**252,2**	**203,0**	**199,9**	**214,6**	**199,1**	**221,8**	**220,0**	**105,8**
WACC							6,1%	6,1%	6,1%	
Discount Factor							0,943	0,889	0,838	
Discounted Cash Flows							**187,7**	**197,1**	**184,3**	
Continuity Value									1981,0	
Discounted Cont. Value									**1659,1**	
Enterprise Value						**2228,05**				

Portugal

PORTUGAL (€m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F	2021 F
EBIT	**92,4**	**103,9**	**107,1**	**234,3**	**151,0**	**140,4**	**142,4**	**171,8**	**174,6**	
tax rate (%)	27,5%	27,5%	27,5%	27,5%	27,5%	27,5%	27,5%	27,5%	27,5%	
NOPLAT	**67,0**	**75,4**	**77,6**	**169,9**	**109,5**	**101,8**	**103,2**	**124,5**	**126,6**	
+ D&A	26,3	25,5	27,3	43,5	72,2	48,3	49,0	59,1	60,0	
Operational Cash-flow	**93,3**	**100,9**	**104,9**	**213,4**	**181,7**	**150,1**	**152,2**	**183,6**	**186,6**	
Changes in Working Capital		22,03	-33,52	3,25	-28,4	1,99	3,64	-14,39	0,48	
CAPEX		10,3	8,2	15,8	29,0	20,5	20,5	24,4	24,4	
Free Cash Flow to the Firm		**68,5**	**130,2**	**194,3**	**181,1**	**127,6**	**128,0**	**173,6**	**161,7**	**128,2**
WACC							6,5%	6,5%	6,5%	
Discount Factor							0,939	0,881	0,827	
Discounted Cash Flows							**120,2**	**153,0**	**133,7**	
Continuity Value									2211,7	
Discounted Cont. Value									**1828,6**	
Enterprise Value						**2235,40**				

Rest of Europe

Rest of Europe (€m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F	2021F
EBIT	**123,5**	**98,0**	**64,9**	**70,3**	**96,2**	**113,9**	**125,3**	**127,6**	**130,0**	
tax rate (%)	22,3%	22,3%	22,3%	22,3%	22,3%	22,3%	22,3%	22,3%	22,3%	
NOPLAT	**95,9**	**76,1**	**50,4**	**54,6**	**74,7**	**88,4**	**97,3**	**99,1**	**101,0**	
+ D&A	48,6	62,9	103,9	108,7	98,2	89,5	98,5	100,3	102,2	
Operational Cash-flow	**144,5**	**139,0**	**154,3**	**163,3**	**172,9**	**178,0**	**195,8**	**199,4**	**203,2**	
Changes in Working Capital		23,75	-48,69	3,49	-4,7	-14,77	-3,62	0,06	0,23	
CAPEX						142,5	154,1	154,1	154,1	
Free Cash Flow to the Firm		**115,2**	**203,0**	**159,8**	**177,6**	**50,2**	**45,3**	**45,2**	**48,9**	**102,5**
WACC							5,6%	5,6%	5,6%	
Discount Factor							0,947	0,896	0,849	
Discounted Cash Flows							**42,9**	**40,5**	**41,5**	
Continuity Value									2101,5	
Discounted Cont. Value									**1783,2**	
Enterprise Value						**1908,09**				

North America

North America (US$m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F	2021 F
EBIT	**126,3**	**171,2**	**208,4**	**216,4**	**235,2**	**310,5**	**364,2**	**399,5**	**468,9**	
tax rate (%)	39,4%	39,4%	39,4%	39,4%	39,4%	39,4%	39,4%	39,4%	39,4%	
NOPLAT	**76,5**	**103,7**	**126,2**	**131,1**	**142,5**	**188,1**	**220,6**	**242,0**	**284,0**	
D&A	299,9	287,9	292,1	319,6	343,1	327,8	353,2	390,5	446,7	
Operational Cash-flow	**376,4**	**391,6**	**418,3**	**450,7**	**485,6**	**515,9**	**573,8**	**632,5**	**730,7**	
Changes in Working Capital		97,57	-139,45	12,85	-19,5	-73,87	-5,11	-26,12	-42,53	
CAPEX Investment		282,5	722,2	717,0	933,4	921,7	987,2	1109,7	1240,5	
Free Cash Flow to the Firm		**11,6**	**-164,5**	**-279,2**	**-428,4**	**-331,9**	**-408,3**	**-451,0**	**-467,3**	**291,0**
WACC							5,3%	5,3%	5,3%	
Discount Factor							0,950	0,902	0,856	
Discounted Cash Flows							**-387,7**	**-406,7**	**-400,0**	
Continuity Value									9341,3	
Discounted Cont. Value									**7996,8**	
Enterprise Value (US$m)						**6802,47**				
Expected USD/EUR exchange rate 2017						1,13				
Enterprise Value (€m)						**6019,89**				

Brazil

Brazil (R$m)	2012	2013	2014	2015	2016	2017 F	2018 F	2019 F	2020 F	2021F
EBIT	**25,7**	**23,0**	**29,3**	**26,7**	**65,9**	**72,6**	**123,8**	**186,8**	**197,0**	
tax rate (%)	34,0%	34,0%	34,0%	34,0%	34,0%	34,0%	34,0%	34,0%	34,0%	
NOPLAT	**16,9**	**15,2**	**19,3**	**17,6**	**43,5**	**47,9**	**81,7**	**123,3**	**130,0**	
D&A	15,9	18,4	18,5	18,9	31,0	33,4	56,5	84,5	88,3	
Operational Cash-flow	**32,8**	**33,6**	**37,9**	**36,5**	**74,5**	**81,3**	**138,2**	**207,8**	**218,3**	
Changes in Working Capital		8,70	-16,87	4,74	-18,5	-18,13	-35,51	-44,58	-3,16	
CAPEX Investment	0	81,2	82,0	314,2	194,7	213,4	360,2	559,5	548,9	
Free Cash Flow to the Firm		**-56,3**	**-27,3**	**-282,4**	**-101,7**	**-114,0**	**-186,5**	**-307,1**	**-327,5**	**142,4**
WACC							9,4%	9,4%	9,4%	
Discount Factor (mid-year adjusted)							0,914	0,835	0,763	
Discounted Cash Flows							**-170,4**	**-256,4**	**-249,8**	
Continuity Value									2898,1	
Discounted Cont. Value									**2211,3**	
Enterprise Value (R$m)						**1534,56**				
Expected R$/EUR exchange rate 2017						3,76				
Enterprise Value (€m)						**408,13**				

Appendix U– Sensitivity and Scenario Analysis

(1) Changes in WACC

Equal variation in every region

WACC	-0,5%	-0,1%	Base	+0,1%	+0,5%
Target Price	10,33 €	8,27 €	**7,83 €**	7,41 €	5,95 €
% Change	31,9%	5,6%	-	-5,4%	-24,0%

Base case	WACC
Spain	6,09%
Portugal	6,55%
RoE	9,44%
North America	5,32%
Brazil	9,44%

Only in North America

WACC	-0,5%	-0,1%	Base	+0,1%	+0,5%
Target Price	9,51 €	8,12 €	**7,83 €**	7,56 €	6,62 €
% Change	21,4%	3,7%	-	-3,5%	-15,5%

(2) Changes in perpetuity growth rate (g)

Equal variation in every region

g	-0,5%	-0,1%	Base	+0,1%	+0,5%
Target Price	6,03 €	7,43 €	**7,83 €**	8,25 €	10,21 €
% Change	-23,0%	-5,1%	-	5,3%	30,4%

Base case	g
Spain	0,75%
Portugal	0,75%
RoE	0,75%
North America	2,20%
Brazil	4,52%

Only in North America

g	-0,5%	-0,1%	Base	+0,1%	+0,5%
Target Price	6,67 €	7,57 €	**7,83 €**	8,11 €	9,44 €
% Change	-14,8%	-3,4%	-	3,5%	20,5%

No Growth (g=0)

g	= 0
Target Price	3,71 €

Appendix V– FCFE valuation

SPAIN (€m)	2017 F	2018 F	2019 F	2020 F	2021E
EBIT	**127,1**	**128,9**	**136,4**	**138,7**	
Interest Expenses	35,4	37,0	34,9	34,7	
EBT	**91,7**	**91,8**	**101,5**	**104,0**	
Tax rate	25%	25%	25%	25%	
Net Income	**68,78**	**68,88**	**76,12**	**78,00**	78,59
Depreciations	113,28	114,90	121,62	123,63	
Changes in Working Capital	-12,76	5,76	-4,84	0,62	-0,97
CAPEX	6,72	6,72	7,00	7,00	
Debt Variation	31,24	-39,33	-4,59	-66,95	0,00
FCFE	**219,34**	**131,96**	**190,99**	**127,07**	**79,55**
Discount Rate	7,4%	7,4%	7,4%	7,4%	
Discount Factor		0,93	0,87	0,81	
Continuity Value				1193,4	
Disocunted FCFE		**122,9**	**165,5**	**102,5**	
Discounted Cont. Value				**962,9**	
Equity Value	**1353,82**				

PORTUGAL (€m)	2017 F	2018 F	2019 F	2020 F	2021E
EBIT	**140,4**	**142,4**	**171,8**	**174,6**	
Interest Expenses	34,9	29,1	27,4	31,0	
EBT	**105,5**	**113,3**	**144,4**	**143,5**	
Tax rate	28%	28%	28%	28%	
Net Income	**76,48**	**82,13**	**104,67**	**104,05**	104,83
Depreciations	48,29	48,96	59,08	60,03	
Changes in Working Capital	1,99	3,64	-14,39	0,48	-0,69
CAPEX	20,50	20,50	24,38	24,38	
Debt Variation	-108,42	-31,02	67,16	-60,13	0,00
FCFE	**-6,14**	**75,93**	**220,92**	**79,09**	**105,52**
Discount Rate	8,3%	8,3%	8,3%	8,3%	
Discount Factor		0,92	0,85	0,79	
Continuity Value				1405,9	
Disocunted FCFE		**70,1**	**188,5**	**62,3**	
Discounted Cont. Value				**1108,1**	
Equity Value	**1429,13**				

REST OF EUROPE (€m)	2017 F	2018 F	2019 F	2020 F	2021E
EBIT	**113,9**	**125,3**	**127,6**	**130,0**	
Interest Expenses	30,4	31,4	32,1	30,6	
EBT	**83,5**	**93,9**	**95,5**	**99,4**	
Tax rate	22%	22%	22%	22%	
Net Income	**64,83**	**72,95**	**74,19**	**77,19**	77,77
Depreciations	89,52	98,49	100,29	102,21	
Changes in Working Capital	-14,77	-3,62	0,06	0,23	-0,76
CAPEX	142,53	154,10	154,10	154,10	
Debt Variation	17,49	13,20	-26,66	-57,84	0,00
FCFE	**44,09**	**34,15**	**-6,34**	**-32,76**	**78,54**
Discount Rate		6,6%	6,6%	6,6%	
Discount Factor		0,94	0,88	0,83	
Continuity Value				1350,9	
Disocunted FCFE		**32,0**	**-5,6**	**-27,1**	
Discounted Cont. Value				**1116,3**	
Equity Value	**1115,73**				

North America (€m)	2017 F	2018 F	2019 F	2020 F	2021E
EBIT	**274,8**	**316,7**	**332,9**	**390,7**	
Interest Expenses	100,0	107,3	110,6	109,8	
EBT	**174,7**	**209,4**	**222,3**	**280,9**	
Tax rate	39%	39%	39%	39%	
Net Income	**105,84**	**126,84**	**134,65**	**170,14**	173,88
Depreciations	290,08	307,14	325,43	372,25	
Changes in Working Capital	-61,48	0,45	-10,05	-35,44	-7,19
CAPEX	815,62	858,45	924,71	1033,73	
Debt Variation	105,33	48,20	-11,35	41,21	0,00
FCFE	**-252,90**	**-376,72**	**-465,93**	**-414,69**	**181,07**
Discount Rate	6,1%	6,1%	6,1%	6,1%	
Discount Factor		0,94	0,89	0,84	
Continuity Value				4693,5	
Disocunted FCFE		**-355,2**	**-414,2**	**-347,6**	
Discounted Cont. Value				**3934,2**	
Equity Value	**2817,15**				

Brazil (€m)	2017 F	2018 F	2019 F	2020 F	2021E
EBIT	**19,3**	**31,7**	**44,1**	**47,4**	
Interest Expenses	6,9	6,8	10,3	13,4	
EBT	**12,5**	**24,9**	**33,8**	**34,0**	
Tax rate	34%	34%	34%	34%	
Net Income	**8,22**	**16,44**	**22,30**	**22,43**	23,44
Depreciations	8,87	14,45	19,94	21,23	
Changes in Working Capital	-3,76	-8,47	-8,62	-1,39	-1,55
CAPEX	56,76	92,13	131,96	131,96	
Debt Variation	-1,24	42,03	37,04	-8,84	0,00
FCFE	**-37,14**	**-10,73**	**-44,07**	**-95,75**	**24,99**
Discount Rate	12,0%	12,0%	12,0%	12,0%	
Discount Factor		0,89	0,80	0,71	
Continuity Value				335,9	
Disocunted FCFE		**-9,6**	**-35,2**	**-68,2**	
Discounted Cont. Value				**239,3**	
Equity Value	**126,34**				

Appendix W– APV Valuation

APV Spain (€m)	2017 F	2018 F	2019 F	2020 F	2021F
Free Cash Flow to the Firm	**214,6**	**199,1**	**221,8**	**220,0**	**105,8**
Discount Rate	6,2%	6,2%	6,2%	6,2%	
Discount Factor		0,942	0,887	0,836	
Discounted Cash Flows		**187,5**	**196,8**	**183,9**	
Continuity Value				1952,3	
Discounted Cont. Value				**1631,5**	
Present Value of FCFF	**2199,62**				
Debt t-1	656,96	688,20	648,87	644,28	
Cost of Debt	5,4%	5,4%	5,4%	5,4%	
Interests	35,37	37,05	34,93	34,68	
Tax rate	25,0%	25,0%	25,0%	25,0%	
Interest Tax Shields	**8,84**	**9,26**	**8,73**	**8,67**	
Discount Factor		0,949	0,900	0,854	
PVITS	**24,06**				

Unlevered Cost of Equity	
Risk-free Rate	0,88%
Market Risk Premium	6,00%
Unlevered Beta	0,43
Country Premium	2,71%
Unlevered Cost of Equity	6,2%

APV Portugal (€m)	2017 F	2018 F	2019 F	2020 F	2021F
Free Cash Flow to the Firm	**127,6**	**128,0**	**173,6**	**161,7**	**128,2**
Discount Rate		7,0%	7,0%	7,0%	
Discount Factor		0,935	0,873	0,816	
Discounted Cash Flows		**119,7**	**151,6**	**132,0**	
Continuity Value				2048,7	
Discounted Cont. Value				**1672,0**	
Present Value of FCFF	**2075,29**				
Debt t-1	648,71	540,29	509,26	576,42	
Cost of Debt	5,4%	5,4%	5,4%	5,4%	
Interests	34,92	29,09	27,42	31,03	
Tax rate	27,5%	27,5%	27,5%	27,5%	
Interest Tax Shields	**9,60**	**8,00**	**7,54**	**8,53**	
Discount Factor		0,949	0,900	0,854	
PVITS	**21,67**				

Unlevered Cost of Equity	
Risk-free Rate	0,88%
Market Risk Premium	6,00%
Levered Beta	0,43
Country Premium	3,55%
Unlevered Cost of Equity	7,0%

APV RoE (€m)	2017 F	2018 F	2019 F	2020 F	2021F
Free Cash Flow to the Firm	**50,2**	**45,3**	**45,2**	**48,9**	**102,5**
Discount Rate		5,3%	5,3%	5,3%	
Discount Factor		0,950	0,902	0,856	
Discounted Cash Flows		**43,0**	**40,8**	**41,8**	
Continuity Value				2245,4	
Discounted Cont. Value				**1922,3**	
Present Value of FCFF	**2047,91**				
Debt t-1	564,97	582,46	595,66	569,00	
Cost of Debt	5,4%	5,4%	5,4%	5,4%	
Interests	30,41	31,36	32,07	30,63	
Tax rate	22,3%	22,3%	22,3%	22,3%	
Interest Tax Shields	**6,80**	**7,01**	**7,17**	**6,85**	
Discount Factor		0,949	0,900	0,854	
PVITS	**18,95**				

Unlevered Cost of Equity	
Risk-free Rate	0,88%
Market Risk Premium	6,00%
Levered Beta	0,43
Country Premium	1,86%
Unlevered Cost of Equity	5,3%

APV North America ($m)	2017 F	2018 F	2019 F	2020 F	2021F
Free Cash Flow to the Firm	**-331,9**	**-408,3**	**-451,0**	**-467,3**	**291,0**
Discount Rate	4,8%	4,8%	4,8%	4,8%	
Discount Factor		0,954	0,910	0,869	
Discounted Cash Flows		**-389,6**	**-410,6**	**-405,8**	
Continuity Value				11153,9	
Discounted Cont. Value				**9687,6**	
Present Value of FCFF	**8481,59**				
USD/EUR exchange rate 2017	1,13				
Unlevered Value (€m)	**7505,83**				
Debt t-1	1453,5	1558,8	1607,0	1595,7	
Cost of Debt	6,9%	6,9%	6,9%	6,9%	
Interests	100,0	107,3	110,6	109,8	
Tax rate	39,4%	39,4%	39,4%	39,4%	
Interest Tax Shields		**42,3**	**43,6**	**43,3**	
Discount Factor		0,936	0,875	0,819	
PVITS	**113,23**				

Unlevered Cost of Equity	
Risk-free Rate	2,2%
Market Risk Premium	6,00%
Unlevered Beta	0,43
Country Premium	0,07%
Unlevered Cost of Equity	4,8%

APV Brazil (R$m)	2017 F	2018 F	2019 F	2020 F	2021F
Free Cash Flow to the Firm	**-114,0**	**-186,5**	**-307,1**	**-327,5**	**142,4**
Discount Rate	10,7%	10,7%	10,7%	10,7%	
Discount Factor		0,903	0,816	0,737	
Discounted Cash Flows		**-168,5**	**-250,5**	**-241,3**	
Continuity Value				2298,9	
Discounted Cont. Value				**1693,9**	
Present Value of FCFF	**1033,62**				
Avg. USD/EUR exchange rate 2017	3,76				
Unlevered Value (€m)	**274,90**				
Debt t-1	81,9	80,7	122,7	159,8	
Cost of Debt	8,4%	8,4%	8,4%	8,4%	
Interests	6,9	6,8	10,3	13,4	
Tax rate	34,0%	34,0%	34,0%	34,0%	
Interest Tax Shields	**2,3**	**2,3**	**3,5**	**4,5**	
Discount Factor		0,923	0,851	0,786	
PVITS	**8,67**				

Unlevered Cost of Equity	
Risk-free Rate	3,9%
Market Risk Premium	6,00%
Unlevered Beta	0,43
Country Premium	4,27%
Unlevered Cost of Equity	10,7%

Appendix X– Multiples Valuation

Company	Country	Currency	EV/EBITDA			P/E		
			2016	2017E	2018E	2016	2017E	2018E
EDP Renováveis SA	Spain	EUR	8,0	8,2	7,8	100,6	32,0	28,4
Acciona SA	Spain	EUR	5,0	8,0	7,6	11,3	16,9	15,0
Iberdrola SA	Spain	EUR	9,0	9,4	8,6	14,7	15,6	14,5
China Longyuan Power Group	China	HKD	9,2	8,1	7,3	12,8	10,4	8,8
NextEra Energy Inc	US	USD	10,8	11,5	10,9	20,8	21,9	20,4
Pattern Energy Inc	US	USD	23,1	12,2	10,7	N/A	82,4	42,7
Voltalia SA	France	EUR	15,9	12,6	8,1	156,2	51,3	24,4
TransAlta Renewables Inc	Canada	CAD	24,3	9,7	9,3	N/A	16,4	14,5
Boralex Inc	Canada	CAD	15,5	12,2	10,7	1328,3	65,2	35,4
Falck Renewables SA	Italy	EUR	6,5	6,9	6,6	N/A	41,2	28,9
Engie Brasil Energia SA	Brazil	BRL	7,9	7,2	6,9	14,8	13,0	13,7
Alerion Cleanpower SpA	Italy	EUR	8,8	6,8	6,8	141,9	23,4	22,5
Infigen Energy	Australia	AUD	11,4	9,5	9,2	91,4	28,6	17,8
Huaneng Renewables Corp Ltd	China	HKD	8,7	7,7	6,9	8,3	6,5	5,9
Median			**9,2**	**9,4**	**8,1**	**17,8**	**21,9**	**17,8**
Average			12,0	9,4	8,4	180,0	30,2	20,3
Green & Renewables Industry				12,4	12,4		55,9	55,9
Utilities				11,6	11,6		19,3	19,3

EDPR Valuation							
Total Enterprise Value		11076,3	**11354,1**	10586,4			
Total Equity Value		5109,1	**5386,8**	4362,2	3296,2	4072,0	3792,2
Shares Outstanding		872,3	872,3	872,3	872,3	872,3	872,3
Fair Value (YE 2017)		5,86 €	**6,18 €**	5,00 €	3,78 €	**4,67 €**	4,35 €
Close Price (31/03/2017)	**6,93**						
Up/Downside Potential		-15,5%	**-10,9%**	-27,8%	-45,5%	**-32,6%**	-37,3%

Appendix Y– Comparative Analysis

	GH	BPI	Santander
	31/mar	27/mar	27/mar
TP (2017E)	€ 7,83	€ 8,00	€ 7,70
WACC	**5,8%**	**5,8%**	**6,4%**
Spain	6,1%	5,7%	6,0%
Portugal	6,5%	6,0%	6,5%
RoE	5,6%	5,4%	7,5%
North America	5,3%	5,9%	6,0%
Brazil	9,4%	N/A	10,5%
risk-free rate			
Europe	0,9%	3,25%	N/A
North America	2,2%	N/A	N/A
Beta Unlevered	0,43	0,40	N/A
Beta Levered	0,64	0,85	N/A
MRP	6,0%	6,0%	N/A
CRP			
Portugal	3,55%	1,85%	N/A
Spain	2,71%	0,75%	N/A
North America	0,07%	N/A	N/A
D/(E+D)	39%	60%	N/A
Cost of debt			
Spain	5,4%	4,5%	N/A
Portugal	5,4%	4,5%	N/A
Rest of Europe	5,4%	4,5%	N/A
North America	6,9%	6,2%	N/A
Brazil	8,4%	N/A	N/A
Cost of Equity			
Spain	7,4%	9,1%	N/A
Portugal	8,3%	10,1%	N/A
Rest of Europe	6,6%	N/A	N/A
North America	6,1%	7,0%	N/A
Brazil	12,0%	N/A	N/A
EV	**12800**	**12881**	**12513**
Spain	2228	2473	2099
Portugal	2235	1506	2027
RoE	1908	765	1750
North America	6020	6382	6238
Brazil	408	839	400
Payout Ratio	25%	25%	25%