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EDP RENEWABLES: WINDS OF CHANGE – IS THE WIND OFFSHORE OPPORTUNITY PRICED IN?

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EDP Renewables: Winds of change – Is the Wind Offshore opportunity priced in?

Abstract:
EDPR has gain a foot on the promising Wind Offshore market in 2020, when it entered in a Joint Venture with ENGIE for that effect, called Ocean Winds. The present paper tries to assess whether investors have already fully priced in the Wind Offshore opportunity. With that goal, it questions assumptions made in the Equity Research' Intrinsic Valuation, namely on two of the main drivers of value - installed capacity and costs of Wind Offshore. Results show that the share price premium compared to the base scenario should go from 4.0% to 4.8%, reinforcing the 'BUY' valuation issued on EDPR.

Keywords: Finance, Corporate Finance, Equity Research, EDPR, Renewable Energy, Wind Offshore

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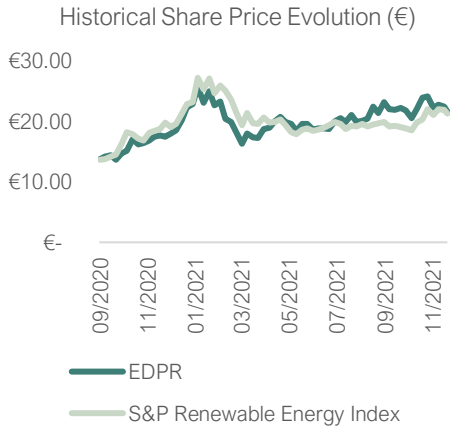
WINDS OF CHANGE

Gonçalo Pina Santos | Francisco Gião | Joana Oliveira | Vincent Marques

Recommendation	BUY
Date	25.11.2021
Current Price	€21.54
Target Price	€24.29
Upside	13%
Industry	Energy
Sector	Renewable
Stock Exchange	Euronext Lisbon

Shares Outstanding	960m
Market Cap	€21.79bn
EPS (LTM)	€0.47
Free Float	240m



Source: Bloomberg

INVESTMENT SUMMARY

We issue a BUY recommendation for EDPR's stock at a target price of €24.29, corresponding to an upside of 13% to the closing price on 23/11/2021. The recommendation is based on the following 3 drivers: (1) Further expected investment in an already rapidly expanding industry; (2) EDPR's accelerated technological and regional diversification strategy; (3) Above expected multiples on asset disposals.

INDUSTRY EXPANSION

With many countries setting 2050 as the target for carbon neutrality, further incentives are expected for renewables to increase in installed capacity and to improve cost savings in the market. EDPR benefits from a strong financial position and a self-funded business model which should allow it to make the necessary investments to benefit from this growth.

TECHNOLOGICAL & REGIONAL DIVERSIFICATION

EDPR's is forecasted to add an ambitious value of 18.4 GW of gross capacity distributed across regions and technologies until 2025. The entry in APAC ahead of schedule with Sunseap's acquisition and the fact that Ocean Winds' pipeline already meets 2025 targets for Offshore Wind point to an increasingly diversified portfolio.

ABOVE EXPECTATIONS ASSET ROTATION PLAN

The firm has been able to offload assets at an average EV/MW of €1.6 m, 45% above the €1.1 m estimated. Following this trend, the company should yield €1 bn more in capital gains until 2025 than expected, key to fund the company's growth.

	2019	2020	2021	2022	2023	2024	2025
Revenues (€mn)	1,642	1,529	1,692	1,956	2,112	2,292	2,564
EBITDA (€mn)	1,604	1,453	1,334	1,647	1,724	1,834	2,017
Net Income (€mn)	688	463	432	617	581	625	660
EPS (€)	0.76	0.47	0.56	0.75	0.77	0.84	0.92
Total Instaled Capacity (MW)	11,362	12,168	13,984	16,541	17,971	20,733	24,553
EBITDA Margin	98%	95%	79%	84%	82%	80%	79%

Source: EDPR and Team Analysis

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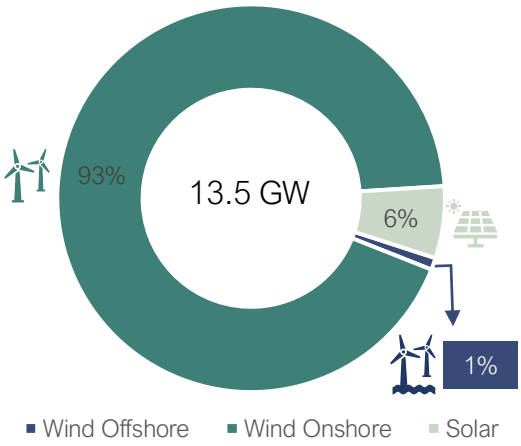
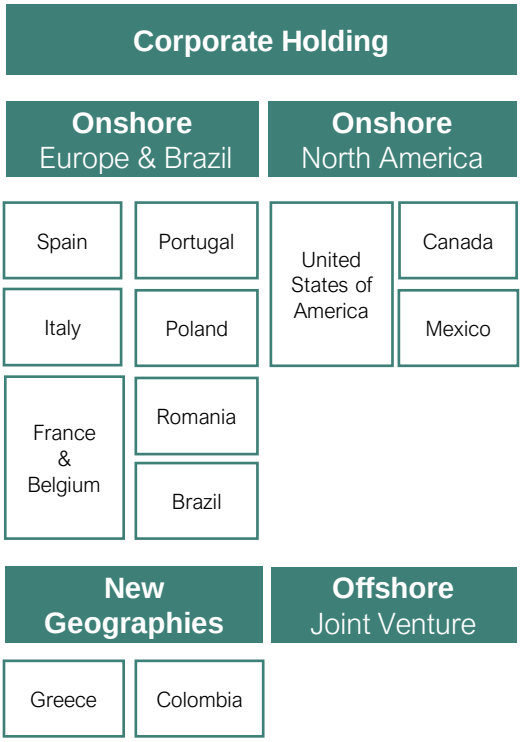
Graph 1 – Installed Capacity by Technology (GW)



Source: EDPR

Graph 2 – Organizational Chart in 2020



Source: EDPR

BUSINESS SEGMENTS

EDPR core business is focused on energy generation through Wind and Solar

Founded in 2007, and headquartered in Madrid, EDPR is a leading company in the renewables energy sector. The company business targets the development, design and management of power plants that use renewable energy sources to produce electricity.

Currently, EDPR is invested in a diversified portfolio of operations that are divided within three main business segments – Onshore and Offshore Wind, and Solar. The company has a total installed capacity of 13,5 GW (Graph 1), generating €1.6 bn in revenues and employing over 2000 employees.

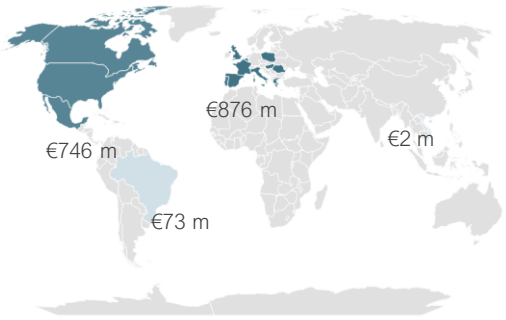
Regarding the 3 different segments, Onshore Wind represents the highest share of installed capacity (93%). In fact, EDPR is the world's fourth-largest wind energy producer with more than 270 wind farms in operation. The firm has a total of 12.6 GW fully operational and over 2.1 GW under construction.

The Offshore Wind segment plays a small role in the company's operations, having 53 MW of installed capacity, corresponding to 1% of the firm's total. Nevertheless, EDPR has been making efforts to grow their presence in this segment, having entered a Joint Venture with ENGIE, called Ocean Winds (OW), which will focus exclusively on this type of projects and that already has 0.1 GW operating and a project visibility of 8.3 GW until 2025.

Solar is an even smaller segment where EDPR currently has 787 MW in operation and 215 MW under construction, corresponding to 6% of the company's total installed capacity. Nevertheless, its Solar capacity is expected to increase with the recent acquisition of Sunseap, the fourth-largest solar operator in the Southeast Asia, and their portfolio of 540 MW of operating and under construction assets.

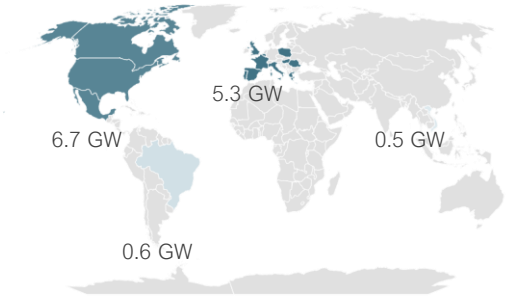
Lastly, as Graph 2 highlights, EDPR was structured in 2020 through an organization model that has five different elements: a Corporate Holding; two different Onshore platforms (one that comprises Europe & Brazil and the other that covers North America); a platform for new geographies such as, Greece or Colombia; and the OW Offshore platform. Each of these include distinct business units that are specialized in the countries and technologies specificities. This chart will likely change in the upcoming year due to the current expansion that EDPR is undertaking.

Graph 3 – Revenues by Region (€m)



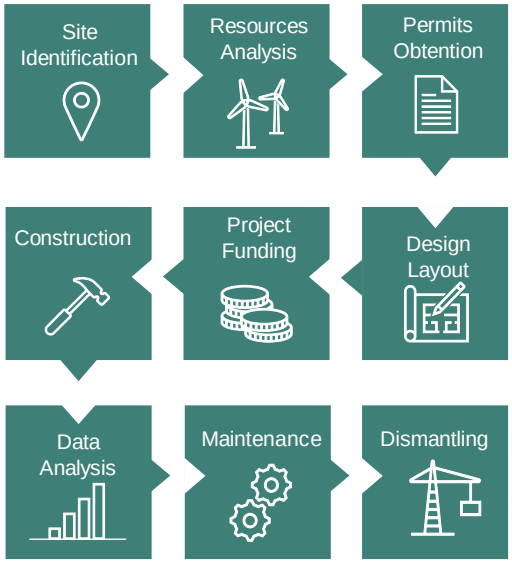
Source: EDPR

Graph 4 – Installed Capacity by Region (GW)



Source: EDPR

Graph 5 – Value Chain Steps



Source: EDPR

GEOGRAPHICAL REACH

EDPR is present in 4 markets: Europe, North America, Latin America and Asia Pacific (APAC)

Currently, EDPR holds assets in 25 different countries distributed in 4 regions. The company's revenues in the Q3 of 2021 were broken-down into 52% coming in Europe, 44% in North America and 4% in Brazil (Graph 3), where the firm's largest hubs have been until 2020. EDPR also entered recently in APAC, through Vietnam and the already mentioned acquisition of Sunseap.

Looking at Graph 4 the North American region has more than 6,560 MW installed capacity, followed by Europe with 5,260 MW and Brazil with 639 MW. These three hubs account for over 96% of the total installed capacity.

Beyond the current operations, EDPR is growing its presence in Chile and Colombia, transforming the Brazil hub in a Latin American hub. Similarly, there will be a new hub in APAC driven by the acquisition of Sunseap, which operates in several different countries in that region.

VALUE CHAIN

The value chain goes from planning and bidding for long-term projects to constructing, operating and disposing

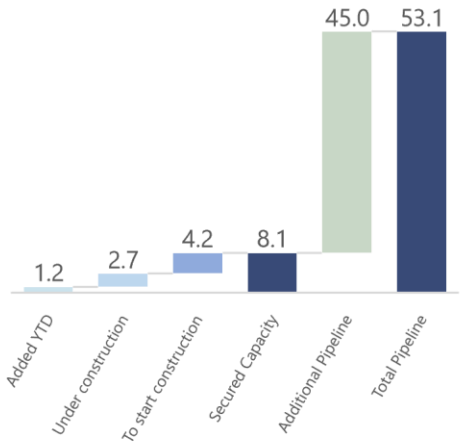
By bidding for projects, constructing them and either operating or selling those projects, EDPR has created an efficient integrated value chain (Graph 5).

In the development stage, making use of its investing expertise, the company proceeds to identify the sites with the most appropriate wind or irradiation conditions. Furthermore, EDPR evaluates the most suitable financing structure for the project, establishes the remuneration framework with the responsible entities and obtains the long-term sale contracts in an efficient and timely fashion.

Once construction begins, EDPR chooses the equipment that is best suited for the site characteristics. This allows the firm to construct infrastructures adjusted to each site, maximizing efficiency and cost-saving additions to their portfolio. Furthermore, by sourcing the equipment themselves (wind turbines, solar panels, etc…) the company creates and takes advantage of long-lasting supplier relationship at global scale.

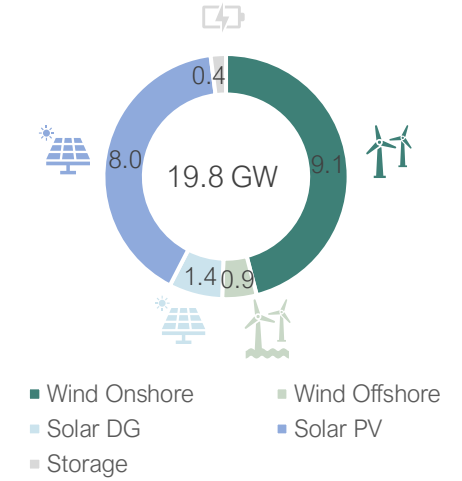
When the projects are complete, depending on the market characteristics, EDPR either sells them as a part of their Asset Rotation Plan or adds them to their portfolio. As operators, EDPR makes use of its expertise and economies of scale to efficiently run and maintain the equipment, maximizing

Graph 6 – Pipeline from Growth Strategy until 2025 (GW)



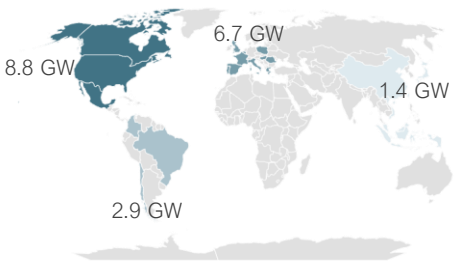
Source: EDPR

Graph 7 – Capacity to be added by Technology until 2025 (GW)



Source: EDPR

Graph 8 – Capacity to be added by Region until 2025 (GW)



Source: EDPR

technical availability[1]. To this end, the firm takes advantage of its Dispatch Center and Big Data tools to address any underlying issues.

Finally, once a project's useful life is complete (which can take up to 30 years), the plants are either dismantled and EDPR conducts a process for restoring the lands and recycling the waste generated, or the project is repowered (rebuilt with newer equipment).

STRATEGY PLAN 2021 - 2025

In 2021 EDPR presented its new strategy with updated 2025 targets. The company expects to have 18 GW of installed capacity by 2023 and 25 GW until 2025. This capacity would be the result of 19.8 GW gross additions between 2021 and 2025, coupled by an Asset Rotation Plan where, according to company estimates, 7.2 GW are to be sold, generating an expected €8 bn in proceeds.

Growth - EDPR expects to install 19.8 GW until 2025

To install 19.8 GW until 2025, the company intends to add 3.5 GW per year of gross capacity until 2023 and 4.6 GW afterwards. As of the Q3 2021, 8.1 GW of the target are already secured on top of an additional pipeline of over 45 GW (Graph 6).

The break-down per technology, seen on Graph 7, should lead to a more even balance between Wind Onshore and Solar, as 47.5% of the capacity to be added is Solar (while today this only represents 6.0% of the installed capacity in EDPR). The bet in Wind Offshore, nonetheless, is more modest (4.5% of gross additions), due to the recent awakening of this industry which EDPR is now starting to explore in a Joint Venture with ENGIE. There is also room for development of Storage capacity coupled with Solar projects or standalone.

Regarding break-down per region, as on Graph 8 EDPR intends to expand internationally with different key drivers per region:

- North America – it is the market where EDPR intends to secure more added capacity in the next 5 years: ~45% of the total gross additions. It is the main growth market of the company and represents more than half of its current portfolio. This is driven by Purchasing Power Agreements (PPAs) secured mostly in the U.S., but, in 2021, the company has already launched 300 MW in Mexico and has 297 MW secured in Canada for 2023.
- Europe – after North America, EDPR intends to secure ~34% of new capacity in Europe. Besides the numerous European countries in which it is already present, this

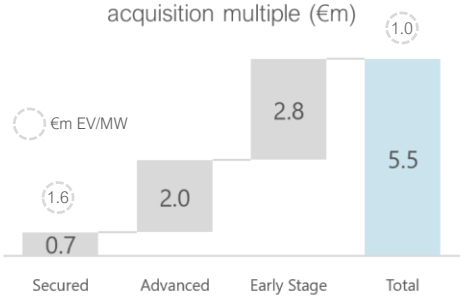
[1] Technical availability – Glossary

Table 1 – Sunseap Operating and U/C[1] Capacity by country (MW)

Country	MW
Singapore	313.2
Vietnam	151.2
Taiwan	37.8
China	16.2
Japan	5.4
Malaysia	5.4
Other SEA[2]	10.8

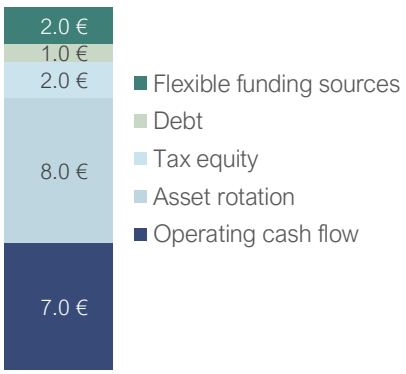
Source: EDPR

Graph 9 – Sunseap Pipeline (GW) and acquisition multiple (€m)



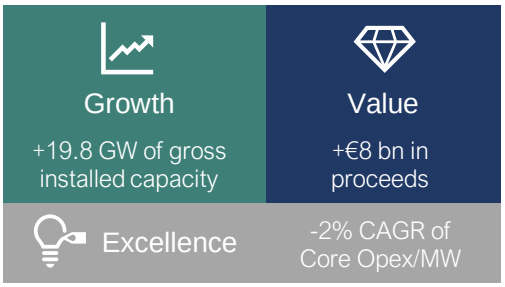
Source: EDPR

Graph 10 - Sources of Cash for Growth Plan (€bn)



Source: EDPR

Graph 11 – 3 Strategic Pillars until 2025



Source: EDPR

year it will establish presence in Greece and in the UK, with 65 MW, and in 2022 is expected to expand to Hungary.

- Latin America – EDPR has a strong and growing presence in Brazil, having recently announced the establishment of a 209 MW Solar platform in São Paulo. The company has also already announced a 15-year PPA contract in Colombia for 492 MW to start operation in 2022 and two projects in Chile for a total of 748 MW.
- APAC – After a fairly modest entry through Vietnam with 28 MW from Solar energy, EDPR has announced in November, the acquisition of Sunseap, a Solar platform present in 9 Asian markets and based in Singapore with 550 MW of operating and under construction capacity (Graph 9), of which 72% is Solar DG capacity and 28% Utility capacity, and a total pipeline 10x superior.

The acquisition of €600 m of Sunseap was made for an EV/MW of €1.6 m, disregarding the pipeline, and of €1 m considering the pipeline, for 87.4% of the company.

In order to finance the expansion, the sources of cash used are those in Graph 10. The €20 bn should be used to finance €19 bn in Capex and €1 bn of dividends and distributions to shareholders.

Value - EDPR's Asset Rotation Plan intends to deliver €8 bn in proceeds until 2025

To reach this target the company estimates that it needs to sell 7.2 GW of installed capacity: 1.4 GW per year until 2023 and 1.5 GW per year between 2024 and 2025. This should correspond to €0.3 bn in capital gains yearly. EDPR has already managed to secure 2.3 GW of the sell-down plan at an average EV/MW of €1.6 m, 44% above the expected multiple of €1.1 m of EV per MW.

Excellence – Goal is to decrease Core Opex/MW[3] 2% per year

EDPR expects to maintain a level of excellency in operations by developing competitive projects and constructing them on time and on budget. They point towards a decrease of Core Opex per Average MW at a 2% CAGR until 2025. This challenge is coupled with the intention of having more than 3000 employees by 2025.

The company wants to develop these 3 strategic pillars (Graph 11), but mainly the latter with 4 main technological developments, namely:

- Hybridization – hybrid projects combine Solar and Wind energy and improve asset utilization. This model was

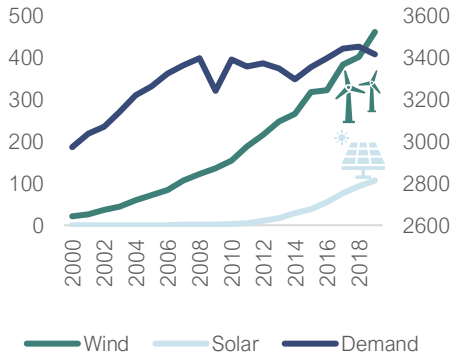
[1] U/C – Under Construction
[2] SEA – South East Asian
[3] Core OPEX – Includes Supplies and Services (S&S) and Personnel Expenses

launched in 2021 with a 143 MW hybrid project awarded at the Spanish auction;

- Storage – storage of renewable energy is expensive but the company intends to explore decreasing costs with the deployment of Storage projects coupled with a Solar and a standalone unit. The first project combines 200 MW of Solar and 40 MW of Storage capacity in the US in 2022. This combination should address intermittency of renewable resources and address demanding client requirements;
- Floating Offshore – EDPR intends to explore early-mover advantages in the Floating Offshore market to become a technological reference in the sector. This is explored through the OW platform which has installed a 25 MW project in Portugal and has another one secured in France for 30 MW;
- Repowering – to increase the useful life and value of current assets, the upgrade of current infrastructure is expected. The first repowering is under construction in Spain for 42 MW of installed capacity.

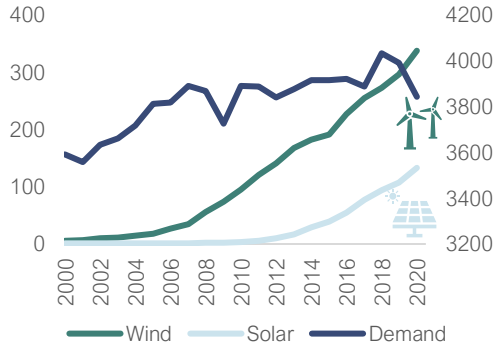
Overall, EDPR 3-pillar strategy up until 2025 has the intention of reaching a €2.3 bn EBITDA and a €0.8 bn Net Income by 2025, implying a 7% and 8% increase in profitability per year, respectively.

Graph 12: Electricity demanded (RHS) vs Wind and Solar electricity generated in Europe (LHS)[1] (TWh)



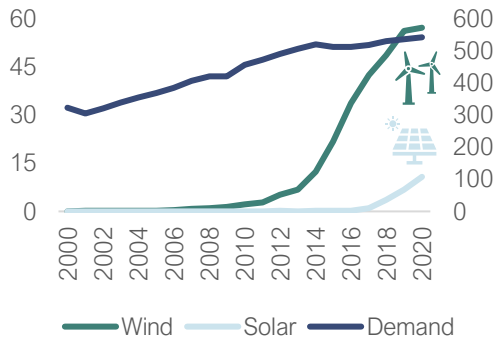
Source: EIA

Graph 13: Electricity demanded (RHS) vs Wind and Solar electricity generated in US (LHS) (TWh)



Source: EIA

Graph 14: Electricity demanded (RHS) vs Wind and Solar electricity generated in Brazil (LHS) (TWh)



Source: EIA

DEMAND OUTLOOK

Demand for renewables has increased significantly since the beginning of the century

The electricity demand is predominantly driven by macroeconomic and demographic drivers, namely, disposable income, population and number of households, furthermore, the price level for electricity also plays an important role for the quantity demanded.

Regarding the price level, in the consumers' electricity market the amount generated is staked from the lowest to the highest submitted bid in public auctions, therefore cheaper energy sources are used in the first place. Since the renewable sources, such as Solar and Wind, have a negligible marginal cost, energy from these sources is dispatched ahead of costliest sources, such as natural gas or coal. Therefore, the latter are only used when the first are fully depleted, which usually happens whenever there is a peak or renewable sources cannot fulfill the total demand. This is common (energy demand surpassing renewable energy supply), therefore all the energy produced from these renewable sources is expected to be consumed and therefore the renewables industry is never considerably impacted by demand shifts.

Electricity demand across Europe and US has had an upward constant trend (going from 2973 to 3416 TWh, and from 3592 to 3843 TWh, respectively), despite occasional demand shocks since 2000 (Graphs 12 and 13). Brazil has had a more linear demand growth of 68%, without any relevant shocks, which can be justified by a persistent economic and demographic growth (Graph 14).

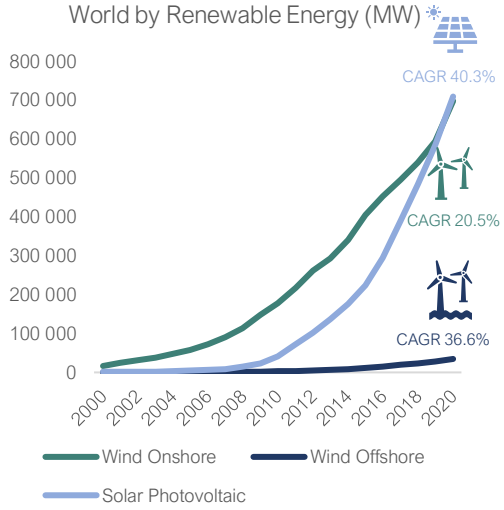
Although the share of renewable energy generation to meet energy demand has increased rapidly, its overall weight in final consumption is still small. In Europe, the share of renewable energy generated from Solar and Wind is 18% of demand, in the US the share stands at 10% and in Brazil 12% of the demand is fulfilled by Solar and Wind resources.

All in all, it is observable that renewable energy generation is remarkably resilient to demand shocks. This happens because renewables are consumed first than fossil fuels due to lower marginal costs, and the first still represent a small percentage of total energy consumed. Thus, if demand is larger than renewable supply, all this supply will be met.

This competitive advantage in comparison to fossil fuels is expected to step even further as regions like Europe impose

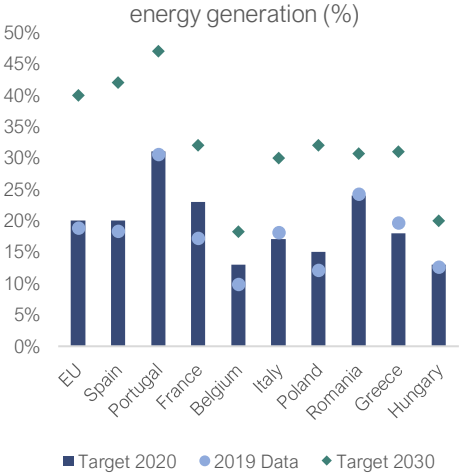
[1] RHS – Right-hand side; LHS – Left-hand side

Graph 15 – Installed Capacity in the World by Renewable Energy (MW)



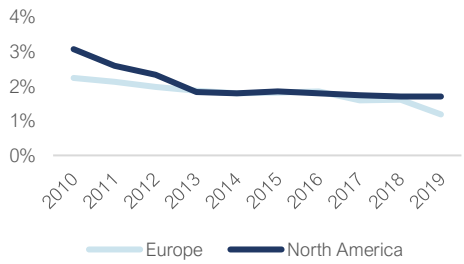
Source: IRENA

Graph 16 – EU country targets vs data for renewables share of gross energy generation (%)



Source: European Commission and National Energy Plans

Graph 17 – EDPR Wind Onshore Market Share in Europe and North America (%)



Source: EDPR and IRENA

smaller Carbon Credits[1] allowances, placing an extra financial burden on companies burning fossil fuels and polluting. All in all, reducing fossil fuels attractiveness and increasing Renewable investment and demand. In fact, the price of carbon credits has increased exponentially in the past and is expected to continue to do so.

SUPPLY OUTLOOK

Installed Capacity and Renewable Energy Generation should continue to increase…

Despite the pandemic outbreak, installed capacity of renewable energy had an unprecedent growth in 2020, namely of Wind Onshore and Solar PV (Graph 15), and is set to have a new record year as governments tried to meet the decade targets and prepare to set new ones. Additions are expected to average 305 GW per year until 2026, to reach 4,801 GW which is a 60% expansion in 5 years. Global electricity demand is expected to triple until 2050, when renewable electricity generation needs to represent around 95% of total generation to achieve climate milestones set in the Paris Agreement and in COP 26. Currently, more than 130 countries, representing more than 90% of World GDP have set Net Zero goals (International Energy Agency 2021). The fact that China, EU and US, have set ambitious plans like the $1.1. trillion Green Deal and the $1.9 trillion Biden plan, and companies worth of $15 trillion committed to go net zero in emissions, should boost the market in the future.

…by region:

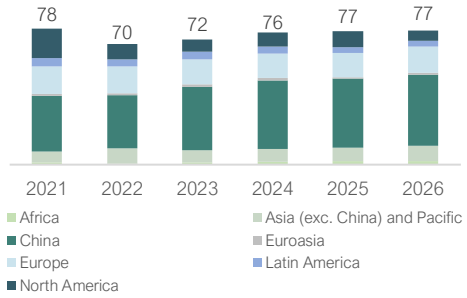
Europe should continue to be the region with higher absolute additions boosted by country targets after APAC

In the European Gren Deal signed in 2019, Europe established the goal of becoming the first climate-neutral continent by 2050. For 2020, the continent had the goal of having a 20% share of renewables in gross energy generation, which will be most likely reachable as 2019 share was of 18.9% and most State-Members were in line to beat country-level targets (Graph 16). For 2030 the target is of 32% to 40% share of renewable energy, which translates into the need to install 30 GW of Wind and 56.3 GW of Solar capacity per year.

The targets for 2030 are way above expected additions of 15 GW of Onshore and 28 GW of Solar capacity to be added yearly. However, Europe is still the region with higher absolute values of capacity additions expected after APAC, but with lowest expected relative growth (6.6% CAGR of Wind Onshore and 12.7% CAGR of Solar). EDPR has been losing Wind Onshore market share[2] in the region (Graph 17) but the entry in

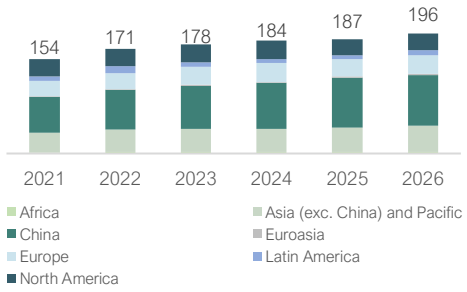
[1] Carbon credits - Glossary
[2] Market share used as share of total installed capacity in the market

Graph 18 - Expected Net Additions of Wind Onshore Capacity by Region (GW)



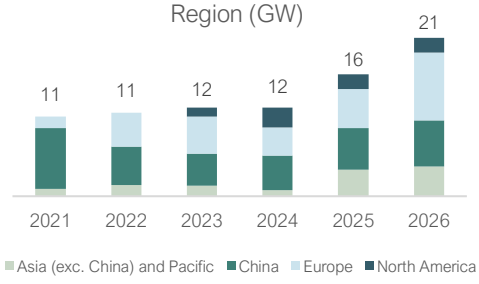
Source: IRENA

Graph 19 - Expected Net Additions of Solar Capacity by Region (GW)



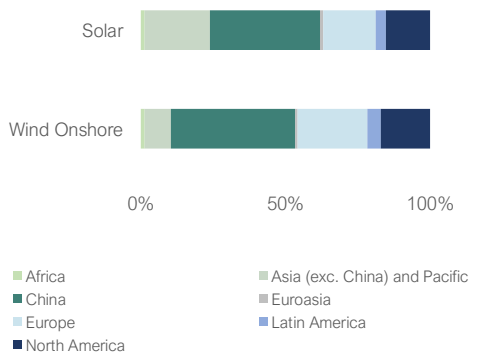
Source: IRENA

Graph 20 - Expected Net Additions of Wind Offshore Capacity by Region (GW)



Source: IRENA

Graph 21 – Share of regional capacity by technology, expected in 2026 (%)



Source: IRENA

the Solar and Offshore markets may compensate for this in overall market share of renewables, specially as the region is pioneer in Offshore deployment.

Looking at the two European countries where EDPR is the most present in, Portugal and Spain, both are on track to beat 2020 targets, having the two highest targets for weight of renewables in electricity generation in 2030 from all the EDPR European markets (Graph 16). This is expected as Spain is the second biggest European market of Wind energy and Portugal is being very successful in incentivizing Solar and Wind deployment since it introduced a new policy framework in 2019.

North America should fall short of meeting 2025 installed capacity targets

Despite having a lower installed capacity than Europe and Asia, North America had a more ambitious target than Europe: NAFTA aimed to reach 50% renewable energy generation in 2025. However, considering that as of today the renewable share stands at 22.5%, this goal seems unlikely to reach in what is currently EDPR's largest market. Current trends point to the US reaching 38% by 2030, 50% in an accelerated scenario of Onshore Wind and Solar deployment, which is still far below Biden's estimate of 80% (International Energy Agency 2021).

Overall installed capacity growth in North America should slow down with Solar increasing 16.2% yearly and Onshore about 8.6% (Graphs 18 and 19). The region should represent more than 15% of total installed capacity of each of the Renewables in 2026. The deployment of Offshore installed capacity will only start being relevant in 2023, when 1.2 GW are expected to be added (Graph 20).

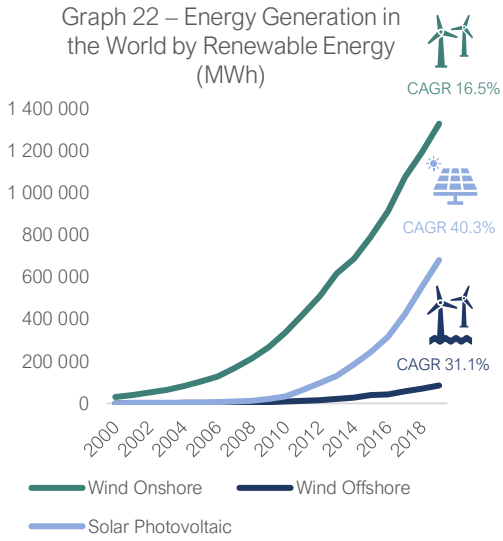
Latin America is a high-growth market, with Brazil ranking highly in renewables installed capacity and consumption

Latin America is the region which has presented the highest Wind Onshore and Solar capacity $CAGR_{2010\text{-}2020}$ at 44% and 97%, respectively. The region is expected to continue to grow at an accelerated pace, especially in Solar, reaching a 4% global share of installed capacity by 2026 (Graph 21). Offshore Wind is not expected to be added in the region anytime soon.

Looking at EDPR's largest market in the continent, Brazil's Wind Onshore and Solar markets, similarly to the region, have been growing exponentially fast and are expected to continue to do so at least until 2023. Having beaten its 2030 goal of reaching 45% renewables in 2018, the country has the third largest installed capacity after China and the US.

APAC with China should represent more than 50% of Wind and Solar installed capacity globally by 2026

Graph 22 – Energy Generation in the World by Renewable Energy (MWh)



Source: IRENA

Within APAC, China has stood-out by adding more capacity than the rest of Asia combined in all sources, and more than any other region in all technologies except Offshore Wind (where it stands behind Europe). The rest of APAC has also been developing fast as Southeast Asian countries committed to a 23% target for renewable energy generation in 2025. The main source in the region is Solar and is expected to continue to be so, with China forecasted to hold 38% of world capacity by 2026 and the rest of Asia 22%. It is also expected that the region expands Offshore Wind at a CAGR above 70% and Onshore Wind at a lower CAGR of 10.1% (Graphs 18 and 20). EDPR is not yet in China but recently expanded to many other APAC countries through the Solar platform Sunseap.

…by technology:

Wind Onshore is the largest non-hydro renewable generation source

Despite only representing 23.9% of renewable energy installed capacity, Onshore Wind is the largest non-hydro source of energy generated. In 2020 there was an addition of c.104 GW, almost +100% YoY mostly due to additions in China and the US (Graph 18). Due to pandemic related delays and increase in number of projects closed until 2020 to benefit from tax credits and other region-specific incentives, the spike in additions is expected to carry on in 2021 and 2022. From 2023 onwards, incentives are expected to phase-out in China and the U.S., slowing down capacity additions. However, more aggressive targets in other regions, like Europe, might counter-balance this. All in all, energy generation of Wind Onshore has been growing at a CAGR of 16.5% CAGR (Graph 22), which was in 2020, driven by increases in the Brazilian, Chinese, Indian and US markets, partially offset by the first decrease in 30-years in Europe of 3%.

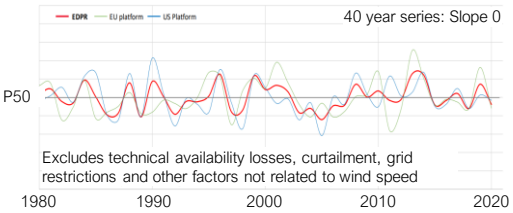
Wind Offshore is still lagging behind in installed capacity with Europe and China leading deployment

Offshore Wind still represents only 1.2% of renewables installed capacity but it is the technology with better growth prospects for the future. In 2020 installed capacity grew by around 6 GW (1 GW above 2019) mainly due to China and Europe's growth. The UK continues to lead in total installed capacity (with 32%) followed by Germany and China (with little more than 22% each). Currently 23 GW of projects are under construction, with China and the Europe expected to continue leading deployments with CoD[1] until 2023 (Graph 20), with other Asian markets and the US entering the race afterwards. It is expected that an average of 14 GW of new capacity is added yearly until 2026.

[1] CoD – Commercial Operation Date - Glossary

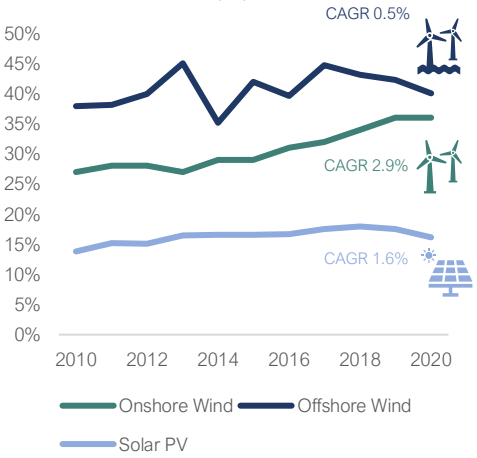
Graph 23 – Pure wind resource 1980 – 2020

(modelled production on EDPR 2020 fleet)



Source: EDPR

Graph 24 - Global weighted-average net capacity factor by technology (%)



Source: IRENA

Solar PV is the technology with higher growth since 2010

Solar Photovoltaic (PV) represents 24.3% of Renewables installed capacity, being the technology that registered a higher increase in growth of capacity and energy generation in the last 20 years (Graph 19) and the capacity to be added in the next five years is set to be two times the capacity added since 2016, at an average of more than 150 GW per year. Most projects in Solar PV (around 60%) are still utility-scale projects compared to distributed (commercial and residential) projects, which had a reduction in 2020. It is expected that 2021 registers a new record year in Solar capacity additions as China shifts to larger scale projects and Indian, US and European markets recover and gain policy backing.

Load Factor of all technologies to keep increasing

Load factor or net capacity factor measures how much energy is actually generated in a given period as a percentage of the maximum theoretical energy output, i.e. continuous operation at full power. In each project it will depend mainly on: technology used, renewable resource quality in the region and in the period of estimate, and downtime of the plants. The common metrics to measure these factors are:

- Renewables Index – is an index which measures the pure wind resource that EDPR enjoys, as a percentage of the long-term average (P50[1]). As seen in Graph 23, this index tends to converge in the long-term to 100% (i.e. to being equal to the P50), being, nonetheless, a good short-term measure of renewable resources quality in Wind projects;
- Availability - the ratio between energy generated and the energy that would have been generated without any downtime due to internal reasons (specifically preventive maintenances and repairs) (EDP Renováveis 2020). This is a more company specific metric, being analysed further ahead in the report.

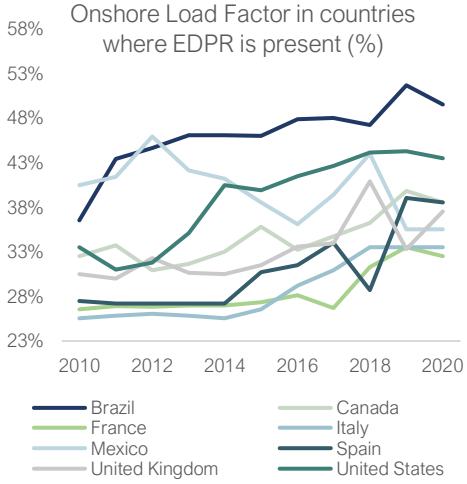
As it was previously mentioned, the load factor is technology dependent and therefore different sources have different load factors, all of which have seen upward trends in recent years due to technological advancements worth exploring (Graph 24). With this in mind and looking at EDPR's main sources' load factors, Wind Offshore has the highest, above 40%, followed by Wind Onshore at 27% to 36% and lastly Solar at 15% to 18%.

Wind Onshore load factor has been boosted by higher hub heights and rotor diameters

Wind Onshore's load factor depends on both the quality and

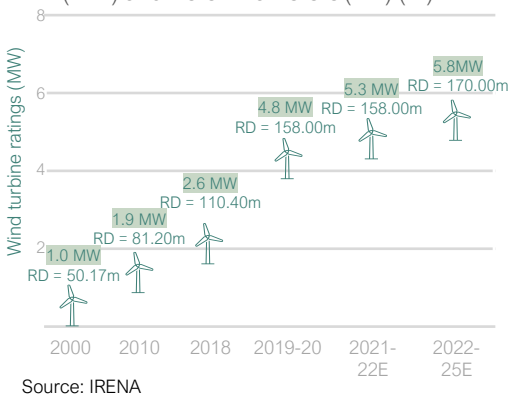
[1] P50 - Probability figure that measures the average level of electricity generation which output forecasted should exceed 50% of the time over the projects' life

Graph 25 – Evolution of Wind Onshore Load Factor in countries where EDPR is present (%)



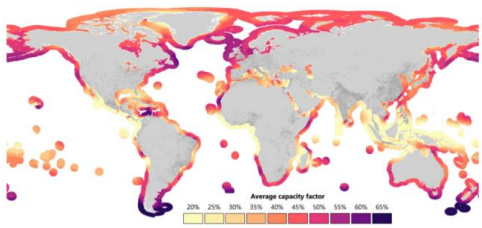
Source: IRENA

Graph 26 – Onshore Wind Turbines Ratings (MW) and Rotor Diameters (RD) (m)



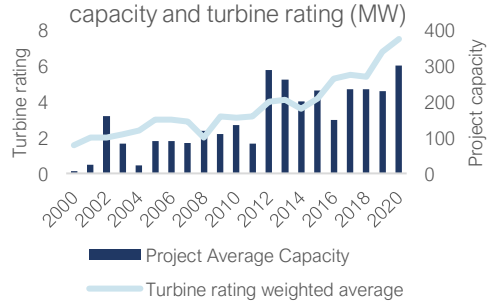
Source: IRENA

Graph 27 – Average simulated capacity factors for Offshore Wind worldwide (%)



Source: IEA analysis in collaboration with Imperial College London

Graph 28 – Wind Offshore project capacity and turbine rating (MW)



Source: IRENA

and speed of the wind and on the technology used. Regarding the quality of the wind, the main determinants are the site, namely its area and altitude, and population density. Countries with higher population density usually have lower load factors, as these are usually less mountainous (which partially explains why countries such as Brazil, United States, Mexico and Canada have, on average, higher load factors than most European countries, Graph 25). Regarding technology, the main determinants are the hub height and the rotor diameters of turbines, which are positively correlated with the power these will capture, measured by nameplate capacity in MW (Graph 26).

Large developments have occurred in turbines in recent years and are expected to continue, with GE currently selling wind turbines with a rating of 5.3 MW which represents a capacity 100% above what was in the market in 2018 and Siemens-Gamesa already announcing for 2022-2025 a 5.8 MW (123% above 2018 levels) and 170-meter-wide turbine (54% above 2018 levels), (International Renewable Energy Agency 2019). Looking at hub heights, these strongly influence wind speed (Appendix 12), and are especially important in moderate wind regions. Nonetheless gains are limited, since while increasing hubs from 110 to 140m drives sizeable gains, these are diminishing from that point onwards (Lantz, et al. 2019). All in all, these technological improvements and better understanding of the industry have allowed for the higher CAGR (2.6%) in load factor in the last 10 years.

Wind Offshore has the highest load factor

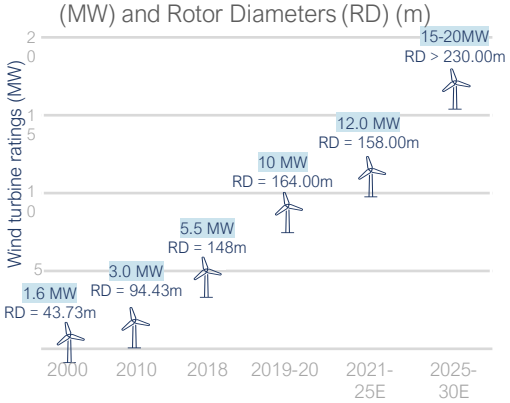
Similarly to Wind Onshore, Wind Offshore load factor also depends on wind quality, hub height and turbines used, but the latter enjoys advantages in both, justifying the sizable difference in load factor.

Firstly, wind tends to be faster off-shore (Graph 27), secondly firms are able to build higher hubs and overall bigger projects, which has been the trend and is expected to continue to be the case in upcoming years (Graph 28), and thirdly they're able to deploy larger turbines. The MHI Vestas' turbines with a 10 MW capacity and 164 m rotor are already in the market and there is an overall expectation of having turbines of 15 to 20 MW by 2030, which would represent a tangible increase in load factor (Graph 29).

Solar load factor has increased due to implementation in better sites and improvement in panels' technology

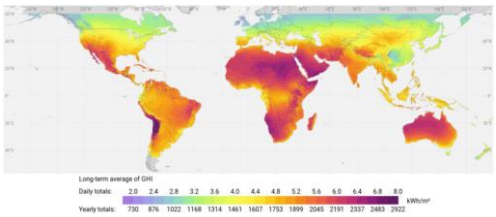
Solar load factor depends both on solar irradiation profile and technology used in the panels. The first is measured by GHI and can change considerably around the globe as can be seen

Graph 29 – Offshore Wind Turbines Ratings (MW) and Rotor Diameters (RD) (m)



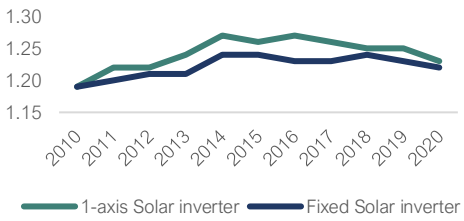
Source: IRENA

Graph 30 – Solar Photovoltaic Power Potential by Country (GHI)



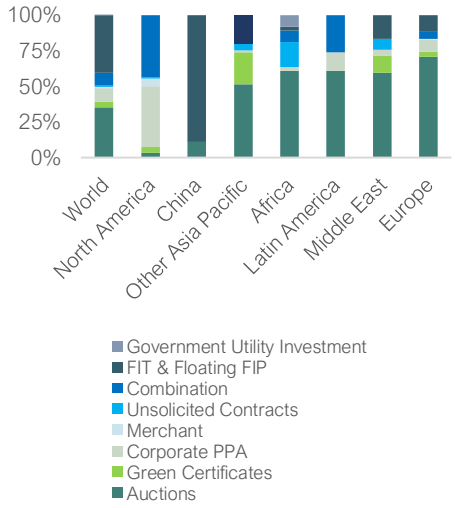
Source: World Bank

Graph 31 – Global average inverter load ratio trend



Source: IRENA

Graph 32 – Remuneration Schemes supporting wind capacity additions (%)



Source: IEA

in Graph 30. Recently, a shift of deployment of panels to areas with higher irradiation contributed significantly for the 1.6% CAGR in global Solar load factor in the last 10 years. This trend should continue in the future as new markets with higher GHI initiate the energetic shift to renewables.

Similarly to Wind, Solar load factor has had a contribution from technological advancements, namely with the increasing usage of bifacial modules (which allow panels to capture irradiation from both sides) and tracking systems – which allows to rotate the panel towards the Sun (as seen in Graph 31, devices with one rotation axis have higher capacity factors compared to those which are fixed). These reduce losses and variability of irradiation received throughout the day.

Despite the different remuneration frameworks throughout regions, prices in the industry are expected to continue decreasing, albeit at a slow rate due to price stickiness

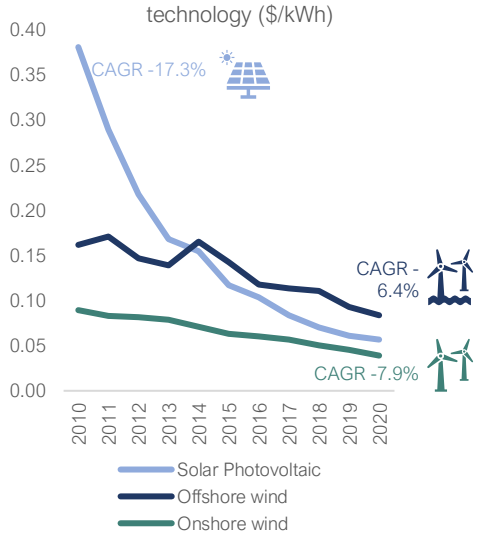
In the energy industry, contracts tend to be long-term and there are two main mechanisms for a company to win a new project:

1. Public Auction – Usually reserved for government entities, when a new project is announced, with its longevity and capacity defined (e.g. a government wants a wind farm on a 50 acre area built and producing 500 MW of energy for 20 years), different players will then submit their bids, detailing the conditions they are able to offer, such as the completion date and the price at which they will sell their energy for. Once a winner is chosen, the conditions are set and, for the agreed-upon life-time of the project (usually between 20 and 30 years), the energy provider will sell energy at the agreed upon price (it is not uncommon for stipulations such as inflation adjustments to be included)
2. Corporate Power Purchase Agreement (PPA) – A procedure similar to Public Auctions, but reserved for private entities, translating into a bilateral long-term contract predicting the purchase of energy from a given source and price for a stipulated period (usually also 15 to 30 years). Lastly, just like in public auctions, there are many potential variations on the contract types (e.g., "Pay as you use", "Inflation Linked").

Looking at Graph 32 it is clear that the main remuneration scheme for Onshore Wind in all regions except China and North America is auctions, where the former is vastly dominated by administratively defined tariffs and the latter by Corporate/Private PPA's and Tax Credits.

Regarding tax credits, these are both PTC's (Production Tax

Graph 33 – Global weighted-average utility-scale LCOE by technology ($/kWh)



Source: IRENA

Tax Credits), and ITC's (Investment Tax Credits). They represent tax incentives given on renewable electricity generation and investment, respectively, which remain fixed for 10 years of operation. EDPR enjoys from these benefits in the US where it established tax equity partnerships with institutional investors which contribute with capital in exchange for the benefits and cash distributions.

In all remuneration schemes, government subsidies (e.g., guaranteed minimum price, tax credits, etc…) are still common, however in the upcoming years, prices are expected to transition from being administratively set to being competitively set.

It is also important to note that the set price is the price at which supply meets demand, meaning that a firm might sell their energy at a price greater than the one they were willing to sell for. With regards to how firms define the price they will offer when bidding for new projects, the main indicator used is LCOE (Levelized Cost of Energy), which essentially is the total cost per MWh of a given project over its lifetime, which includes not only the operational and maintenance costs but also its CAPEX. From this value, firms will place a premium which allows for a desired return.

Looking now at the overall trend of LCOE, due to recent innovation, significant investments and China's mass production involvement, this has been falling rapidly, namely -82% in Solar, -38% in Onshore Wind and -29% in Offshore Wind in the last 10 years (Graph 33). This trend is expected to continue, with Solar decreasing 39% until 2025 and Onshore and Offshore Wind decreasing 11% and 41%, respectively, in the same time period (International Renewables Energy Agency 2021).

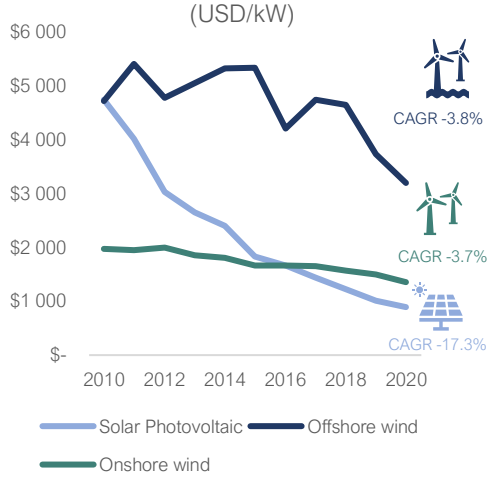
With the decrease in LCOE, the price at which renewable energy has been sold has been decreasing and is expected to continue to do so in upcoming years. Therefore, since both developers and clients know that prices will decrease overtime, the contracted price will be somewhere between the current higher price and the future lower price. Essentially, clients know that prices are falling and therefore they will not sign a long term deal for a price which in the following year they could get for cheaper. This is not a problem as long as developers are able to set a long-term price which is at a discount of current market prices but at a premium in future market prices, meaning that the contractual price will benefit both parties – the clients in the first few years and the developers in the later ones. All in all, this results in contractual prices between developers and their clients to be significantly sticky.

Table 2 – Learning rates by technology (%)

	Total installed cost 2010 - 2020	LCOE 2010 – 2021/23
Utility-scale solar PV	34%	39%
Onshore wind	17%	32%
Offshore	9%	15%

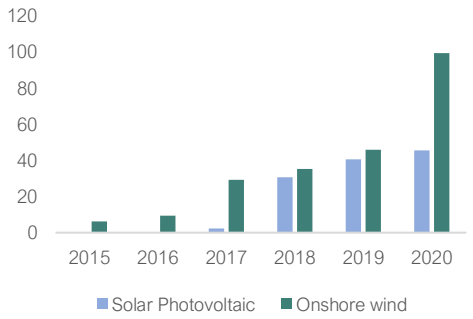
Source: IRENA

Graph 34 - Global weighted-average total installed costs by technology (USD/kW)



Source: IRENA

Graph 35 – Annual total capacity added at a lower cost than the cheapest fossil fuel-fired option (GW)



Source: IRENA

Table 3 – Wind turbine price indices decrease (%)

Index	Period	% Decrease
United States <5 MW	2007-2011	17%
United States 5-100 MW	2010-2015	44%
United States >100 MW	2008-2016	56%
BNEF WTPI	2009-2020	59%
BNEF WTPI <100 m Ø	2009-2019	53%
BNEF WTPI >100 m Ø	2010-2020	59%
Chinese turbine prices	1998-2020	78%
Vestas Average Selling Price	2008-2021	49%

Source: IRENA

Cost decreases of Wind and Solar technologies make them now competitive with fossil-fuels

As referred previously, the LCOE of renewable energies like Wind and Solar has been decreasing steadily in the last few years (more than other renewables), driving lower average selling prices. As seen in Table 2 there have been significant learning rates[1] in the technologies used by EDPR, with utility-scale Solar PV gaining in the learning rates of LCOE and total installed costs, followed by Wind Onshore, which had a similar learning rate in LCOE (32% versus 39%) but a much lower in total installed costs (17% versus 34%). Wind Offshore is still the most expensive of the three (Graph 34) but cost reductions are expected to continue through the future.

The main drivers for these cost reductions range from: technological advancements which drove capacity factors upwards, specialisation and standardisation of equipment, broader and more competitive supply chains, economies of scale, and the worldwide competition between project developers (International Renewables Energy Agency 2021). All these factors are potentiated by the rapid development of the market, supported by governments. With these cost reductions, Wind Onshore, and Solar PV are already competitive with fossil fuels, without subsidies, with new coal-fired power plants in Europe becoming more expensive than these renewables. Thus, more and more capacity is being deployed every year at a lower cost than the cheapest alternative fossil fuel-based, having Wind Onshore capacity in this conditions more than doubled in 2020 (Graph 35). Wind Offshore should become cost competitive in the near term.

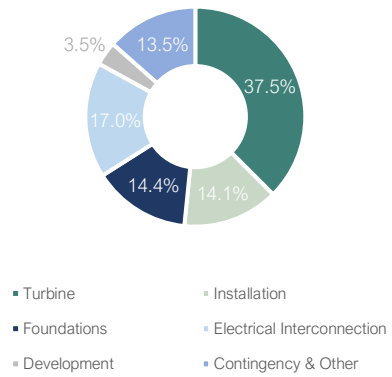
Wind Onshore costs reduction fuelled by lower turbine prices

Wind Onshore LCOE fell approximately 56% in the last 10 years. This reduction was driven by different reasons: significant turbine prices decreases (Table 3) and significant cost reductions in parks construction (both due to more mature supply chains), higher capacity factors, and lower Operation and Maintenance (O&M) costs (due to increasing competitiveness between providers and better turbines). Regionally, Brazil and other South American countries led the decrease in LCOE and total installed costs of Onshore in the last decade, followed by Europe and North America.

This rapid cost decrease should slow down in the next 5 years (with an expected decline of the weighted-average LCOE of 15%) since investment is being focused on more expensive markets and due to the site and sizable limitations of Wind Onshore. Good wind locations have been decreasing and there are constraints on building much larger towers. As such, other

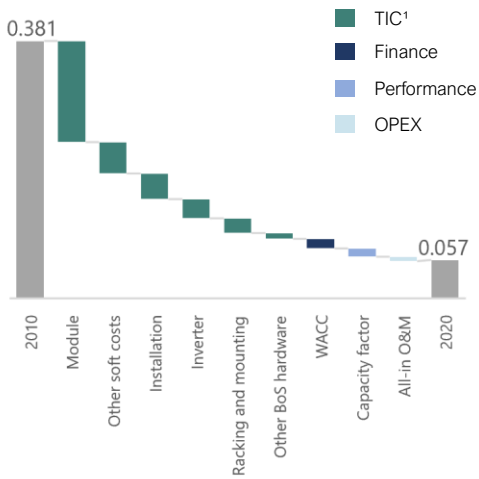
[1] Learning rate - percentual reduction in costs for each doubling of cumulative production or capacity

Graph 36 - Representative Offshore Wind farm total installed costs breakdown in OECD country, 2017 (%)



Source: OECD

Graph 37 - Drivers of the decline of LCOE of utility-scale Solar PV (2010-2020) (USD/W)



Source: IRENA

Table 4 – Average module prices decreases in selected EDPR markets

	2013	2020	2013-2020
Country Names	2020 USD/W	2020 USD/W	% Difference
Brazil	0.748	0.217	-71%
Canada	0.994	0.436	-56%
France	0.771	0.236	-69%
Italy	0.804	0.28	-65%
Japan	0.961	0.367	-62%
Spain	0.762	0.251	-67%
United Kingdom	0.737	0.288	-61%
United States	0.838	0.356	-57%

Source: IRENA

innovations in the design and construction of rotor blades, optimization of electronics, digitalization of Wind turbines and recycling of materials will need to be alternatives to improve load factors and drive down LCOE, for which repowerings should also contribute significantly, specially in markets like the European one, with older average useful lives of plants.

Wind Offshore is still expensive but market growth and floating technology should help to reduce costs in the next decades

Wind Offshore LCOE reduced around 48% in 10 years. Nonetheless, it is still a very expensive alternative compared to Wind Onshore, since it is a fairly recent technology and is still in a maturing stage. The conditions of planning, installation and O&M of wind farms in the sea are harder. Thus, Onshore and Offshore cost breakdown differs as Offshore has a higher share of cost for installation and foundation (Graph 36). Also, grid connections to land are longer and thus, more expensive. However, as there is an expected increase in installed capacity in the next years, cost savings are to increase by benefiting from more competitiveness between developers and between suppliers, further economies of scale and more regionalization of manufacturing in hubs.

A major advancement, beyond the turbine enlargement already analysed in Onshore, is the introduction of specialised ships for installation and maintenance. This is particularly a pro as the plants move further away from shore to deeper waters. Onshore turbines started off as not being able to stand in waters deeper than 60 meters, which is a constraint for markets with shallow water borders. Floating technology launched in 2017 has came as a way of surpassing this. Also, the turbine set-up in floating Offshore is easier and may become more cost-efficient than fixed Offshore turbines over time.

Solar is now the most cost-competitive renewable technology, mainly due to decreasing module prices

Solar PV LCOE had a remarkable fall of c.85% since 2010 (varying depending on the region), competing now with the cheapest fossil-fuel projects, whereas it was twice as expensive 10 years ago. Unlike Wind cost reductions, which have been strongly driven by reductions in load factor, Solar lower costs have been driven mostly by total installed cost reductions (as can be seen by the close learning rates of the two variables). These cost reductions are 46% due to decreases in module prices (Graph 37) which reduced 93% in the last decade. As can be seen from the Table 4, in most EDPR markets, these costs reduced by more than 60%.

Other important factors for the decrease in LCOE lie in the reduction of costs in the balance of systems, the rise in capacity

[1] TIC – information and communication technologies

factors, and the reduction in system losses due to other technological improvements. Finally, other small contributions were of better financing conditions (lower WACC) and lower O&M costs (Graph 37).

Table 5 – Peer Group 1 breakdown

Characteristics
• European Based • Share of renewable energy > 30% • Share of wind > 10% • Market Cap > €20 bn • Preferably Diversified services portfolio
Firms
enel ENGIE IBERDROLA

Table 6 – Peer Group 2 breakdown

Characteristics
• European based • Share of renewable energy > 75% • Share of wind > 60% • Market Cap > €1 bn
Firms
acciona Ørsted voltalia

Source: Team Analysis

COMPETITIVE POSITIONING

EDPR positions itself as a strong wind-energy-focused player as well as an infrastructure builder with the investment capacity to win multiple auctions and sell the finished projects at a premium.

As it is mentioned in section 'Supply Outlook' the renewable energy industry has been expanding and, as more countries and companies commit to reaching carbon neutrality, and consequently invest more capital, more firms will enter the market. This has led to different types of firms competing in the industry:

- Fossil fuel-focused firms which have created divisions to also target the renewable energy industry (e.g., Shell investing and offering to clients Wind and Solar energy)
- Firms originally focused on fossil fuels, which have transitioned into renewable energy (e.g., Orsted being created in the 70's to manage gas and oil, but became a renewables only firm)
- Segments of firms separated into entirely new firms to focus on renewable energy (e.g., EDPR transforming into a new firm from a segment of EDP)

Out of the 3 types, the main competitors end up being the second and third, in other words, firms which in one way or another, only focus on renewable energy. Nevertheless, even the firms which focus only on renewables might differ by offering different services. Namely, whereas some firms might only deal with the production of energy, others also offer network distribution services, for example. The latter tend to be larger and have higher market caps.

With this in mind, the overall competitive environment in which EDPR finds itself in, can be split into 2 main peer groups:

1. Firms with a more diversified portfolio of technology and services which tend to have large market caps (Table 5)
2. Firms which large majority of energy revenues stem from renewable energy production, more specifically Wind (Table 6)

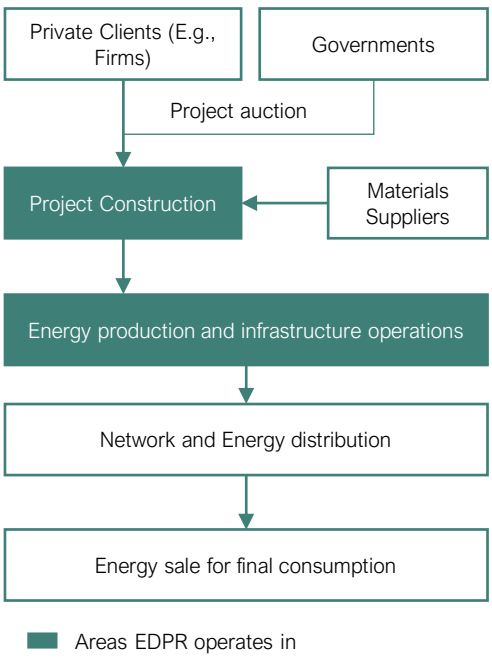
Although in terms of operations the second peer group better tracks EDPR's operations, the first is also composed of direct competitors.

Table 7 – Peers Operations' characteristics and breakdown

			Peer Group 1			Peer Group 2		
Company		EDPR	Enel SPA	Engie	Iberdrola	Acciona AS	Orsted	Voltalia SA
Market Cap (€ bn)		€23,1	€73,4	€30,0	€64,0	€9,0	€51,5	€2,1
Geography Breakdown (%)	Europe	50%	81%	64%	61%	52%	95%	49%
	North America	48%	2%	8%	24%	29%	5%	-
	South America	2%	22%	9%	18%	3%	-	51%
	Other/Adjustments	-	-5%	19%	-3%	19%	1%	-
Revenue Source Breakdown (%)	Energy, Generation & Supply	100%	93%	100%	68%	33%	58%	70%
	Network	-	31%	-	39%	67%	42%	24%
	Other/Adjustments	-	-24%	-	-7%	-	-	7%
Energy Mix Breakdown (%)	Renewables	100%	54%	41%	63%	100%	82%	100%
	Wind	96%	15%	10%	36%	79%	68%	74%
	Solar	4%	5%	4%	-	10%	-	22%
	Other Renewables	-	34%	27%	27%	11%	14%	4%
	Non-Renewables/Others	-	42%	49%	31%	-	18%	-
	Nuclear	-	4%	10%	6%	-	-	-

Source: Bloomberg

Graph 38 - Average project progression



Source: Team Analysis

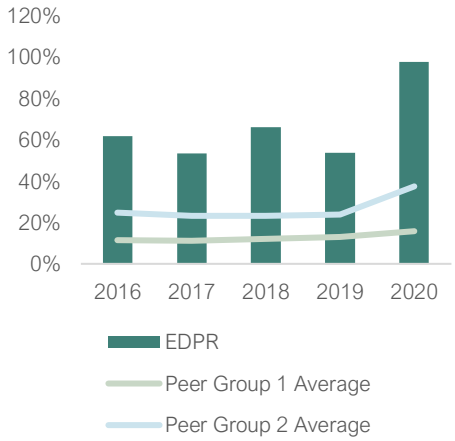
Peer group 1 is characterized by a higher investment capacity, resulting in a superior capability to take on new projects. Furthermore, in cases where vertical integration has taken place and firms offer multiple services within the energy production and distribution supply-chain (e.g., Iberdrola), firms are more independent in their operations and can establish more easily in new regions. These type of companies tend to have a higher market cap not only due to their higher revenues and profitability, but also due to their bigger diversification of services and therefore potentially lower risk profile. However, given the easy access to capital, these firms often turn to acquisitions of smaller, more specialized companies or already built projects, instead of growing organically.

Peer group 2 is characterized by a heavier focus on renewable energies, especially in Wind, meaning that they often benefit from learning economies and can develop more expertise in the area. However, these firms are also frequently smaller and therefore often find themselves unable to bid for certain projects and expand to new regions. Furthermore, since there can be an overreliance on one type of energy, they are overexposed to any disruption on that technology's profitability (e.g., decreases in the quality of wind, increases in particular CAPEX costs).

Concerning EDPR's positioning within the market landscaped, it finds itself in between the two peer groups with unique characteristics:

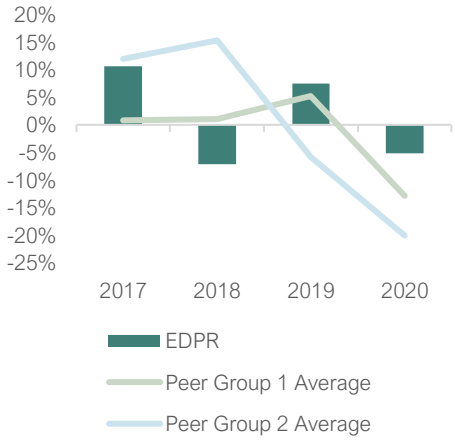
Sourcing & Investing Capacity - EDPR has shown a remarkable capability of investing, being able to source a highly competitive pipeline which in turn results in more efficient additions to its portfolio. This ability is clearly showcased in the increasingly

Graph 39 – Capex/Revenue evolution (%)



Source: Team Analysis

Graph 40 – Revenue YoY Growth Rate evolution (%)



Source: EDPR, Bloomberg, Team Analysis

higher share of revenues that EDPR spends in Capex in comparison to its peers (Graph 39) highlighting its ability to compete and win new auctions and PPAs.

Wind-Energy Operations Expertise – the firm's vast experience in Onshore Wind energy allows it to operate its energy fields efficiently and accurately assess new projects feasibility. Furthermore, its market's expertise and proven track record make for a better project sourcing process and its relations with suppliers allow for cost efficient operations. Said expertise can be partially seen on Graph 40, in EDPR's accelerated revenues' growth rate compared to peers.

Asset Rotation Capabilities – Lastly, EDPR has also shown a remarkable capability to sell some of its assets, which is highlighted by the c.15% premium it has achieved by capital gains in recent sell-downs

FORECAST MODEL

The financial forecasts of EDPR depend strongly on visibility of the future installed capacity. On this note, there are three important remarks about the financial forecast.

EBITDA MW Capacity vs Equity Consolidated Capacity

Firstly, the company has a strong bet in Joint Ventures and Associates. Profits which derive from Joint Ventures and Associates where EDPR's share is between 20% and 50% (as it is the case for OW) are, accounting-wise, registered as 'Share of Net Profit in Joint Ventures and Associates'. However, in the upcoming years, OW is expected to make up the majority of this type of profit. Being the main vehicle through which EDPR is investing in the Offshore Wind market, the revenue drivers for this Joint Venture in specific were also analysed in detail. Furthermore, and following EDPR's notation, capacity referred to the Joint Ventures and Associates in this category will be referred as 'Equity Consolidated Capacity' to distinguish from the remaining capacity referred as 'EBITDA MW Capacity'

Timing of forecasts

Secondly, regarding the timing of forecasts:

- Until 2025, revenue drivers were estimated at a country level and EBIT drivers were estimated at a regional level;
- From 2026 until 2030, both revenue drivers and EBIT drivers were estimated at a regional level due to low visibility on gross additions of capacity per country;
- We consider the company is far from reaching plateau. We estimate this to happen in 2050 (the target year for Net Zero Emissions for most countries). Between 2030 and 2050, EBIT drivers were estimated at the company level and we forecasted revenue to follow market growth.

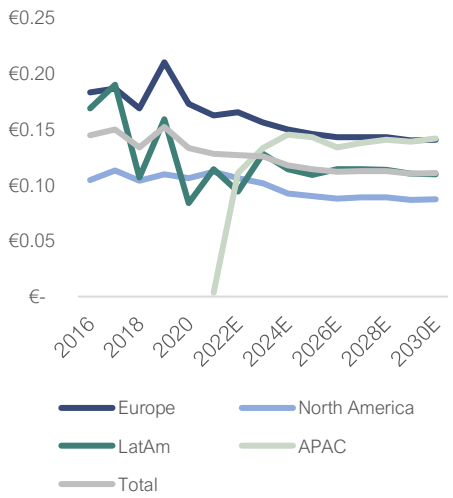
Net vs Gross Installed Capacity

Lastly, installed capacity depends positively on gross capacity additions and negatively on sell-downs within the Asset Rotation Plan. Due to low visibility on when and which assets EDPR intends to sell, the sell-down of capacity was just predicted by country until 2022 year end. Thus, until 2022 estimations of capacity at the country level are of net capacity, while from 2023 onwards, capacity estimations are gross capacity. The latter follow the split of gross additions by region and technology predicted by EDPR to avoid contaminating forecasts based on installed capacity.

Graph 41 – EDPR Revenues by segment (€m)

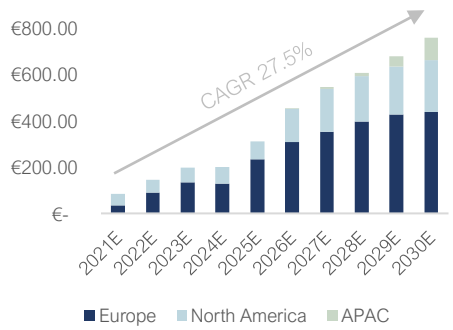
Source: EDPR and Team Analysis

Graph 42 – Revenues per average MW in operation (€)



Source: EDPR and Team Analysis

Graph 43 – Revenues of Joint Ventures and Associates (€m)



Financial results were not affected by this estimation as we estimated capacity sold by region and technology and respective revenue loss after 2022, adjusting respective revenues and including the expected yearly capital gains. Other EBIT drivers are calculated based on adjusted revenues and net capacity (average MW in operation) by region.

REVENUES FORECAST

Revenues should increase approximately 11% per year until 2030

Revenues of EDPR have been increasing at a low CAGR of 1% since 2016, mostly due to the decrease of revenues in Europe due to the Asset Rotation Plan in place, and a decrease of 3.2% per year in average selling price per MW (Graph 41). However, it is expected that revenue growth accelerates to around 11% per year from 2021 onwards attributable to an exponential increase of electricity generated of 14.3% per year, albeit partially offset by a decrease in Revenue per MW resulting from a 1% yearly drop in average selling price (Graph 42). The best forecasted year in terms of growth is 2022 as there is good visibility on several projects to start operating next year.

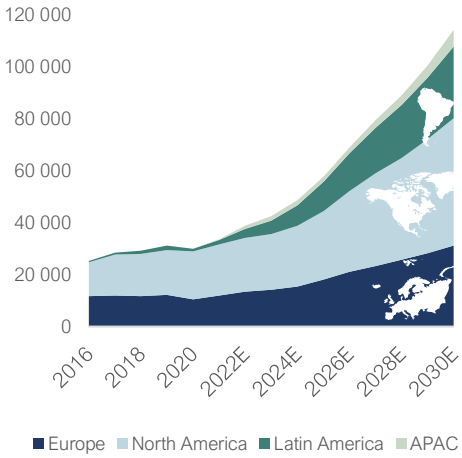
On a per region basis, Europe and North America, as the more mature regions, should grow at very similar yearly rates: 7% until 2025 and 10% to 11% afterwards, despite revenues per MW in Europe being higher than in North America due to higher prices charged. The region with more room to expand is APAC, supported by an expected increase in price until 2025 and the integration of Sunseap, it is, thus, the region with highest forecasted growth. Latin America (LatAm) will also grow considerably, namely in the first half of the decade, when it will have a revenue growth of around 44% per year, however limited due to an average selling price yearly decrease of 4%. The revenues per MW have been a bit unstable due to fluctuations of prices but we estimate a stabilization as EDPR diversifies its presence by entering other countries.

Regarding revenues of Joint Ventures and Associates, even though they do not contribute to overall revenues of the firm, its inflow is going to be registered through their respective net profit, which is forecasted to grow at a $CAGR_{2021-2030}$ of 27.5%.

Electricity Generated should grow 14.3% per year mostly due to net capacity growth

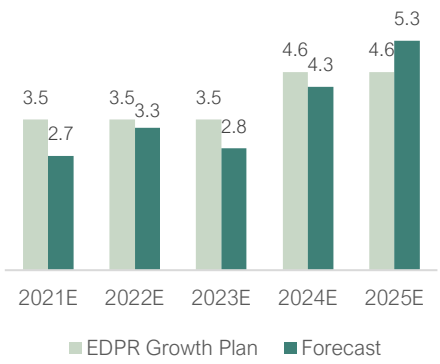
It is expected that electricity generated accelerates considerably until 2025 (at a CAGR of 25% compared to a previous growth of 4% per year) and decelerates slightly

Graph 44 – Net Electricity Generated by Region (GWh) (EBITDA MW Capacity + Equity Consolidated)



Source: EDPR and Team Analysis

Graph 45 - Gross Capacity Added per year - Forecast vs EDPR growth plan (GW)



Source: EDPR and Team Analysis

afterwards, until 2030, growing at a 13% CAGR by then (Graph 44). This in line with the net installed capacity growth as load factor suffers almost no changes at an aggregate level. Yet, the slight growth of the latter in the last half of the decade (namely due to Wind Offshore expansion) will allow electricity generated to grow by even more than installed capacity (which grows at a 13.7% growth rate).

Regionally, APAC is the region with the highest growth followed by Latin America, which is in line with the considerable growth in installed capacity in both regions and the fact that those are the only two regions in which the load factor for EBITDA MW capacity is expected to increase. Electricity generated in Europe decreased by 3% a year since 2016, as installed capacity decreased due to sell-downs and the load factor stagnated. However, Europe's generation is forecasted to grow by approximately 10% per year, similarly to North America, as the company expands to new markets and improves the asset base's generation by installing projects with more advanced technology.

Installed Capacity

Until 2024 gross additions should fall slightly short of targets, with Wind Offshore being the exception

Making use of the firm's information on installed capacity under construction, project announcements to the market and growth plan expectations, the report forecasts gross additions of installed capacity on a technology and country basis until 2025 (Appendix 9). Currently, EDPR has secured 8.1 GW, of which 7.9 GW with a Commercial Operation Date (CoD) until 2023, which is 75% of 2023's target. Thus, we expect EDPR to fall short of expected yearly 3.5 GW of gross additions until 2023, with announced projects currently in line to add only 2.8 GW/year in 2021 and 2023. Although new projects will likely still be announced, EDPR still needs to increase this rate considerably in 2024 and 2025 in order to meet forecasts (Graph 45). Overall our model incorporates 18.4 GW of gross additions until 2025, slightly below the 19.8 GW estimated by the company, due to the difficulty that EDPR will have to meet the 3.5 GW rate in the first years with the current secured pipeline.

Regarding 2030, EDPR has announced the goal of making 50 GW of gross additions in the next decade. This was incorporated in the model for 2025 until 2030 and corresponds to approximately 30 GW added in that 5-year period, at a yearly gross additions rate of 5 to 7 GW, to be distributed across technologies - the growth plan until 2025 was replicated to the future.

Table 8 – Ocean Winds Project Visibility (GW)

Year	GW
2021	0.5
2022	1.5
2022	3.4
>2025	+4.9
Total	8.3

Source: EDPR

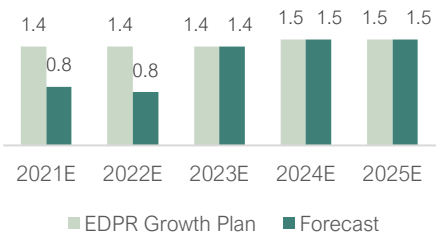
Table 9 – Sell-down announcements

Name Project	Announcing Date	Country	MW sold	Energy	% sold
Indiana Crossroads Wind B&T	24/10/2019	US	302		100%
Riverstart Solar	02/09/2020	US	200		100%
Indiana Crossroads Solar B&T	22/03/2021	US	200		100%
Bright Stalk & Harvest Ridge	09/04/2021	US	275		68%
Bright Stalk & Harvest Ridge	01/07/2021	US	49		12%
Wind Portugal	21/07/2021	Portugal	221		100%
Wind Poland	04/08/2021	Poland	149		100%
N.A.	15/11/2021	Spain	181		100%

Completed

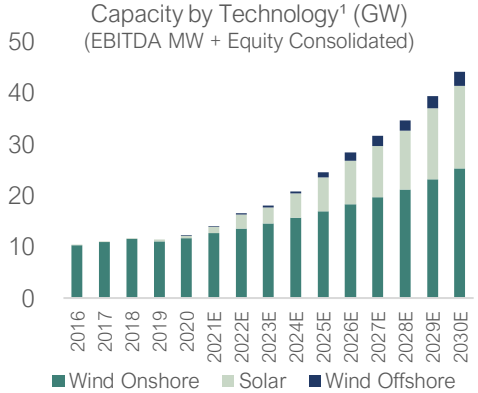
Source: EDPR

Graph 46 - Sold-down capacity per year - Forecast vs EDPR asset rotation plan (GW)



Source: EDPR and Team Analysis

Graph 47 - EDPR Net Installed Capacity by Technology[1] (GW) (EBITDA MW + Equity Consolidated)



Source: EDPR and Team Analysis

For Wind Offshore installed capacity in the upcoming decade, we included almost exclusively projects announced by OW (Appendix 10). The reason being that if the Joint Venture manages to complete the projects already announced, EDPR will already reach the goal for Wind Offshore in the growth plan until 2025 – 0.9 GW. We added an extra 140MW (70MW net for EDPR) yearly capacity after 2025 to reflect the current project visibility of the Joint Venture (Table 8) and the 67% average share of capacity it owns in announced projects.

Sell-down capacity until 2025 should be less than the 7.2 GW expected, as EDPR is securing transactions at higher multiples

Regarding sold-down capacity, we expect the Asset Rotation to continue to be focused in the two core technologies of EDPR – Wind Onshore and Solar – as Wind Offshore is operated through a Joint Venture with ENGIE and so results from a different strategy, and Storage installed capacity is only now being developed.

Until 2022 we estimated net capacity by country by considering the announced sell-downs so far (Table 9). We assumed those projects that have not yet been sold to be sold only in 2022 to avoid overestimating 2021 numbers. This means the sold-down capacity in 2021 and 2022 will be approximately 0.8 GW, almost half of the 1.4 GW expected until 2023. As we forecast that EDPR will manage to sell installed capacity in line with their goals after 2023 (Graph 46), overall the company will sell approximately 6 GW until 2025, less 1.2 GW than expected. The company ultimately will sell less than originally estimated because the goal is set on a proceeds-basis and not on a capacity-basis and, since EDPR has been selling at a higher price than expected, it will not need to sell as much to reach the desired amount (to be discussed in 'Capital Gains Forecast').

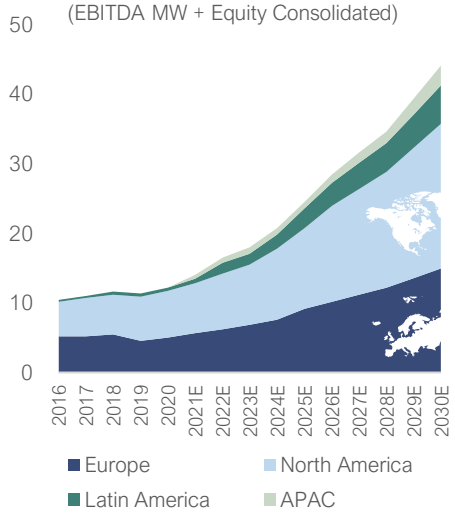
Between 2026 and 2028, we expect the sell-downs to represent the same share of gross additions as these represented between 2021 and 2023 – 40% – and in 2029 and 2030, the same share as in 2024 and 2025 – 33% – to ensure a smooth increase of forecasted net installed capacity.

Net installed capacity should grow 13.7% per year until 2030

Overall net installed capacity is expected to grow at a $CAGR_{2021-2025}$ of 15% and at 12% $CAGR_{2025-2030}$ afterwards (Graph 47). We expect EDPR to have 24.6 GW of operational capacity (including Equity Consolidated) by 2025, and 20 GW more by 2030. This sharp increase in CAGR in comparison with $CAGR_{2016-2020}$ of 4%, reflects the very ambitious plan for the upcoming decade. This growth in capacity will be mostly possible due to a 42% yearly growth in Solar net installed

[1] Solar capacity includes Storage capacity due to the negligible size of the latter (around 300MW in 2025)

Graph 48 - EDPR Net Installed Capacity by Region (GW)
(EBITDA MW + Equity Consolidated)



Source: EDPR and Team Analysis

Table 10 – EDPR New Markets (without Wind Offshore and Sunseap countries)

Country	CoD	MW (entry year)	Technology
Greece	2021	60	Wind Onshore
UK	2021	5	Wind Onshore
Brazil	2021	204	Solar
Vietnam	2021	28	Solar
Colombia	2022	492	Wind Onshore
US	2022	40	Storage
Spain	2022	71	Solar
Poland	2022	44	Solar
Hungary	2022	50	Solar
Chile	2023	77	Wind Onshore
Chile	2025	254	Solar

Source: EDPR and Team Analysis

capacity until 2030 (against an 8% CAGR of Wind Onshore). Although Solar currently represents c.6% of total capacity, it should represent c.30% in less than 5 years and c.36% in 10 years. Wind Offshore launch through OW platform will also contribute to drive growth in the next 10 years and should represent c.6% of installed capacity by 2030.

Europe - Installed capacity in Europe has been fairly stagnated since 2016 (Graph 48). Yet, the fact that the region is betting strongly in Wind Offshore, and the entry of EDPR in new markets, as Greece and the UK, should boost growth in the following years (Table 10) to around 12%. From the more consolidated markets, Spain is the one that has more projects to be released, namely hybrid projects, followed by Italy and Poland.

North America - Installed capacity in North America represents around half of EDPR's capacity. The first has grown at an 8% CAGR since 2016 but this rate should grow 4% in the following years as EDPR is betting strongly in the US, namely in Solar capacity. It is expected that the latter represents almost 35% of capacity in the region by 2025 and almost 50% by 2030. The launch of Storage capacity coupled with Solar in the region is of reference too.

Latin America – This will continue as the fastest growing region (with an expected CAGR of 29% in the following 5 years) due to the strong bet in the Brazilian market with more than 1340 MW between Solar and Wind Onshore capacity already secured in the country, and the announced expansion to promising markets as Colombia and Chile (Table 10). Future expansions in Wind Offshore are not expected in the region.

APAC – While Vietnam 28 MW was the entry of EDPR in the region, the Sunseap acquisition represents a growth platform that should secure a yearly growth above 18% in the following years. Solar should remain the majority of installed capacity in the APAC but it is expected that the expansion to Wind Onshore occurs already in the next year. By 2030, APAC should represent at most 6% of EDPR's installed capacity.

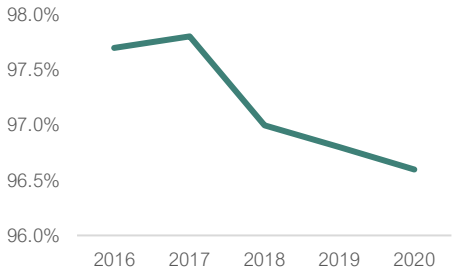
Load Factor

EBITDA MW capacity's load factor should stagnate due to counterbalance between Solar additions and technological improvement of newly added capacity

Load factor was estimated taking into consideration: technical availability of EDPR, technological mix of installed capacity, and respective renewables resource quality by region and technological improvements (as explained in 'Supply Outlook').

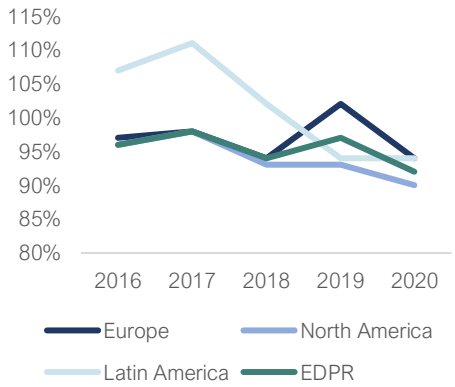
Regarding technical availability in EDPR, this has been slightly decreasing since 2017, showing some O&M problems, which

Graph 49 – Technical Energy Availability[1] (%)



Source: EDPR

Graph 50 - Renewables Index (vs P50 = 100%) (%)



Source: EDPR

Table 11 – Assets average age by country

Country	Average age in years
Spain	12
Portugal	12
France & Belgium	2
Poland	7
Romania	9
Italy	4
Greece	0
UK	10
US	9
Canada	2
Mexico	3
Brazil	3
Vietnam	0.3
EDPR	9

Source: EDPR

was pointed out in 2018 as concerning certain wind farms (Graph 49). However, this is not very material and the company maintains a target of 97.5% for 2022.

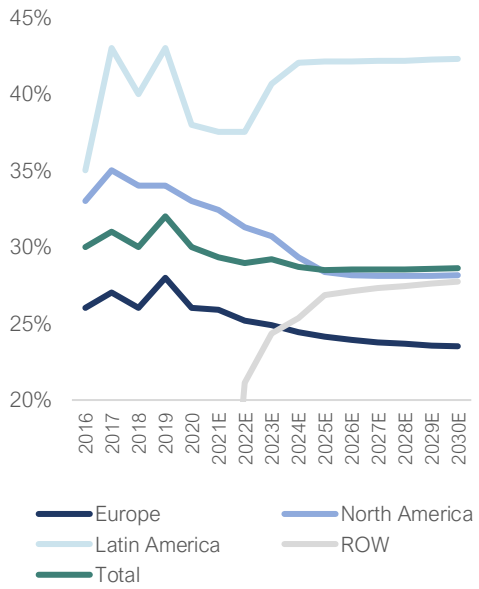
When it comes to overall wind renewables resource quality, the renewable index has been slightly below the P50 reference for EDPR portfolio in all main regions (Graph 50). Nonetheless, as shown in the 'Supply Outlook' the low wind resource is in the expected range of uncertainty in the long-run.

For the forecast of the load factor, at the country level, a series of assumptions were made:

1. Load factors were estimated differently for EBITDA MW capacity and Equity Consolidated capacity as these have different technological mixes – the first is mostly Wind Onshore and Solar and the second is mostly composed by OW capacity, thus Wind Offshore;
2. Load factor in 2021 was estimated using an average of the load factor of the S1 2021 and Q3 2021;
3. After 2021, old capacity was assumed to keep the same load factor in the country of the previous year and new capacity was added at the load factor of projects contracted two years before at that same technology in the country level (using external data), to reflect technological innovations (in wind turbines, hub heights, solar module and inverter, etc.) incorporated in new projects;
4. To estimate forward-looking values, the growth rates applied to the 2020 data of IRENA were those estimated by IEA at a regional level for each technology in a 'Stated Policies Scenario', i.e. a Scenario in which current policies on Renewables will continue to apply in the next decade (Appendix 16);
5. Whenever country's data was not available, a country with similar renewable resource quality was used, or, if none, regional data[2]. To assess the similarity between countries, for Solar, irradiation was compared by using the Graph 30 on long-term average GHI. For Wind Onshore and Offshore, the speed of wind and power generated per square meter was analysed in terms of variability across different hub heights (Appendix 12). Wind Offshore quality was also compared using the Graph 27 on capacity factors in near shore waters;
6. Regarding assets useful life (Table 11) and, according to EDPR investors' communication, repowerings were mostly included after 2025. Only in 2022 a repowering of 42 MW

[1] Technical Energy Availability (TEA) excludes losses caused by curtailment, grid and other non controllable losses
[2] This also is applicable to average selling prices forecasts as some individual countries did not have a market for future securities or it was illiquid and therefore the prices were derived based on historical data, neighbouring countries' prices and regional or global CAGR.

Graph 51 - Load Factor by Region (EBITDA MW Capacity) (%)



Source: EDPR and Team Analysis

was included in Spain considering company's guidelines. As it is precisely Spain, Portugal and other European countries those with highest average age, and thus with lowest useful life (the average life of a renewables plant is 30 years), it was Europe the region where more repowerings were estimated to be done after 2025: 0.5% of installed capacity in the previous year was estimated to be repowered in each of the five years until 2030. In North America, this was also considered but at a lower rate: 0.1%. The reason being that only the United States should go through repowerings due to the advanced useful life of 9 years and according to company's guidelines.

In terms of EBITDA MW Capacity, it is worth highlighting two conflicting trends after 2021: the new added capacity of Wind Onshore with significantly higher load factors than the older capacity due to technological improvements, and the expansion to Solar which has a much lower load factor than Wind Onshore. These trends will almost cancel each other out as total load factor is expected to decrease by 0.7% a year between 2021 and 2025, and increase by 0.1% a year after 2025 until 2030 (Graph 51). The load factor in 2030 should be of 29% (only 1% below the current overall load factor). Regionally there are some differences in values and in trends worth understanding:

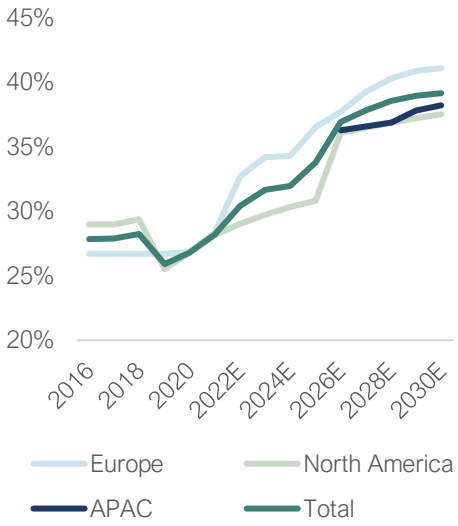
Europe – load factor is inferior to other regions as the quality of Wind Onshore is worse due to higher population density and the fact that the best locations are already taken. The expansion of Solar capacity in the region will make load factor slightly decrease along the following years, despite the repowerings that will occur after 2025.

North America – while having a higher load factor than Europe, the decrease of load factor between 2021 and 2025 will be higher, as the share of additions in Solar is also more significant. The overall load factor of EDPR will converge to the load factor in North America which is not surprising considering it is the region with a bigger weight in terms of installed capacity (47% of total in 2030).

Latin America – it is the region with higher load factor, both due to higher wind speeds and higher irradiation than the others, meaning that both Wind Onshore and Solar load factors will be superior. It is to expect a considerable increase in the load factor after 2022 (2.9% CAGR) since the entry in Chile and Colombia and the expansion in Brazil will be added at more recent technology.

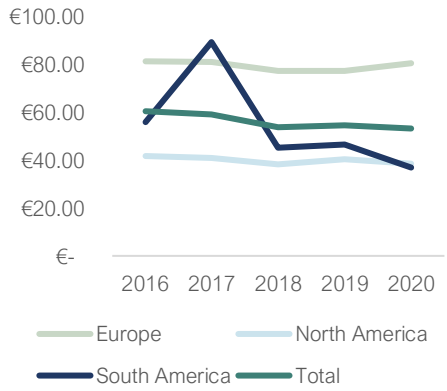
APAC – the sudden increase of load factor in the region derives from the fact that EDPR is currently present in the

Graph 52 - Load Factor by Region (Equity Consolidated Capacity) (%)



Source: EDPR and Team Analysis

Graph 53 – EDPR's contractual price evolution per year and region (€/MWh)



Source: EDPR and Team Analysis

region with Solar capacity alone (through the Vietnamese project and Sunseap's capacity), but it is, however, predicted that Wind Onshore capacity will be added after 2022. After 2025, net capacity factor should increase by 0.6% rate per year.

Regarding load factor of Equity Consolidated Capacity, this was induced backwards due to lack of data on load factor of Joint Ventures and Associates capacity. Before 2021, Wind Offshore capacity of OW was not yet deployed so load factors were inferior. These should grow considerably as more Wind Offshore capacity becomes operational (at around 4% per year) (Graph 52). Differences between regions are not significant, as Offshore Wind is less prone to changes depending on where is built (as could be seen in Graph 27).

Prices

Market Prices are expected to continue falling significantly at c. 3.2% per year, however due to price stickiness, EDPR's contractual prices will fall at a smaller rate of c.1%

It is assumed that the total price of a certain region is the weighted average of the price of each project, dependent on the weight of that project's capacity in relation to the region's total capacity. With this in mind, it is important to note that the stickiness of contractual prices mentioned in 'Supply Outlook' will be more prevalent in more mature regions with larger established capacities, since new additions at lower prices will not represent a significant enough weight in terms of capacity to severely impact the overall average price.

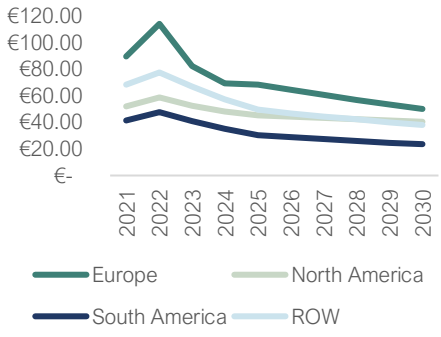
This is easily observable in the historical data on Graph 53, where the decrease of contractual prices has an inverse relation with the region's market maturity, with Europe decreasing at 0.3% per year, North America at 2.0% and South America at 9.9%. The variation in South America is especially volatile between 2016 and 2018 because EDPR only began its production in the region in 2016 and therefore each new capacity addition represented a large share of total capacity. However, considering that the more mature regions make up the majority of capacity, the total price decreased at 3.2% per year.

When forecasting revenues in the upcoming years, the same underlying logic was applied, meaning that it is assumed that the capacity in operation of previous years will continue to run at the contractual price of the previous year, whereas the added capacity in any given year will be fixed at a new price.

To define the price, firstly, market prices were established:

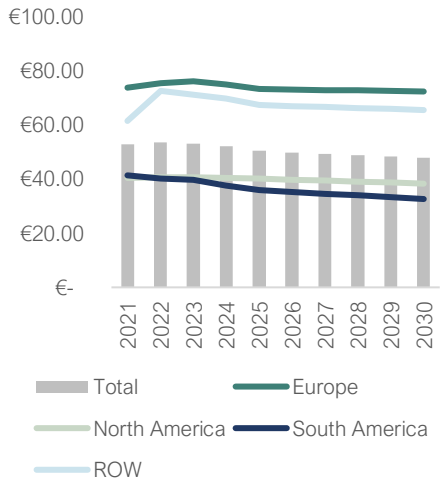
- For 2021, considering that contracts could have been

Graph 54 – Forecasted Evolution of Energy Market Price (€/MWh)



Source: Bloomberg, Local Exchanges and Team Analysis

Graph 55 – Forecasted Evolution of EDPR's Sale Price (€/MWh)



Source: Team Analysis

Table 12 – Contractual price growth rates per region

Region	CAGR 16-20	CAGR 21-25	CAGR 26-30
Europe	-0.3%	-0.2%	-0.2%
North America	-1.4%	-0.4%	-0.9%
South America	0.2%	-3.8%	-1.8%
APAC	-	2.4%	-0.6%
Total	-3.2%	-1.2%	-0.9%

Source: Team Analysis

signed at any point in the year, the annual average of futures contracts for 2021 in each country were assumed to be the market price[1] ;

- Between 2022 and 2025, operating under the assumption that markets are efficient but adjusting for unrelated volatility, the market price for each year was assumed to be the 3-month-average of futures contracts for each respective year[1];
- For 2026-2030, market prices were assumed to continue to evolve at the region's previous CAGR (Graph 54).

Looking at Graph 54, market prices of energy are expected to increase exponentially in 2022 which can be attributed to overall accelerated currency inflation, OPEC tampering of the world's oil market and decrease in gas-supply across Europe. However, in the following years the prices are expected to continue their descent resulting in an average $CAGR_{2021-2025}$ of -5.7%.

Once future market prices were established, in order to reach each year's new contracted price two assumptions were made:

- The new price is assumed to be the average of each region's following 5 years' market prices to capture the long-term fixed price which lays somewhere between the current higher price and the future lower price;
- Since it takes on average 1 year for a project to be operational, contracts are signed 1 year prior to the capacity being added and therefore the price is set on the previous year.

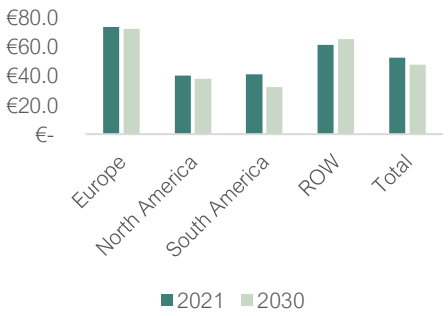
In conclusion, each year's new price is given as the average market price between T-1 and T+3 (assuming T is the year in question).

All in all, looking at Graph 55 and Table 12, it is possible to see that in the next 5 year period, contractual prices are expected to remain fairly stable in the mature regions (decreasing 0.2% in Europe and 0.4% in North America) whereas they vary significantly in the less mature ones (increasing 2.4% in ROW and decreasing 3.8% in South America), which was to be expected considering the correlation between maturity and price stickiness. APAC, in particular, sees a significant increase in its contractual price resulting from EDPR's purchase of Sunseap which portfolio is selling at higher prices.

Despite the spike in 2022's market prices, which skewed the CAGR upward slightly, as a whole, the firm's contractual price will evolve at a negative CAGR of 1.1%, which contrasts with the market's 5,4% decrease reflecting the firm's prices' stickiness.

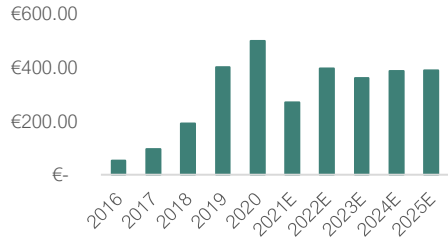
[1] All values retrieved on 1/12/21

Graph 56 – EDPR's sale price per region 2021 vs 2030 (€/MW)



Source: Team Analysis

Graph 57 - Other operating income (€m)



Source: Team Analysis

Table 13 – Sell-down announcements EV/MW

Name Project	Country	MW sold	Energy	% sold	EV/MW
Indiana Crossroads Wind B&T	US	302		100%	No info
Riverstart Solar	US	200		100%	$1.50
Indiana Crossroads Solar B&T	US	200		100%	No info
Bright Stalk & Harvest Ridge	US	275		68%	$1.54
Bright Stalk & Harvest Ridge	US	49		12%	$1.54
Wind Portugal	Portugal	221		100%	2.40€
Wind Poland	Poland	149		100%	2.00€
N.A.	Spain	181		100%	1.70€

Completed

Energy	Implied EV/MW
	€1.70 m
	€1.25 m

Source: EDPR

Between 2026 and 2030, the trend of contractual prices decreasing is common to all regions (Graph 56), which is to be expected considering that the capacity will virtually double while market prices will continue to drop, nonetheless the amplitude of variations per region is now smaller. The firm overall contractual price will continue to decrease but at a smaller rate of 0.9% per year.

CAPITAL GAINS FORECAST

Asset Rotations multiples have been higher than forecasted, resulting in higher Capital Gains per MW

Other operating income is mostly composed by capital gains of the company. These have been in a clear upward trend in recent years as the company reinforces successive Asset Rotation programs (Graph 57). To forecast future capital gains, it is necessary not only to forecast installed capacity sold (in 'Revenue Drivers – Installed Capacity') and respective book value sold, but also the EV/MW at which transactions will occur per technology.

Considering past transactions announced, the average EV/MW of sell-downs announced so far was €1.6 m, above expectations for the forward Asset Rotation plan of €1.1 m. We assumed this ratio is maintained as estimates of EDPR seem fairly conservative, and that Wind Onshore transactions will register an EV/MW of €1.70 m and Solar of €1.25 m (Table 13). The implied gain per MW of €0.25 m of past completed transactions was used as a proxy for future gains on transactions. Meaning that the implicit book value sold is €1.45 m per MW for wind Onshore and €1.00 m per MW for Solar.

Keeping these trends of higher multiples than forecasted for the future, EDPR should surpass by €1 bn its goal of generating €8 bn in proceeds until 2025. Until then, Other Operating Income should be around €360 m and €400 m, except in 2021, as transactions announced seem to be delayed and were forecasted for 2022.

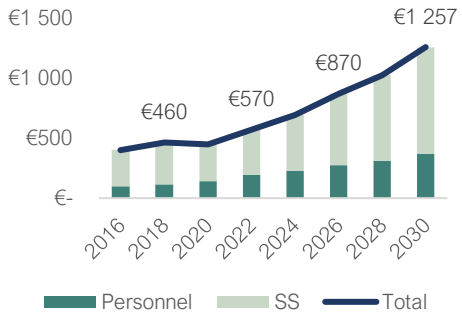
COSTS FORECAST

OPEX Costs per MW are forecasted to decrease at c.2% per year, driven by an increase in employee productivity and decrease in S&S Costs result of economies of scale and learning

EDPR's costs can be broken down into 2 categories: Personnel costs and Supplies & Services (S&S).

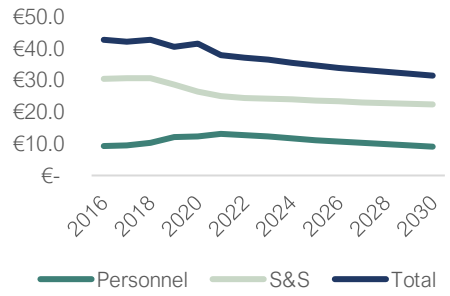
EDPR's overall total costs have remained fairly stable in recent years with a $CAGR_{2016-2020}$ of 2%, EDPR's total costs $CAGR_{2021-2030}$ is forecasted to increase to 11% (which is to be

Graph 58 – EDPR's total cost breakdown per category (€m)



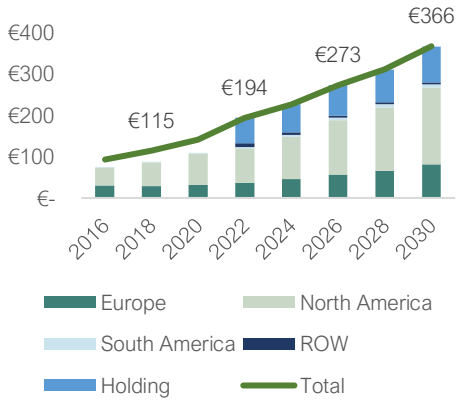
Source: EDPR and Team Analysis

Graph 59 – EDPR's Costs/MW evolution by category (€)



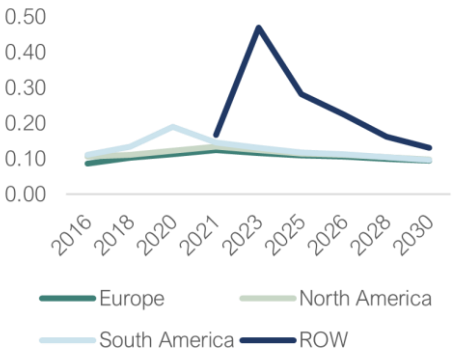
Source: EDPR and Team Analysis

Graph 60 – EDPR's Personnel Cost per region (€m)



Source: EDPR and Team Analysis

Graph 61 – Evolution of Employee/MW per region



Source: EDPR and Team Analysis

expected considering the significant increase in the firm's installed capacity) (Graph 58).

However, analysing at a per MW basis, it is clear that the firm's efficiency has been increasing and is expected to continue to do so through the maximization of economies of learning and scale. All in all, the trend has been for costs per MW to decrease, with the total having a $CAGR_{2020-2030}$ of -3% driven largely by a fall in S&S costs per MW at a $CAGR_{2020-2030}$ of -3.2% and a smaller decrease of Personnel Costs per MW at a $CAGR_{2020-2030}$ of -1.9%.

Through efficiency gains, personnel costs per MW are expected to decrease by c.3.7% per year

The number of employees was forecasted using 'Employee/MW' under the assumption that this depends on total installed capacity, since the firm is very infrastructure-based.

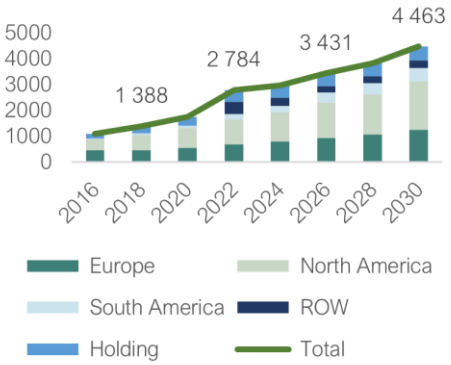
In the previous 5 years, personnel costs have increased €47 m representing a $CAGR_{2016-2020}$ of 11% (Graph 58), however in the upcoming 10 years the increase is expected to slowdown to a $CAGR_{2021-2030}$ of 9% (Graph 60). Nevertheless, despite the smaller CAGR, yearly personnel costs are still expected to increase €206 m, which can be attributed to an increase in the total number of employees, which will be somewhat offset by an increase in employee efficiency.

Still looking at Graph 60, it is observable that North America consistently makes up the largest share of personnel costs representing 51% of these, which is to be expected considering the high wages and large work-force in the region.

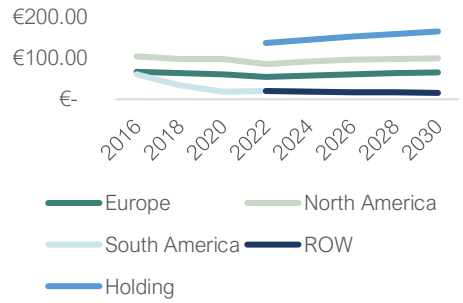
Looking at Graph 61 it is possible to see that employee efficiency has been decreasing in recent years, with the firm needing more employees per MW, which can be attributed to recent asset sell-downs. However, this trend is expected to invert, considering that 2020 already verified a decrease of number employees per MW and EDPR's has already announced policies to improve efficiency such as further digitalization of operations.

Said gains in efficiency will be especially prevalent in regions where EDPR is growing rapidly, creating the opportunity for centralizing regional services (e.g., in Latin America, leveraging their position in Brazil to expand to Colombia and Chile) and overall larger room for improvement. Each region is expected to see different rates of improvement in their employee productivity, with Europe and North America at a more modest 3 and 4%, respectively versus Latin America and APAC's 4 and 5%. Ultimately, the tendency will be for regions to converge into a ratio of c. 0.1 employees per MW under the assumption that,

Graph 62 – Evolution of Employees per region

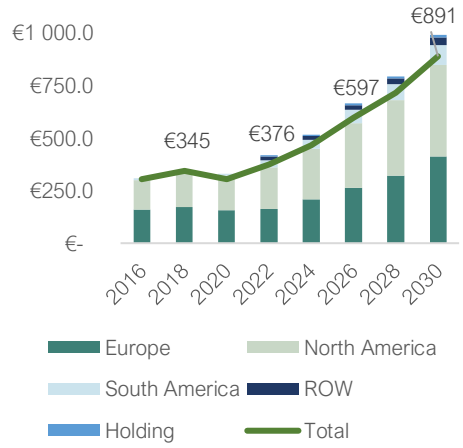


Graph 63 – Evolution of Cost per Employee (€k)



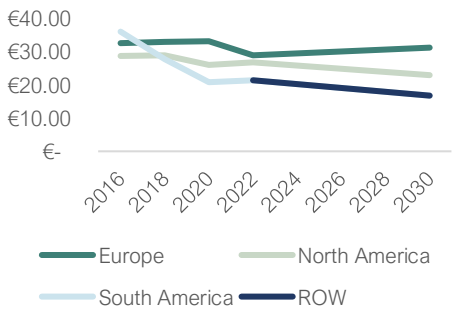
Source: EDPR and Team Analysis

Graph 64 – EDPR's S&S Costs per region and per year (€m)



Source: EDPR and Team Analysis

Graph 65 – EDPR's evolution of S&S costs per MW (€)



Source: EDPR and Team Analysis

as maturity increases, similar levels of efficiency are achievable across all regions (Graph 61).

Important to note that APAC's ratio increases exponentially in 2022 (to an unobservable in the Graph 61 0.6) followed by a quick descent due to the acquisition of Sunseap and the integration of its central services employees. Since a lot of these employees will already have counterparts in EDPR's Holding and as EDPR explores economies of scope and scale in the region, employees should be progressively let go over the years until the region's employee/MW ratio becomes similarly efficient to other regions.

Regarding the Holding, since it cannot be assigned to installed capacity, a direct growth rate of 2% per year was applied in order to capture the required increase to accompany the firm's growth.

All in all, the exponential increase in installed capacity will result in an increase of employees of 2,284 between 2021 and 2030 (Graph 62).

As far as the cost per employee is concerned, simpler assumptions were made contemplating the regions development levels (Graph 63). With Europe, North America and Holding increasing at 3% until 2025 and 2% until 2030 to cover for inflation, and Latin America and APAC offsetting the growth by decreasing at 3% per year to reflect the hiring of less senior workers at lower wages as the region develops.

Looking at Graph 63, it is possible to note that the Holding has the higher wages followed by North America and then Europe, which is to be expected considering that the Holding encompasses the higher wages of board members and North America has overall higher wages than Europe. Furthermore, Latin America's and APAC's costs per employee were assumed to be equal, considering the similar development levels within the company.

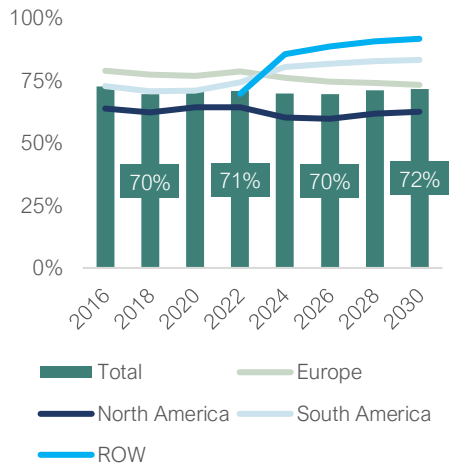
All in all, the main driver in the increase of Personnel Costs will be the increase in installed capacity, albeit counterbalanced by a decreasing Employee/MW ratio throughout the company.

S&S Costs/MW is set to decrease by c.1.2% per year due to efficiency gains in less mature regions, but inflationary pressure in mature ones

Services & Supplies costs are mainly stemming from the cost of maintenance and operation of the equipment. With this in mind, they were forecasted by region on a per MW basis. As such, yearly S&S costs evolve with capacity (Graph 64), and are expected to increase €562 m from 2021 to 2030 (12% CAGR)

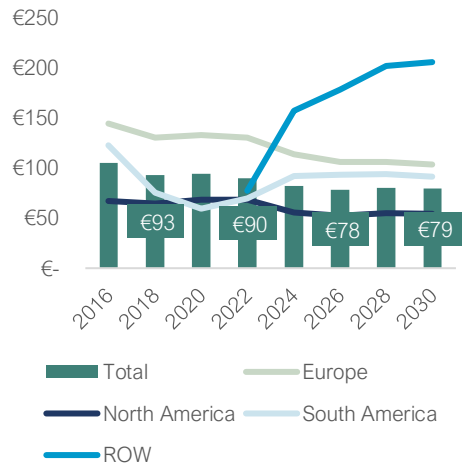
Looking at S&S Costs per MW (Graph 65), the increase in

Graph 66 – EDPR's Operational Margin evolution (%)



Source: EDPR and Team Analysis

Graph 67 – EDPR's Operational profit per MW (€/MW)



Source: EDPR and Team Analysis

capacity and costs is partially offset by improvements in efficiency as EDPR has announced that it will be introducing new technology which is expected to improve significantly the maintenance processes and increase technical availability across all regions. Furthermore, the firm predicts leveraging their expertise in internalization models and predictive maintenance to further increase efficiency gains.

Similarly to personnel costs, the more mature regions are expected to have smaller efficiency gains, partially explaining why, looking at Graph 65, Europe is the only region with an increasing S&S Cost/MW at a $CAGR_{2021-2030}$ of 1%. This is, however, still below inflation, meaning that it captures some form of efficiency gains. The other regions have a decreasing trend of S&S Costs/MW, showcasing the increasing efficiency. Nevertheless, due to the difference in maturities (and operational improvements available), North America will decrease at 2% per year, whereas Latin America and APAC (once again considered to have similar levels of development) will decrease at 3%.

Considering that Holding does not have any attributable MW to derive S&S from, it was assumed to be the average ratio of S&S Costs/Revenues in each region, c.19%.

MARGINS FORECASTS

A larger decrease in Costs/MW than that of Revenues/MW will result in a slight increase in Operating Margin from 70% to 72%

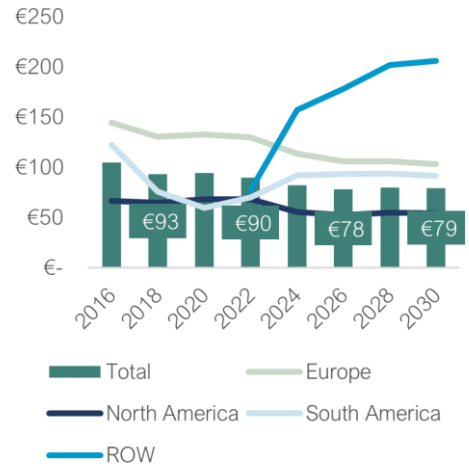
Looking at Graph 66, in the upcoming 10 years, EDPR's operational margin[1] is expected to see a residual increase going from 70% in 2021 to 72% in 2030 as a result of decreasing Opex/MW costs at a slightly higher rate than the decrease in revenue/MW.

Breaking it down further, it is possible to see that margins by region are expected to decrease or to grow slower up to 2025, which can be attributed to faster decreases in prices in the upcoming 5 years (except in APAC where the price increase translated into an increase in margin). From 2025 onwards however, as market prices' decreases slow down but cost savings continue in most regions, margins either stabilize, in the case of Europe, or start increasing, in the case of North America and Latin America.

Looking at the entire decade, mature regions saw a decrease in margins with Europe going from 78% to 73% and North America from 66% to 62% (in both cases a residual yearly decrease of c.0.75%), whereas recent regions saw an increase due to the price increase in APAC and higher cost savings in

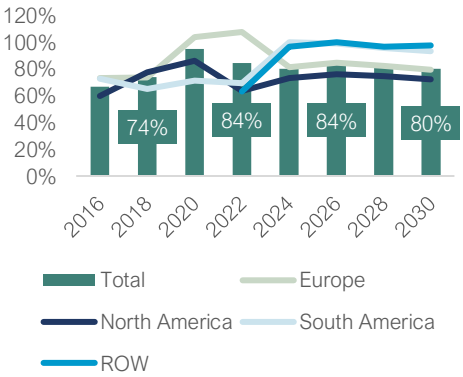
[1] Operational margins are defined as *Revenues – Personnel Costs – S&S Costs*

Graph 68 – EDPR's Operational profit per MW (€/MW)



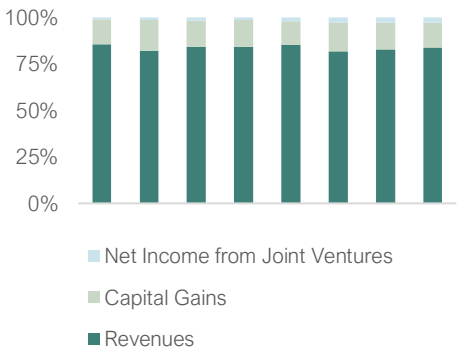
Source: EDPR and Team Analysis

Graph 69 – EDPR's EBITDA Margin evolution (%)



Source: EDPR and Team Analysis

Graph 70 – Breakdown of Income per Source (%)



Source: EDPR and Team Analysis

both APAC and South America, with the operational margin of the first going from 80% in 2022 to 92% in 2030 and of the latter from 78% in 2021 to 83% in 2030.

Despite the increase in operating margins, the absolute profit/MW will decrease by -1.4% per year due to decreasing prices

Despite gross operating margins having remained fairly stable due to cost savings marginally higher than price decreases, since the selling price still decreased, Operational Profit per MW on absolute terms will decrease (Graph 68), going from 90€/MW in 2020 to 79€/MW in 2030, representing a $CAGR_{2021-2030}$ of -1.4%.

Nevertheless, despite the overall operational profit per MW going down, less mature regions saw an increase in profit per MW. With Latin America reversing previous years' trend and increasing its margin at 0.3% per year between 2021 and 2030 (90€/MW to 92€/MW), and APAC widening its margins at 6.8% per year between 2022 and 2030 (122€/MW to 206€/MW).

Nonetheless, the overall profit per MW ultimately decreased because the vast majority of energy is generated in Europe and North America, both regions with a track record of decreasing prices and, consequently, decreasing absolute margins, which are expected to persist, resulting in a $CAGR_{2021-2030}$ in the former of -2.3% (127€/MW to 103€/MW) and in the latter of -3.3% (73€/MW to 54.42€/MW).

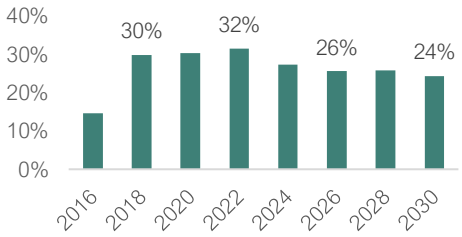
Lastly, regarding the overall difference in margins between the regions, North America's operational margin is significantly smaller than Europe's because the first has a higher load factor and both have similar capex costs, the firm is able to charge smaller prices in the region and achieve similar returns. On the other hand, Latin America and APAC present higher margins due to the overall availability of cheaper labour

Due to Capital Gains and Share of Net Profit from Joint Ventures, EBITDA Margin is c.8% larger than Operating margin

The first thing to note on Graph 69 regarding EBITDA margins is that they are larger than operational margins, which can be easily explained by EDPR's business model: two of its important income sources are not included in Revenues - Capital Gains from Asset Rotations and Share of Net Profit from Joint Ventures and Associates - which on average represent 17% of total income (Graph 70). In some extreme cases like in Latin America in 2023, these sources of income are larger than all other costs expenses and result in an EBITDA greater than Revenues and therefore a respective margin larger than 100%.

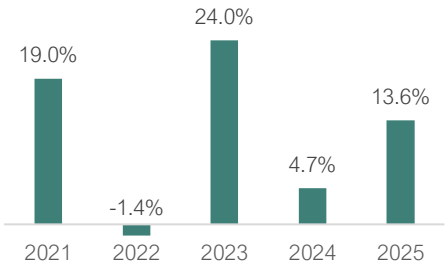
In comparison to operating margins, North and South America

Graph 71 – EDPR's Net Income Margin evolution (%)



Source: EDPR and Team Analysis

Graph 72 – EDPR's YoY variation in Net Financial Expenses (%)



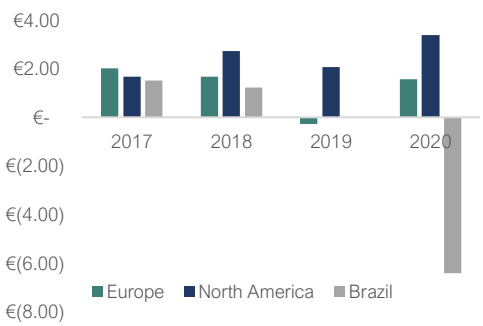
Source: EDPR and Team Analysis

Table 14 – Gross Investment in Growth Plan by Technology

Technology	Investment (in €bn)	Expected gross additions (GW)	Investment / MW (€m)
Solar	7.79	9.4	0.83
Onshore	10.26	9.1	1.13
Offshore	0.57	0.9	0.63
Other	0.38	0.4	0.95
Total	19.00	19.8	0.96

Source: EDPR and Team Analysis

Graph 73 – Capex per MW of Net Capacity added (€m)



Source: EDPR

have EBITDA margins c.11% larger, whereas Europe and APAC only have c.5%. This is because the two former regions will be the ones with largest added capacity, being also assumed to be the ones with a higher share of disposed assets and therefore capital gains.

EDPR's Net Income is expected to remain fairly stable at c.25%, with the exception of 2022

Lastly, regarding Net Income, considering that Financial forecasts are only made at a regional level until EBIT, it is only computed at a firm wide level. Looking at Graph 71 the main takeaway is that in the upcoming 10 years, net income margin is expected to remain fairly stable at an average of 25%.

There is a large outlier in 2022 of 32% which is a result of smaller than expected capacity increases in 2021 and larger than expected increases in 2022. This resulted in the firm incurring in less debt in 2021 and therefore reduced its financial expenses for the following year, and incurred exceptionally higher debt in 2022, which financial expenses are only recognized in 2023 (Graph 72). Meaning that for 2022 there is an extraordinary increase in capacity and therefore revenues, not accompanied by an increase in financial expenses in that period.

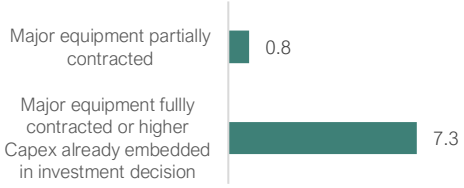
CAPEX & Investment in Joint Ventures & Associates

Forecasts point towards €18.6 bn of investment until 2025

To finance the growth plan until 2025, EDPR announced that it would require €19 bn (Table 14) and, while our estimates point towards gross additions below EDPR's estimate of 19.8 GW, we expect that the Capex multiples predicted by EDPR by technology are still applicable to the gross additions in the next 5 years and we extrapolate no big changes in the multiples after 2025. Furthermore, no regional differences were considered. We recognize these exist and are of relevance, but it is hard to predict a trend based on past multiples of Capex per region (Graph 73). Moreover, investment per technology announced by EDPR is already a weighted average of the added installed capacity per region in the growth plan.

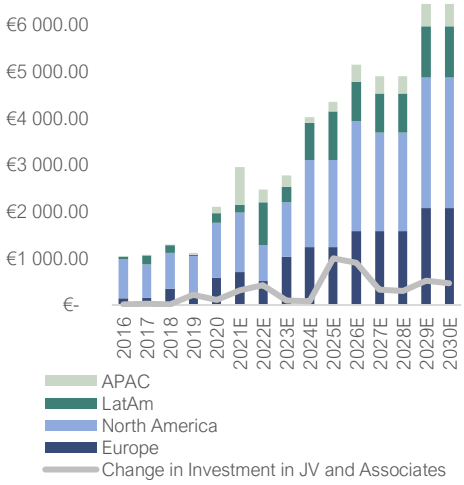
It is also important to make a remark on current supply chain problems which are likely to endure until 2022. According to company statements, EDPR should not be materially affected by this in terms of increasing Capex costs because the equipment for 90% of the already secured capacity for the 2021-2025 plan is already contracted or the increases in Capex are already accounted for in the investment decision (Graph 74). As we did not increase prices substantially due to this short-term turmoil in markets, we decided not to incorporate

Graph 74 - Capacity Already Secured from Growth Plan by stage of equipment contracted (GW)



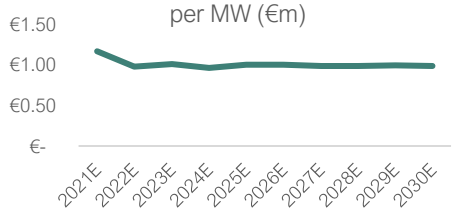
Source: EDPR

Graph 75 – Capex per Region & Investment in JV and associates (€m)
(EBITDA MW & Equity Consolidated, respectively)



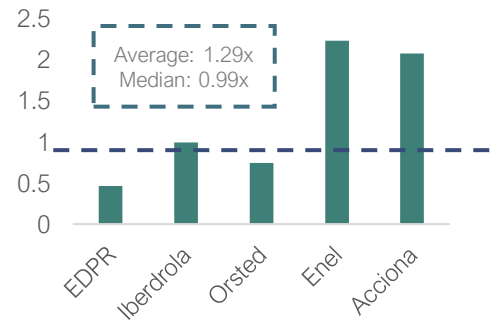
Source: EDPR and Team Analysis

Graph 76 - Average Capex cost per MW (€m)



Source: EDPR and Team Analysis

Graph 77 - Debt-to-Equity ratio comparison between EDPR and its peers



Source: EDPR

higher Capex multiples to avoid shortening such margins. Naturally, with the technology mix of added capacity (higher share of Wind Onshore), the average multiple will be higher until 2023, but not due to Capex overestimation.

Overall Capex costs for EBITDA MW installed capacity are expected to increase at a CAGR of 10% until 2025 and 6% afterwards (Graph 75). The share of Capex costs corresponding to North America's Capex (which consumed more than 50% of capital expenditures since 2016) is likely to decrease as the share of Solar installed capacity increases in the region (with lower Capex multiples than Wind Onshore), and funds are diverted to the growth in Latin America and APAC, which have still a lot of room to grow Wind Onshore, which is a more expensive technology in terms of Capex costs. It should be noted that the predicted strong increase in Capex in 2021 is due to the acquisition of Sunseap in Asia at a high multiple of €1.60 m EV/MW for the 550 MW in operation.

Regarding Investments in Joint Ventures and Associates, these were predicted based on Capex costs for Equity Consolidated Installed Capacity, therefore mostly depend on Wind Offshore investments. These investments should be particularly high in 2025 and 2026, in line with predicted big projects announced by OW in those years in France, UK and the US.

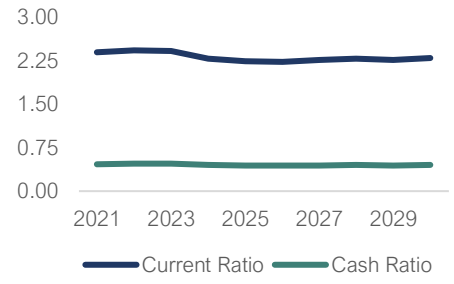
Cumulative investment until 2025 should, therefore, be of €18.6 bn, €0.4 bn below EDPR predictions, which is to be expected considering that only 18.4 GW of gross installed capacity added was estimated, instead of 19.8 GW. Between 2026 and 2030, €30.3 bn in capital expenditures are estimated, for 30 GW of installed capacity. This corresponds to an average investment of around €1 m per MW added in the company, slightly above expectations (€0.96 m per MW) (Graph 76). This is inflated by Sunseap's acquisition and a higher share of Wind Onshore additions before 2025 than that predicted by EDPR growth plan.

CAPITAL STRUCTURE & LIQUIDITY

EDPR shows a healthy financial position that makes the company prepared to pursue its expansion plan

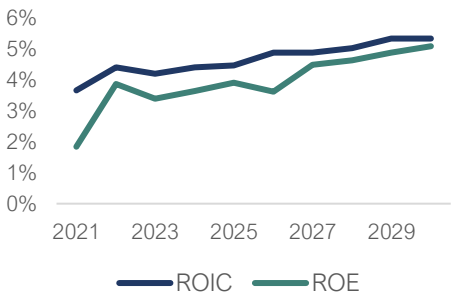
In 2020 the D/E ratio was 0.47x while the peers' average is 1.29x (Graph 77) highlighting that the company is underleveraged and can promptly support the capital-intensive projects that is planning in the upcoming years. Furthermore, the company's Net Debt/EBITDA multiple is currently standing at 2.5x which compared to the peers' alarming average of 4.0x, shows EDPR's ability to repay its debt and gives positive signs in terms of flexibility in future capital raises.

Graph 78 - Projection of Current and Cash Ratios in the project period (2021-2030)



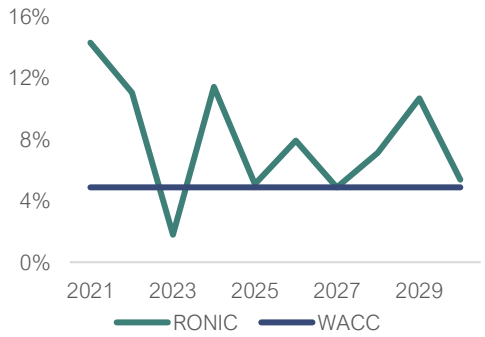
Source: Team Analysis

Graph 79 - Projection of ROE and ROIC in the project period (2021-2030)



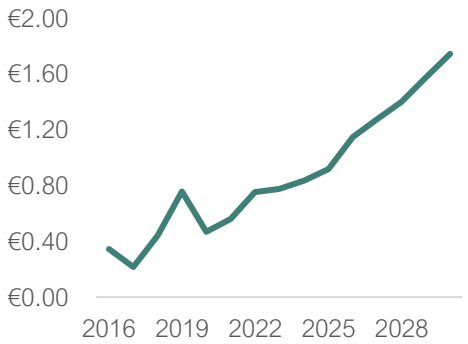
Source: Team Analysis

Graph 80 - Projection of RONIC and WACC in the project period (2021-2030)



Source: Team Analysis

Graph 81 - Projection of EDPR's Earnings per share from 2016 until 2030



Source: Team Analysis

The company shows a very strong level of liquidity, this is specially highlighted by the current ratio that is currently leveled at 2.39x. We estimate that this ratio will remain similar in the forecasted periods, and it shows an above average rate compared to its industry peers that are averaging 0.99x. Regarding the Cash Ratio, the firm also highlights a very strong cash position, the ratio is standing at 0.47x presently and it is predicted that the value will remain similar throughout the periods (Graph 78). Comparing to the industry, EDPR is standing well above, since the peers' average is currently 0.24x.

All in all, this shows that EDPR has a very strong financial position with the level of debt not occupying an alarming part of its capital structure, standing also on top of a healthy cash position, highlighting the firm's position to fund future expansion plans with minimal risks of capital financing.

SHAREHOLDER RETURNS

With this high reinvestment rate policy, EDPR creates value by having a RONIC consistently higher than WACC

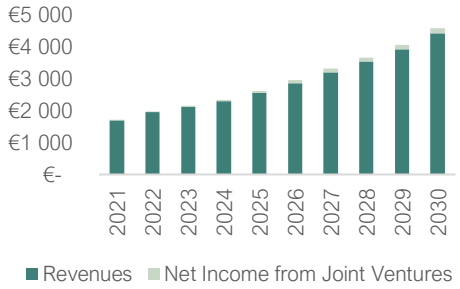
In the past years, EDPR has shown superior returns compared to the industry standards, which is clearly a result of the firm's investments strategy and capital allocation. In 2020, the company had a Return on Equity of 2.5% and a Return on Invested Capital of 3%. We estimate both ROE and ROIC to gradually increase over the next years and converge to 5% and to 5.5%, respectively (Graph 79).

Furthermore, the company is yielding a payout ratio that is estimated to be around 15%. The company has stipulated a dividend per share floor of €0.08 for the upcoming years and announced that it will pay €1 bn in dividends until 2025.

With this in mind, a payout ratio of about 20% to 25% per year was estimated, which is aligned with the company strategy of reinvestment. This also means that, with this strong reinvestment rate, the company will be creating value in the future since EDPR's RONIC of 14% is higher than the WACC, as Graph 80 shows, where RONIC is forecasted to be only below WACC in 2023.

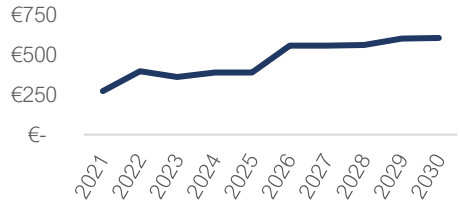
We estimate the company to have an EPS of €0.56 in 2021, this value is expected to converge to the pre-pandemic values in 2023, as Graph 81 showcases, reaching a final value of 1,75€ in the end of our forecast which represents a CAGR of more than 13%.

Graph 82 – Total Operating Income Evolution (€m)



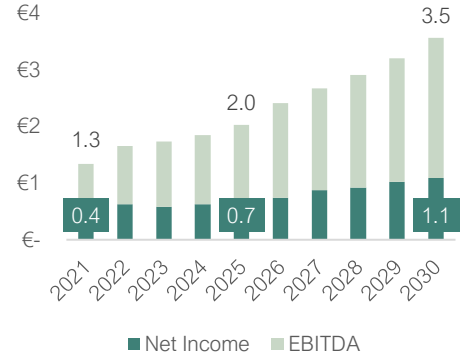
Source: EDPR and Team Analysis

Graph 83 – Evolution of Capital Gains (€m)



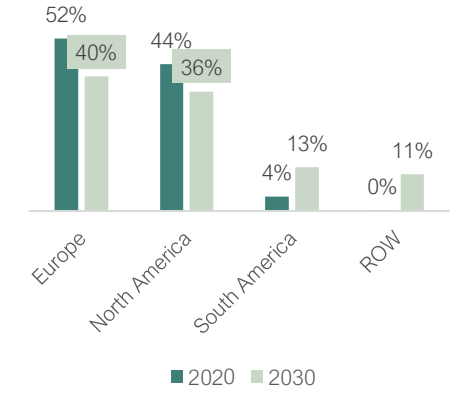
Source: Team Analysis

Graph 84 – Evolution of EBITDA and Net Income (€bn)



Source: Team Analysis

Graph 85 – Revenue weight per region, 2020 vs 2030 (%)



Source: Team Analysis

FINANCIAL ANALYSIS KEY TAKEAWAYS

EDPR's ambitious expansion is expected to result in the firm's sources of income increasing over 160% by 2030, driven by an exponential increase in energy sales as well as above-expectations capital gains from sell-downs

Looking at the main sources of income of EDPR, these can be broken down into operating and M&A income, with the operating income encompassing the energy sales from EBITDA MW capacity (its Revenues) and the net income from the energy sales in its Joint Ventures (namely, in OW), and the M&A income being made up of capital gains from assets disposal (classified as 'Other Operating Income').

Operating income is expecting a sizable $CAGR_{2021-2030}$ of 12%, driven by an increase of EDPR's and OW' sales

Looking at Graph 82, it is observable that EDPR expects a strong $CAGR_{2021-2030}$ of 12% in Operating Income, going from €1.7 bn in 2021 to €4.4 bn in 2030, driven by an exponential increase in its own installed capacity as well as a very high growth of EDPR's share of OW' net profit at a $CAGR_{2021-2030}$ of 27%, all despite falling short of target additions in the next years and expected marginal decreases in price.

EDPR's superior Asset Rotation capabilities are forecasted to result in a Capital Gains $CAGR_{2021-2030}$ of 9%, Capital Gains which increase operating income by 17.6% on average

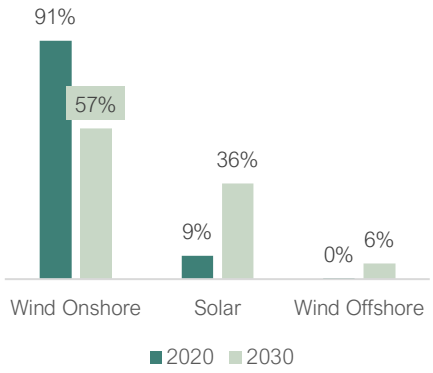
Over the next decade, Capital Gains from Asset disposal are expected to amount to a total of €4.7 bn (Graph 83), due to the firms' capabilities of selling at high multiples, with past transactions resulting in 45% premiums compared to its own estimates (€1.6 m/MW vs €1.1 m/MW).

EDPR is expected to maintain high EBITDA margins of c.80%, resulting in a 2030 EBITDA of €3.5 bn, approximately 2.7 times bigger than 2021 EBITDA. The firm's Net Income is expected to follow a similar growth pattern, going from €0.4 bn in 2021 to €1.1 bn in 2030 (Graph 84)

EDPR's Revenue breakdown by region and technology is also expected to get more diversified, decreasing the company's risk profile and improving its competitive positioning

In line with its diversification strategy, EDPR has expanded in APAC market ahead of schedule with the acquisition of Sunseap, being expected that the weight of this market represents 11% of its revenues by 2030. Furthermore, with the increased investment in Brazil and the entry in Chile and Colombia, the firm is also forecasted to increase the revenue weight of Latin America by 9% in a decade (Graph 85).

Graph 86 – Installed Capacity weight per source, 2020 vs 2030 (%)



Source: Team Analysis

Regarding technology split, the weight of Wind Onshore in installed capacity is expected to fall by 34% (Graph 86), decreasing the dependence on the technology, namely decreasing the exposure to wind quality risks. This should be made possible by the expansion of Solar energy across regions and the investment in Offshore Wind via OW. All in all, the weight of Solar installed capacity is expected to quadruple and Wind Offshore should increase its weight by 6%.

This further diversification allows for EDPR to better position itself to compete for a whole new pleura of projects in both new regions and with new sources of energy, due to the increased scale and bargaining power that the company is expected to benefit from.

Valuation

Valuation Method	Price
Discounted Cash Flows	24.13 €
Peers Multiples	26.20 €
Past Transactions	17.42 €
EDPR Price Target	24.29 €

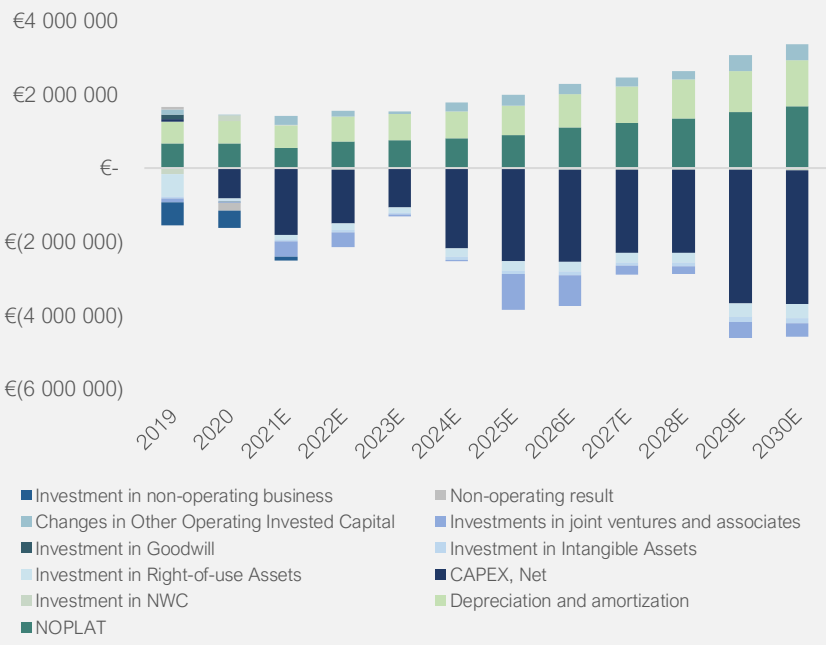
The valuation methods used to value EDPR were both an Intrinsic Valuation through a DCF and a Relative Valuation, using Peers' Multiples and Past Transactions Multiples. EDPR Price Target is 24.29€, which is 12.7% above EDPR's price of 21.54€. A Sensitivity Analysis was also conducted to better assess the results on the DCF Valuation.

DCF VALUATION

Free Cash Flows unlevered are expected to continue negative until 2030

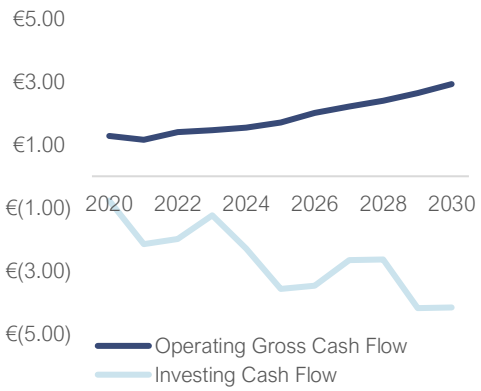
To assess the intrinsic value of the company the Free Cash Flows (FCF) Unlevered were forecasted until 2030. This presented a company in a high growth stage with Investing Cash Flows more than surpassing its Operating Cash Flows, making its FCFs negative (€-1.1 bn in 2021).

Graph 87 – Free Cash Flows Unlevered, 2019 – 2030E



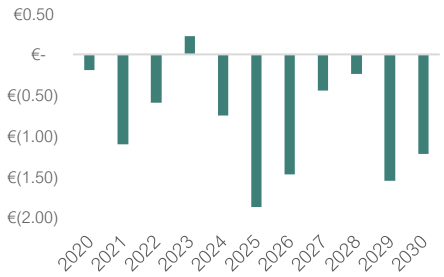
This happens despite its NOPLAT being positive and expected to increase at a 9.6% CAGR in the following 10 years (€1.1 bn in 2021 and €1.7 bn in 2030). This is a direct result of EDPR's very high Net Capex values, forecasted to increase by even more than the NOPLAT (CAGR of 15.9%), in order to finance the high forecasted increase in installed capacity predicted in its growth plans. The high Investment in Joint Ventures and Associates required to finance the expansion plan of OW Offshore installed capacity, expected to grow at a CAGR of 37.6%, also contributes towards this difference. High Investment in Intangible Assets and Right-of-Use Assets are

Graph 88 - Evolution of Operating and Investing Cash Flows, 2020 – 2030E (€bn)



Source: EDPR and Team Analysis

Graph 89 - Evolution of FCF unlevered, 2020 – 2030E (€bn)



Source: EDPR and Team Analysis

Table 15 – Installed Capacity worldwide by Technology Type in a Stated Policies Scenario (GW)

Technology	2030	2040	2050
	2550	4516	6163
	1438	2015	2486
	165	342	509

Source: IEA and IRENA estimates

Table 16 – CAGR of Installed Capacity by Technology in EDPR

Technology	2025-30	2030-40	2040-50
	17.5%	5.9%	3.2%
	8.4%	3.4%	2.1%
	12.3%	7.6%	4.1%

Source: Team Analysis, IEA and IRENA estimates

also in line with the overall high investment plan.

A remark should be made to the fact that this is not expected to affect leverage ratios as EDPR is funding these investment through different sources besides debt. These sources include: its Asset Rotation Plan, with its sell-downs financing its own investments; Tax Equity, through funding partnerships with institutional investors in the US in exchange for tax benefits received; and the €1.5 bn capital raising performed in 2021, that is likely to be repeated in the future (as we estimate that the company will need to raise capital again in 2026 to finance its even more ambitious growth plan in the second half of the decade).

Overall, Operating Gross Cash Flows are expected to increase by 8.7% per year until 2030 from €1.3 bn in 2020 to €2.9 bn in 2030 (more than doubling). However Investing Cash Flows should also become increasingly negative, going from -€0.7 bn in 2020 to -€4 bn forecast in 2030 (more than 4 times) (Graph 88). Overall this will lead to an overall irregular evolution of Free Cash Flows Unlevered until 2030, with these expected to be negative in all years besides 2023 (when a deceleration of capacity additions is expected) (Graph 89).

After 2030, it is expected that the company leaves the growth stage progressively, entering into a more mature stage

With revenues growing 11% per year, EDPR seems to be far from reaching terminal growth. Moreover, the company is still making substantial Capex investments, with yearly invested capital predicted to continue surpassing operating cash-flows, indicating it is in a high-growth stage.

However, we expect the company to reach a more mature stage by 2030. As such, we estimated that between 2030 and 2050 the company's revenues would follow conservative estimations on market growth for the three main different renewable energies that EDPR develops.

For installed capacity and load factor we followed a Stated Policies Scenario, which, (as defined by IEA), is a scenario that 'reflects the current policy settings based on a sector-by-sector assessment of the specific policies that are in place, as well as those that have been announced by governments around the world' (International Renewables Energy Agency 2021) (Table 15).

Overall, looking at EDPR CAGR of installed capacity assumed after 2030 in the Table 16, these are in line with the expected growth between 2025 and 2030. Wind Offshore should be the highest growth technology, followed by Solar and, lastly, by Wind Onshore (which should reach a near long- term growth

Table 17 – Revenues and drivers CAGR estimates for 2030 - 2050

CAGR EBITDA MW Capacity	2030 - 2050
Installed Capacity	3.5%
Load Factor	0.2%
Electricity Generated	2.5%
Average Selling Price	1.5%
Revenues	4.0%

Source: Team Analysis

Table 18 – Share of Net Profit in Joint Ventures and Associates and drivers CAGR estimates for 2030 - 2050

CAGR Equity Consolidated Capacity	2030 - 2050
Installed Capacity	5.8%
Load Factor	0.6%
Electricity Generated	4.5%
Average Selling Price	1.5%
Share of Net Profit in Joint Ventures	6.1%

Source: Team Analysis

Table 19 – Main Assumptions for 2030 – 2050 growth

CAGR	2030 - 2050
Supplies and Services	3.5%
Personnel Costs	5.1%
Other operating income	0.0%
Other operating costs	4.0%
Net Working Capital main captions	4.0%
Capex, Right-of-use assets, Intangible assets, Depreciation	1.8%
Investments in joint venture and associates	3.0%

Source: Team Analysis

rate of 2.1% between 2040 and 2050).

Load factor of EBITDA MW capacity should grow at a 0.2% CAGR, while of Equity Consolidated capacity should grow at a 0.6% CAGR. These growth rates should represent a higher growth between 2030 and 2040 which will eventually stagnate due to obvious limitations of technological improvements (in size of hub heights and rotor diameters for instance).

Applying such implied CAGR's to the expected installed capacity and load factor of EDPR in 2030 we could estimate predicted installed capacity and load factor in 2050. Those estimates get to an expected growth of energy generation of 2.5% for EBITDA MW capacity and 4.5% for Equity Consolidated capacity (reflecting the higher growth in capacity and load factor of Wind Offshore).

Average selling price was predicted to grow with inflation as the decrease in price that was seen in the last few years seems to be stagnating as LCOE decreases become less significant and technological improvements reach its limits.

Overall revenues are expected to grow at around 4% per year between 2030 and 2050 (see Table 17), while Net Profit in Joint Ventures and Associates should grow 6.1% yearly (see Table 18).

Regarding other captions, these were estimated to follow revenues or installed capacity growth depending on what makes the most sense. Relevant assumptions regard the fact that no further Asset Rotations were assumed and so Other Operating Income should be null, and Capex items were estimated to grow at an approximately half the rate of respective installed capacity (looking at historical trends).

EDPR is expected to reach long-term growth after 2050

We expect that EDPR reaches long-term growth in 2050 (the target year for Net Zero Emissions for many countries) an average growth rate of 2%, reflecting the historical long-term growth of the economy.

Under these assumptions, FCF's should turn progressively positive after 2030 as the Capex growth decelerates together with installed capacity growth, and Operating Cash Flows become increasingly superior to Investing Cash Flows, deriving EDPR's current value.

Cost of Capital was estimated to be 4.8%

The cost of capital was computed taking into consideration that the current EDPR capital structure is not expected to have significant changes in the future. In this sense, to calculate the weighted average cost of capital (WACC), we assumed that the

Table 20 – WACC Assumptions

Assumption	Rate
Risk-free rate	1.29%
Market Risk Premium	5.94%
Unlevered Beta	0.66
Equity Beta	0.75
Cost of Equity	5.76%
Cost of Debt	1.59%
Tax Rate	25%
WACC	4.8%

Source: Team Analysis

D/E ratio will remain close to 21% and that the company will continue to finance itself with Tax Equity, keeping the Tax Equity/EV ratio of 5.9% constant in its capital structure.

To determine the cost of debt, we computed EDPR credit rating using its 2020 FY interest coverage ratio of 4.02x, since the company does not have any credit rating issued currently. According to NYU Stern, this interest coverage ratio corresponds to a BBB synthetic credit rating. Considering the latter, the S&P Corporate Bond BBB Index yield registered a yield of 1.82% on 10-year maturity. Such yield adjusted to the respective default and recovery rate resulted in a cost of debt of 1.59% and corresponding debt beta of 0.05.

The cost of equity was calculated using the Capital Asset Pricing Model (CAPM). Firstly, the risk-free rate (1.29%) was calculated using the 10-year German Treasury Yield (-0.26%), that was adjusted to the Spanish country risk premium (1.55%). The levered beta was estimated to be 0.75, this value was extrapolated by conducting a benchmarking analysis to compare the 5-year raw beta of EDPR with a sample of peers (Appendix 17) and adjusted using the Blume's adjustment[1]. The adjusted levered Beta was 0.75, although, this Beta was unlevered to allow the analysis to be independent of the companies' capital structure, which ultimately, led the unlevered Beta result in 0.66. Ultimately, relevering the unlevered Beta with the Debt Beta and EDPR's tax rate we reached to an Equity Beta of 0.75. With this equity beta, a nominal risk-free rate of 1.29% and a market risk premium of 5.94% the cost of equity amounted to 5.85%.

As stated previously, EDPR finances its operations through an additional source of capital which is the tax equity partnerships. Even though, there is no information regarding the probability of default related to this financing source, it is known that the contingency claims of the tax equity investors are comprehended between the cost of debt and the cost of equity. In this sense, the cost of tax equity was estimated to be 1.90%, using a linear interpolation that takes in consideration the cost of equity and cost of debt, and the EDPR capital structure.

Considering the assumptions explained above, we reached to a WACC rate of 4.8%

DCF Conclusion

Overall, the share price of EDPR under the Intrinsic Valuation was of 24.13€, to which it was attributed a weight of 50% in the weighted average price target, as this is the valuation method through which we can better capture EDPR's competitive advantages and specificities.

[1] $\beta_a = \frac{2}{3} * \beta_{est} + \frac{1}{3} * 1$. This adjustment allows to correct the estimated market beta for its natural tendency of converging to 1, thus, it computes a closer value for the expected beta in the future.

SENSITIVITY ANALYSIS

In order to assess the firm's business model robustness, a sensitivity analysis was conducted on 3 of the most relevant factors: Energy Generation through the variation of Load Factor and Installed Capacity $CAGR_{2030-2050}$ for both Onshore Wind and Solar (the two most representative energy sources); Price through the variation of $CAGR_{2030-2050}$ of EDPR's selling Price; Risk through the variation of the discount rate (WACC).

Table 21 – Sensitivity analysis of price per share using Wind Load Factor and Installed Capacity CAGR 2030-2050

Price per share		Installed Capacity Solar CAGR 2030-2050								
		3,31%	3,61%	3,91%	4,21%	4,51%	4,81%	5,11%	5,41%	5,71%
Solar Load Factor CAGR 2030-2050	-0,02%	21,49 €	21,95 €	22,44 €	22,95 €	23,48 €	24,05 €	24,65 €	25,28 €	25,94 €
	0,08%	21,78 €	22,25 €	22,74 €	23,26 €	23,80 €	24,38 €	24,98 €	25,62 €	26,29 €
	0,18%	22,08 €	22,55 €	23,05 €	23,57 €	24,13 €	24,71 €	25,32 €	30,02 €	26,65 €
	0,28%	22,38 €	22,85 €	23,36 €	23,89 €	24,45 €	25,04 €	25,67 €	26,32 €	27,02 €
	0,38%	22,68 €	23,16 €	23,67 €	24,21 €	24,78 €	25,38 €	26,01 €	26,68 €	27,38 €

In Table 21, we estimated the impact on the firm's share price of changes in the $CAGR_{2030-2050}$ of both the load factor and the capacity growth rate of Solar energy.

Looking at the table, it becomes clear that the firm's share price is not overly sensitive to variations in the evolution of Solar Technology within its portfolio, being able to endure a drop of 1.2% in the CAGR of installed capacity without the share price crossing the 22,00€ threshold and with variations in the CAGR of its Load Factor not having a material impact. This is to be expected, considering that despite Solar having gained significant importance in the firm's portfolio, it still only represents 36% of the firm's installed capacity in 2030.

Table 22 – Sensitivity analysis of price per share using Wind Load Factor and Installed Capacity CAGR 2030-2050

Price per share		Installed Capacity Wind Onshore CAGR 2030-2050								
		0,93%	1,39%	1,85%	2,31%	2,77%	3,23%	3,69%	4,15%	4,60%
Wind Load Factor CAGR 2030-2050	-0,01%	20,18 €	20,91 €	21,70 €	22,55 €	23,48 €	24,49 €	25,58 €	26,77 €	28,01 €
	0,09%	20,46 €	22,69 €	21,99 €	22,86 €	23,80 €	24,83 €	25,94 €	27,14 €	28,40 €
	0,19%	20,73 €	21,48 €	22,29 €	23,17 €	24,13 €	25,16 €	26,29 €	27,51 €	28,79 €
	0,29%	21,01 €	21,77 €	22,59 €	23,48 €	24,45 €	25,51 €	26,65 €	27,88 €	29,18 €
	0,39%	21,29 €	22,06 €	22,89 €	23,80 €	24,78 €	25,85 €	27,01 €	28,26 €	29,57 €

In Table 22, a similar analysis is made, but in this instance instead of Solar it looks to Wind Onshore installed capacity and load factor evolution. It is clear to see that the firm is more sensitive to evolutions in this energy source, which is to be

expected considering that it makes up 57% of total installed capacity in 2030. Nevertheless, the share price shows some resilience, requiring a drop of nearly 1% in the growth rate of installed capacity to drop below the current market price. As far as what the growth rate of load factor is concerned, this seems to be negligible, considering that all else equal, the maximum considered decrease only drops the share price to nearly 23.5€.

Overall we are fairly confident in the estimates for energy generation growth between 2030 and 2050 to be realizable. This is because the Scenario used (Stated Policies Scenario) to estimate installed capacity and load factor growth is fairly conservative, under bolder assumptions, the share price for EDPR could go until 29.57€ (23% above the DCF target price estimated, and 37% above current market price).

Table 23 – Sensitivity analysis of price per share based on WACC and Price Energy CAGR 2030-2050

Price per share		Price Energy CAGR 2030-50								
		0,50%	0,75%	1,00%	1,25%	1,50%	1,75%	2,00%	2,25%	2,50%
WACC	4,59%	22,17 €	23,85 €	25,60 €	27,43 €	29,35 €	31,34 €	33,43 €	35,60 €	37,88 €
	4,69%	19,95 €	21,51 €	23,14 €	24,84 €	26,62 €	28,47 €	30,41 €	32,44 €	34,55 €
	4,79%	17,91 €	19,37 €	20,89 €	22,47 €	24,13 €	25,86 €	27,66 €	29,54 €	31,51 €
	4,89%	16,05 €	17,40 €	18,82 €	20,30 €	21,85 €	23,46 €	25,14 €	26,90 €	28,73 €
	4,99%	14,33 €	15,60 €	16,93 €	18,31 €	19,75 €	21,26 €	11,73 €	13,93 €	26,18 €

Lastly, Table 23 assesses the firm's exposure to the growth rate of price and to variations to the cost of capital (WACC). The variations on the latter were predicted small to reflect our level of confidence on this variable. Nonetheless, it is clear that these two variables are far more impactful in the share price, WACC being the most influential out of the two. A decrease of 0.2% in the cost of capital could drop the price below 22€. This sensitivity to the cost of capital, clearly highlights the importance of the firm's financing conditions, especially considering their ambitious expansion plan which requires a lot of capital holders investment.

On the other hand, although at a smaller scale, price also heavily impacts the firm's share price, with a decrease of 0.5% in $CAGR_{2030\text{-}2050}$ resulting in a drop below the current market price. This is the most sensitive operational driver of EDPR's price in analysis. Such sensitivity in price represents a risk for EDPR, specially considering there is less long-term visibility on average selling price trends (unlike installed capacity which outlook is fairly positive). However the firm's pricing strategy of long-term contracts shields it from mild variations (as this will be further analysed in Risk Analysis).

PEERS MULTIPLES

Implied share price through industry multiples undervalues EDPR, valuing it at €26.20

To assess the renewable energy industry's valuation of EDPR, eligible peers were identified which have already been presented on 'Competitive Positioning'.

As it was explained, 2 different peer groups were created, the first one made up of large cap firms whose operations also contain some renewable energy (over 40% but under 75%) and another made up of firms whose energy operations were majorly focused on renewables (over 80%) and more specifically on wind energy (over 65%). Essentially, the first group are large cap indirect competitors and the second is direct competitors.

When computing the industry multiples, considering that the first peer group contains firms' with more distinct operations, it is to be expected that the market's valuation will be accounting for different business segments and therefore it will not be as representative as the second peer group's industry valuation. To account for these differences, different weights were attributed to the two groups, more specifically, when computing the multiples Peer Group 2 was attributed a 75% weight and Peer Group 1 was attributed the remaining 25%.

When gathering the multiples, two further adjustments were made:

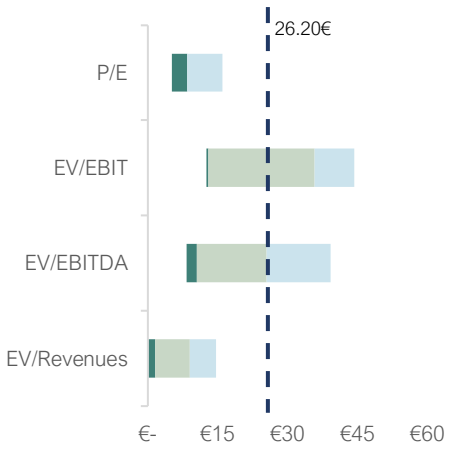
1) to smooth valuation fluctuations resulting from last year's market volatility, the values used were the average of 1Y and LTM multiples;
2) to ensure that all values were comparable both the multiples used and the values used for EDPR when computing the Implied Share Price were Bloomberg's GaaP standardized values.

Table 24 – Peers Multiples Valuation

Target Name	Market Cap (€bn)	EV/Revenues	EV/EBITDA	EV/EBIT	P/E
Enel SPA	73.4	2.37x	10.73x	20.04x	31.83x
Engie	30.0	1.02x	8.97x	39.96x	11.70x
Iberdrola	64.0	3.62x	12.60x	21.4x	18.90x
Acciona As	9.0	1.95x	10.31x	19.45x	19.31x
Orsted	51.5	8.81x	27.15x	48.48x	36.42x
Voltalia SA	2.1	11.27x	33.05x	67.76x	-
	25th Percentile	1.95x	10.31x	19.90x	19.31x
	Median	6.21x	19.88x	44.22x	19.31x
	75th Percentile	9.42x	28.63x	53.50x	36.42x
	Implied Price	5.09€	25.46€	35.79€	8.49€
	Weight	0%	45%	45%	10%

Following the computation of the implied share price per multiple, different weights were distributed by multiple:

Graph 90 – Peers Multiples implied price football field (€)



- Firstly, EV/Revenues was not used since Revenues is unable to capture two of EDPR's main sources of income - the Share of Net Profit in Joint Ventures and Associates and the Capital Gains - and therefore severely undervalues the firm.
- Secondly, based on industry best practices, the majority of the weight was attributed to EV/EBITDA and to EV/EBIT at 45% each, leaving 10% for P/E.

All in all, this resulted in a implied share price of 26.20€, meaning that if the market valued EDPR as it values its competitors, the share would be 21% higher, indicating that the market might be undervaluing EDPR's share.

All in all, considering that there is a satisfactory and appropriate/comparable peers pool, the valuation method was considered relevant and therefore it will be attributed a weight of 45% in the report's overall valuation.

Table 25 – Target Firms' eligibility criteria

Characteristics
• Transaction within the last 3 years • Positive EBITDA • Stake Acquired > 25% • Share of renewable energy > 75% • Share of wind > 25% • Implied EV > €200 m
Firms
Clēnera, GreenVolt, eolia renovables, Tilt renewables, PNE pure new energy

TRANSACTION MULTIPLES

Due to the lack of comparable transactions, valuation through transaction multiples implies a share price of €17.42, but is not representative

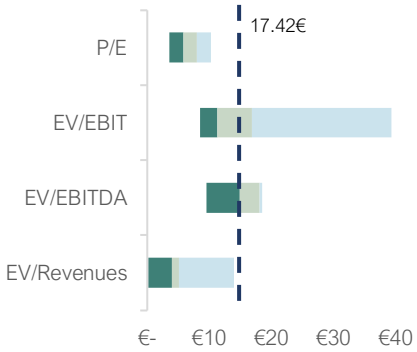
When identifying eligible transactions, defined criteria aimed at identifying similar companies to EDPR (Table 25), however as it is observable in Table 26, recent transactions in the market have been mostly acquisition of smaller firms. All in all, the market trend appears to be large firms buying either small firms or individual projects and therefore the implied multiples fail to capture the added value of EDPR's size and all the factors it entails (e.g. geographic reach, supplier relations, etc…). Taking this into account, the multiples are not ideal to value the firm and therefore we decided to attribute it a residual weight of 5% in the report's valuation.

Table 26 – Transaction Multiples Valuation

Target Name	Implied EV (€m)	EV/Revenues	EV/EBITDA	EV/EBIT	P/E
Eolia Renovables	2.054	11.29x	15.38x	-	-
GreenVolt	500	5.56x	15.14x	23.96x	28.33x
Clenera	382	6.20x	9.70x	15.04x	-
Tilt Renewables	1.824	19.00x	27.52x	71.90x	8.02x
PNE AG	306	3.35x	13.13x	20.97x	-
	25th Percentile	5.56x	13.13x	18.01x	-
	Median	6.20x	15.14x	23.96x	-
	75th Percentile	11.29x	15.38x	47.93x	-
	Implied Price	5.07€	18.04€	16.80€	-
	Weight	0%	50%	50%	0%

Similarly to the peer valuation, considering EDPR's business model, the EV/Revenues will not be used in the valuation since the firm's Revenues are not reflective of their entire operations. Furthermore, in this case, P/E will also not be used since only two of the targets have eligible multiples and therefore it would

Graph 91 - Transaction Multiples implied price football field (€)



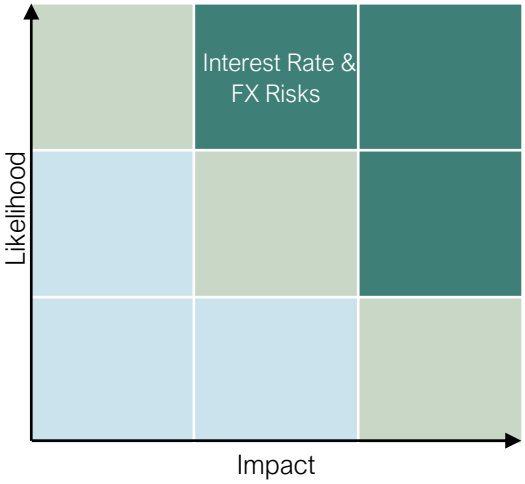
Source: Team Analysis

not be representative enough.

With this in mind, the valuation through transaction multiples will result from attributing 50/50 weight to EV/EBITDA and EV/EBIT, which in this case entails a share valuation of 17.42€ (Graph 91).

EDPR's risk matrix is broad and varied. However, we believe this selection has the higher chance of impacting our valuation.

Graph 92 – Market Risk Map



Source: Team Analysis

MARKET RISK

Likelihood: High – Impact: Moderate

M1. Interest Rates:

Exposure to variable interest rates can be a potential downside for a company of EDPR's size. The firm's debt cash flows requires an active management as to be as uncorrelated to interest rate markets fluctuations as possible.

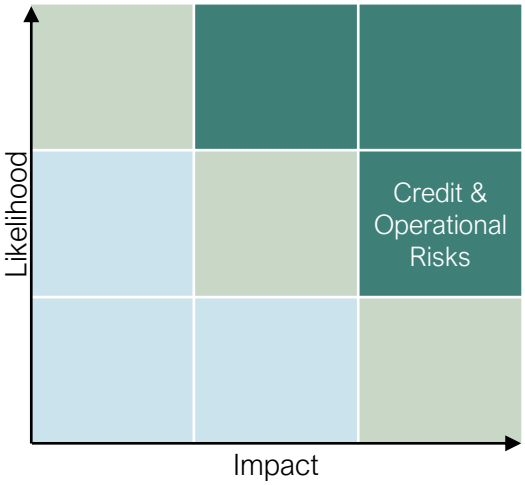
Mitigation: EDPR focuses on contracting long term debt with fixed rates and when it is issued with floating rates, the company uses interest rates derivative contracts to swap their floating exposure for a fixed one. With this portfolio of swap contracts fixing the bulk of EDPR's interest rate exposure, most risk arises from refinancing. In order to counteract this issue, EDPR keeps its risk diversified and continuously monitors it in order to avoid bad timing for debt restructuration opportunities.

M2. Foreign Exchange:

Being an international company, EDPR exposes itself to foreign exchange risks associated with foreign investments. These need to be monitored and managed in order to avoid major impact on asset valuations and profits.

Mitigation: EDPR manages its FX risk mostly by financing foreign projects using local currency. If this option is not available to them, then the company makes use of cross currency interest rate swaps. These derivative contracts allow them to align loan and currency exposure, facilitating the predictability factor of the endeavour.

Graph 93 – Counterparty Risk Map



Source: Team Analysis

COUNTERPARTY RISK

Likelihood: Moderate – Impact: High

C1. Credit Risk:

EDPR's exposure to counterparty credit risk emerge from an array of channels: through their energy sales and supply contracts, as well as their financial derivative transactions. The exposure can therefore arise from trade receivables but also marked-to-market contracts.

Mitigation: Firstly, regarding derivative instruments use, the company makes sure to engage into contracts under an ISDA agreement, which allows for some regulatory surveillance, and makes use of collateralisation

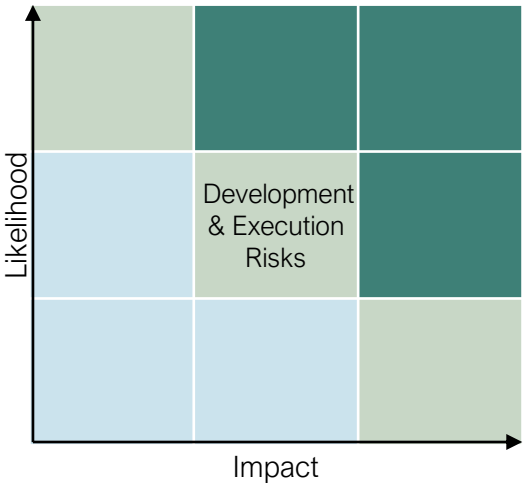
when required. Regarding energy sales contracts, differences arise between regions. For example, the North American part of the group has to deal with more marked-to-market contract exposures than in Europe, which requires extra background check work from EDPR before signing any long-term agreements.

C2. Replacement Risk:

In the event of a default, even with no economic impact, this could still severely affect EDPR's operations. Indeed, the search for a new counterparty could imply extra costs for the firm (replacement costs).

Mitigation: Before entering any kind of contract with a counterparty (namely corporate counterparties), a specific team at EDPR is in charge of analysing its technical capacity, competitive positioning, credit rating and even estimate a potential replacement cost if it were to default on its engagement.

Graph 94 – Operational Risk Map



Source: Team Analysis

OPERATIONAL RISK

Likelihood: Moderate – Impact: Moderate

O1. Development Risk:

When developing new projects, EDPR must manage the regulatory frameworks encompassing the development and construction of those said projects. Renewable plants tend to be subject to heavy regulations of this sort at every level (supranational, national or regional). Navigating those complex rulebooks when developing new projects is, therefore, of the upmost importance to EDPR.

Mitigation: Firstly, the global presence of EDPR allows it to have a good understanding of the plethora of different frameworks regulating development, which permits it to anticipate and apply changes globally, as the general trend has been to smooth out rules across regulatory bodies. In addition, the firm creates "optionality", by having a large pipeline of different projects in different places: it can cover potential delays and prioritise others.

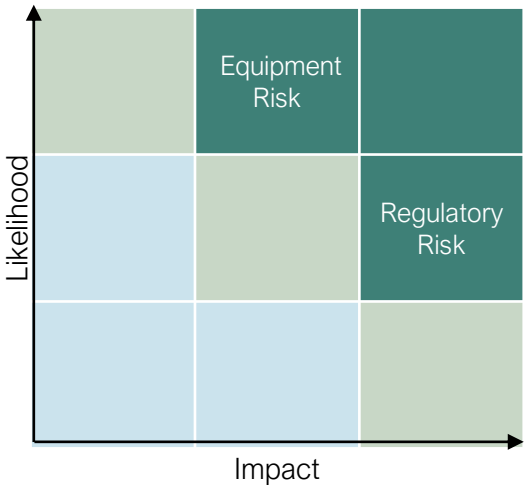
O2. Execution Risk:

After concluding the development phase, the execution phase takes place which englobes construction, interconnection, and installation stages that can be prone to further delays. These delays could impact future cash inflows and profitability levels of the project itself.

Mitigation: In order to hedge out this type of risk, EDPR creates partnerships with reputable local companies which are chosen for their high capability of carrying out

such projects. Furthermore, the company closely monitors and often re-assesses its risk, as well as has its engineering team overseeing the suppliers, their installation methods, and procedures.

Graph 95 – Business Risk Map



Source: Team Analysis

BUSINESS RISK

Likelihood: Moderate – Impact: High

B1. Regulatory Risk:

Renewable energy endeavours are inscribed in complex and fast changing regulatory frameworks. A company such as EDPR, which operates in various geographies, has to monitor and be conscious of such changes, which can differ from region to region but also at each legislation level. The ability to adapt quickly and take advantage of new remuneration schemes or regulatory promoting is crucial.

Mitigation: Through its diverse geographical positioning, EDPR creates a natural hedge against regulatory changes. Indeed, with any framework update, only a part of its operations is affected by that change. This type of risk is consistently monitored by the firm which has created its own in-house assessment that behaves as an indicator for incoming changes. Finally, EDPR also assesses this risk when considering new projects to estimate their impact under different scenarios.

Likelihood: High – Impact: Moderate

B2. Equipment Risk:

This risk has two main points of concern: supply and price. In terms of supply, the firm is mostly affected by problems arising from the supply chain, for instance through trade wars and product shortages. As for price, equipment can be affected by market fluctuations and various trade tariffs in place that can cause market volatility.

Mitigation: In order to efficiently deal with these potential uncertainties surrounding equipment price, EDPR first goes through a tough selection process when picking suppliers. Secondly, the company looks to secure its equipment well in advance as to avoid unexpected changes. Finally, the firm has been drafting agreements with contractors to have maximum levels of visibility on supply and prices. This has allowed the company to avoid having increased Capex costs during the current post-pandemic supply disruptions.

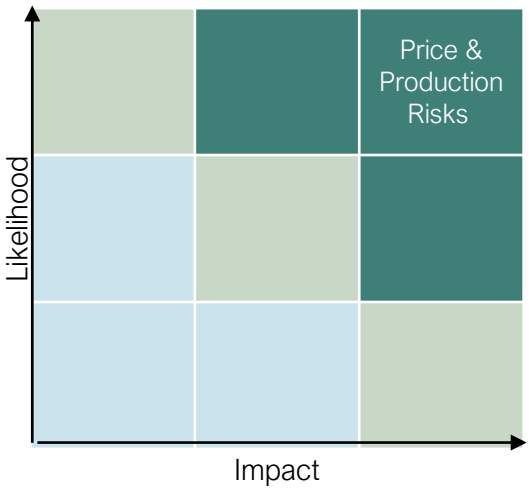
ENERGY RISK

Likelihood: High – Impact: High

E1. Price Risk:

Due to the high heterogeneity levels of pricing and regulations,

Graph 96 – Energy Risk Map



Source: Team Analysis

price risk finds itself at the heart of EDPR' risk assessment. Indeed, depending on the location, energy prices are defined following a variety of frameworks which can leave the company widely exposed to market variations.

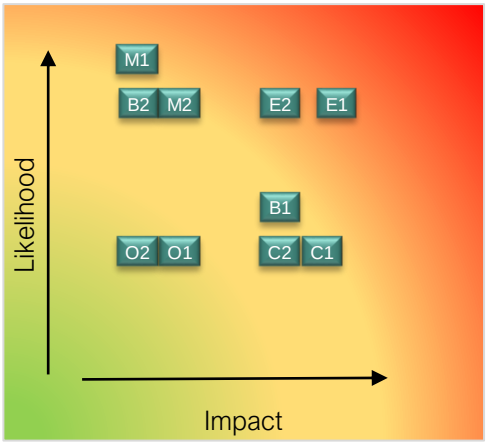
Mitigation: Firstly, EDPR has the strategy of engaging in projects in regions which allow to have a long-term view over future revenues. This allows it, in most cases, to get a determined price via a regulated framework of tariffs. However, this is not always an option, since some company plants end up facing certain levels of merchant exposure In these situations, EDPR uses commodity hedging financial instruments in order to offset such risk.

E2. Production Risk

The production aspect of renewable energies can vary greatly due to an array of variables such as location, seasonality, or weather conditions. These discrepancies will impact the load factors of different technologies in different regions.

Mitigation: In order to deal with this risk, EDPR takes advantage of the diversification of its operations. The increasingly geographical and technological diversity of the company's assets allows for some natural hedge against such problems. In addition, before engaging in any new venture, the firm analyses the expected generation profile of the project. Further along the life of a project, this data is monitored as to anticipate potential forthcoming shifts in load factors and, thus, in electricity generated.

Graph 97 – Risk Heat Map

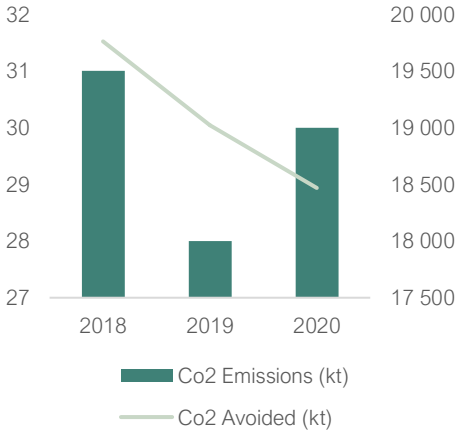


Source: Team Analysis

RISK HEAT MAP

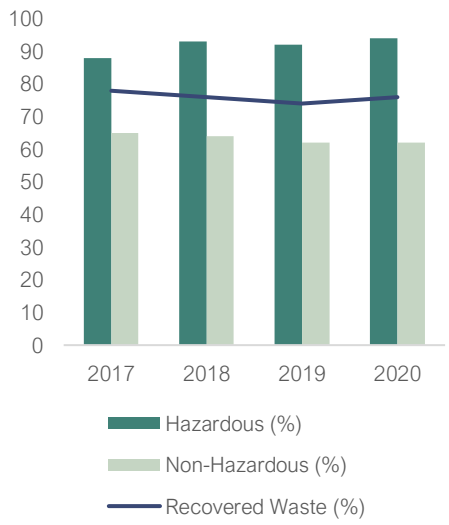
Overall, EDPR's risk heat map (Graph 97), led by its energy risks, must face a quickly shifting industry, with increasing competition, where prices are expected to decrease and projects to get increasingly more competitive to win over. The company's ability to diversify itself in terms of geographies and technologies will have to go hand in hand with pipeline development and delivery reaching installed capacity targets. Furthermore, the selection of its associations and management of its cost of capital health will be paramount to its prosperity.

Graph 98 – Co2 emissions (left) and Co2 avoided (right) (kt)



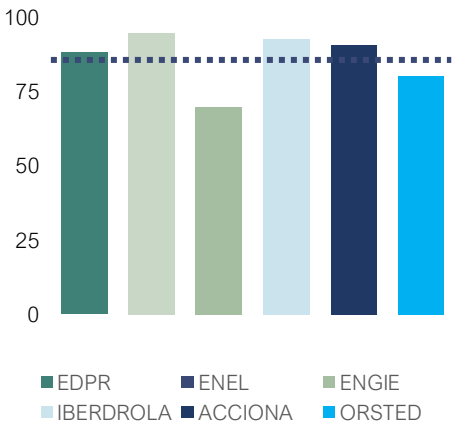
Source: EDPR

Graph 99 – Waste Recovery (%)



Source: EDPR

Graph 100 – EDPR & Peers - Environment Score



Source: Eikon

ENVIRONMENTAL

EDPR's Environmental mission leads the way of its ESG engagement

EDPR's Environmental pillar is based around three core principles: Climate Change, Circular Economy, and Biodiversity. In line with these points of concern, the company tracks mainly three data points: Co2 emissions, waste management and site maintenance.

Firstly, EDPR's Co2 emissions (Graph 98) have recently slightly increased (28kt in 2019 vs 30kt in 2020) and currently, Q3 2021 is already above FY 2020. This can be justified by the company's growth despite the Covid-19 restriction periods. On the other hand, the amount of avoided emissions has declined, which we also do not believe is cause for concern as energy produced has been increasing but countered by the lower emission factors realised.

Secondly, regarding waste management, this is broken down into two categories: hazardous, and non-hazardous. EDPR monitors both the amounts of waste produced and their ability to recover them. Here, the company has been strongly improving, diminishing its overall waste production massively (-31% since 2017) and significantly improving its ability to recover them (+7% since 2017). However, the recovery levels of its non-hazardous waste is lagging far behind the hazardous type (94% vs 62% in 2020) (Graph 99).

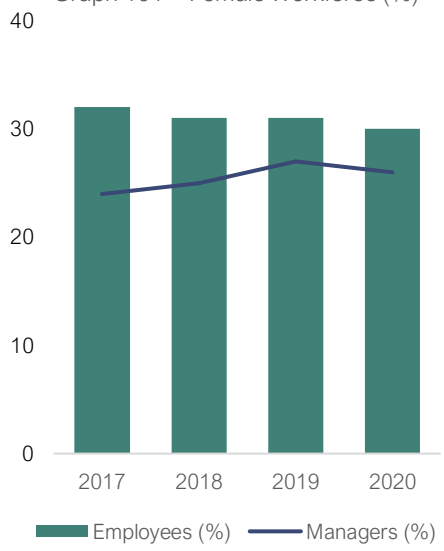
Thirdly, regarding environmental accidents such as spills and fires, the company has not been affected by any since 2018.

In terms of projects and goals, the company has unveiled their 2025-30 plan, with two main projects concerning their Environmental pillar:

1. The transition of their vehicle fleet to hybrid and electrical technologies, which currently represent 30% of the fleet, with a target to reach 40% by 2025 and 100% by 2030.
2. The improvement of waste recovery along their entire value chain and reduction of the difference between hazardous and non-hazardous recovery rates. The current recovery rate of 76% is expected to increase to 85% by 2025.

With an Environmental score of 88.14, the firm holds an A rating following Eikon's ESG data framework. This is EDPR's stronger pillar, above its peers' average of 86.03 (Graph 100). The company has implemented projects which have allowed it to receive the grade and is expected to continue to do so and

Graph 101 – Female Workforce (%)

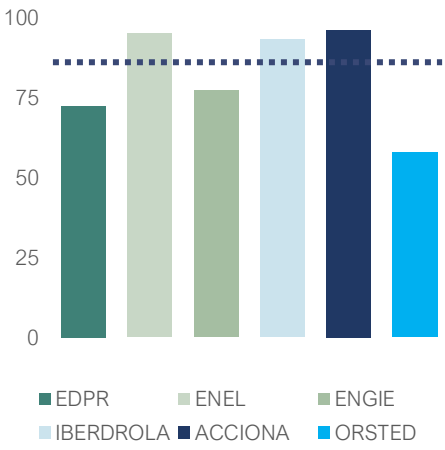


Source: EDPR

Graph 102 – Social Investments (€m)

Source: EDPR

Graph 103 – EDPR & Peers - Social Score



Source: Eikon

retain the rating, leading their overall ESG engagement.

SOCIAL

The Social pillar provides a plethora of potential opportunities for the future

Focusing now on the Social pillar of EDPR's overall ESG framework, it articulates itself around three main concerns: their people, health and safety, and local communities.

Regarding its people, EDPR has been consistently growing its workforce every year ($CAGR_{2017-2020}$ of 12.5%) and investing substantially in trainings programs. The company has also been able to reach and maintain its desired ratios of female and disabled employees (30% and 2% respectively). Recently however, the weight of women has increased in management positions (26% in 2020) but decreased in the company as a whole (Graph 101).

In terms of Health and Safety, the frequency and severity rates of injuries has been stable and the company has been improving supplier inspections frequency, increasing it by 32% in 2021. This increases the compliance with health and safety norms across supply chain.

Looking at their involvement with communities, the company's social investments to support local communities have remained fairly constant (Graph 102), investments such as helping local government or developing an Access to Energy for all program (A2E) designed to bring energy to off-the-grid areas which is an important social endeavour as well as a good opportunity for the company to access and gain a better understanding of emerging markets as most of the program is run in Africa.

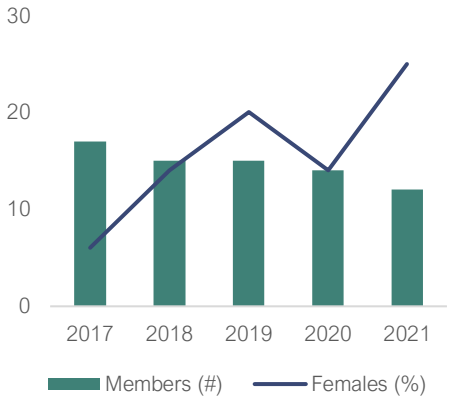
Regarding Social projects, three caught our attention:

1. EDPR set the female employee ratio target at 36% overall and 30% in managerial positions by 2025.
2. The firm wants to accelerate its social impact through its investments and A2E ventures. The goal is to reach €35m of total investments in 2025.
3. EDPR has created a Health and Safety certification system for its suppliers to be enforced by their inspections. Currently 69% of the suppliers have received it and the goal has been set to 100% by 2025.

EDPR scored a 72.26 in ESG rating on the Social pillar, earning a B+, finding itself below its peer's average (Graph 103).

Held back by its Community involvement and Product Responsibility framework, the firm finds itself with room to improve.

Graph 104 – Board Composition

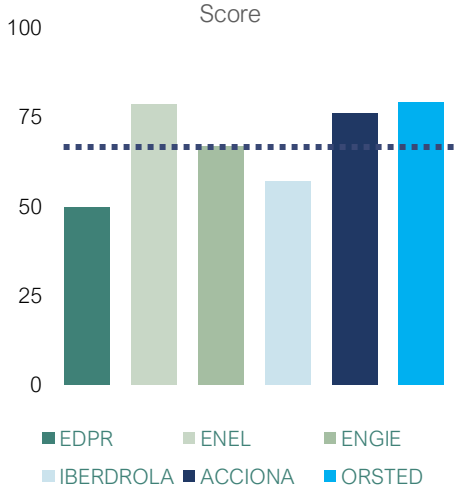


Source: EDPR

Graph 105 – Governance Structure

Source: EDPR

Graph 106 – EDPR & Peers – Governance Score



Source: Eikon

GOVERNANCE

Governance remains EDPR's Achilles heel following an ethics controversy

The Board of Directors is constituted of 12 members. Currently, 10 of its members are non-executive, 50% are independent, 3 are women, and 3 nationalities are present. Its remuneration scheme aims to align objectives and therefore has a fix management fee and a variable amount based on performance. The amounts are defined by the Nominations and Remunerations Committee based on growth, risk control, or efficiency metrics aligned with the company's strategy. It also includes ESG metrics, which are defined through Sustainability satisfaction of employees by the remuneration appreciation committee. With no term limits, once elected, directors serve 3-year terms. The number of board members has been steadily declining, from 17 in 2017 to 12 in 2021, which has allowed for a better gender representation (Graph 104).

Looking at ownership, the company's free float accounts for 25% of its outstanding shares and top holders are EDP (75%), Blackrock (3%) and Pictet AM (1.5%). The presence of a number of top asset managers with powerful ESG mandates can be really helpful for a company such as EDPR as they tend to be active in their ownership and require a number of ESG-related actions especially for Blackrock, which has been putting increasing pressure regarding ESG upon companies they are part of the ownership structure.

EDPR's Governance has been recently been affected by a Business Ethics Controversy, which led to the suspension and ultimate departure of Chairman António Mexia and CEO João Manso Neto, affecting the company's reputation and, by extent, its ability to strive for a higher ESG score on its Governance pillar. Consequently, EDPR's positioning in terms of Governance is lagging behind its peers by a significant margin. Earning itself a C+ grade with the score of 49.75, it is well below peers' average of 67.91 (Graph 106).

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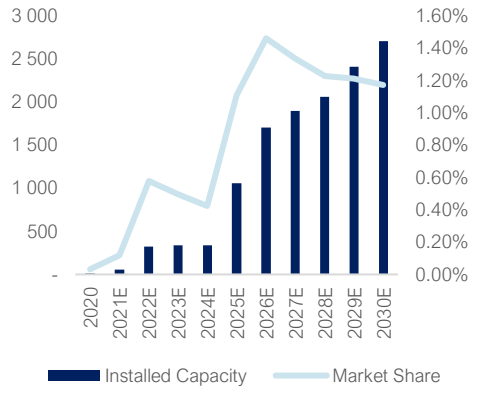
Is the Wind Offshore opportunity priced in? - Index

Introduction

Graph 1 – Forecast Wind Offshore Installed Capacity (MW) and Market Share (%) with OW Announced Projects



Source: IEA, GWEC and Analysis

Graph 2 – Global Wind Onshore vs Wind Offshore Installed Capacity (MW)

Source: IRENA

After successful partnerships in isolated projects, in January of 2020, EDPR joined ENGIE, an international, French-based, renewables player, to launch Ocean Winds - a 50:50 Joint Venture in which both companies compromised to combine their Offshore wind assets and pipeline. The goal of the Venture was to become a global top-5 player in the field. For that, Ocean Winds would mainly target European, Asian and US markets, to capture the rapid expected growth of Wind Offshore in those geographies.

Considering Wind Offshore is an early-stage market with good growth prospects, it is not to admire that EDPR stock price rallied 117% in 2020, ending the year with a share price of 22.80€, fuelled partly by the opportunity created by Ocean Winds (OW). Nonetheless, currently EDPR trades at 21.54€, so it seems the Offshore prospects have been fully priced in by investors before 2021. Or have it?

The equity research DCF model presented points towards a target price of 24.13€, which indicates that maybe not. To know if such price has already priced in the Offshore prospects entirely, one should assess the main sources of assumptions on which the equity model relies to value the Wind Offshore opportunity, both on:

- Installed Capacity: OW will not add new capacity until 2030 besides current projects secured, up until a share of 8.3 GW of current project visibility. Installed capacity growth between 2030 and 2050 follow a Stated Policies Scenario;
- Costs: Load factor growth between 2030 and 2050 follows a Stated Policies Scenario. Net profit margin of Joint Ventures and Associates is 19.4% and Capex/MW of Offshore Wind is 0.63€ (constant between 2021 and 2030).

Under these assumptions, EDPR would start losing market share[1] in 2026 (see Graph 1). By then, installed capacity of Wind Offshore globally is expected to be of around 116 GW – little more than the installed capacity built of Wind Onshore in 2008 – 114GW (see Graph 2), a year after EDPR was launched solo from EDP. Critically, one could use Wind Onshore launch in EDPR as a good benchmark, both for installed capacity growth and potential cost trends of OW capacity after 2026. Under such a benchmark scenario, EDPR share would be worth 26.13€, 8.3% above the target price with the base assumptions. Considering this discrepancy, it becomes imperative to question all the assumptions made when valuing EDPR to understand whether 24.13€ is fairly pricing in Wind Offshore's potential.

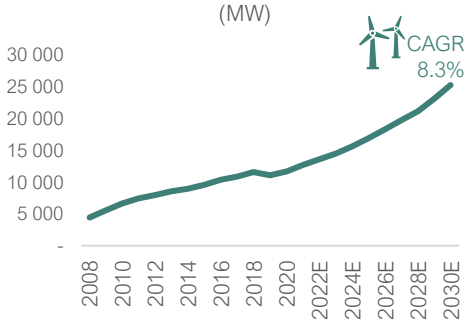
[1] By market share it is meant share of total installed capacity in the World

Methodology

In order to understand whether the Equity Research price target is based on a fair Intrinsic Valuation of EDPR's Wind Offshore opportunity, several sensitivity analysis will be performed to the main assumptions referred. These will be discussed critically based on the Wind Offshore market outlook. In the end, some scenario analysis will be performed with the goal of reaching a fair share price that could indicate a measure for the undervaluation of the Wind Offshore Opportunity.

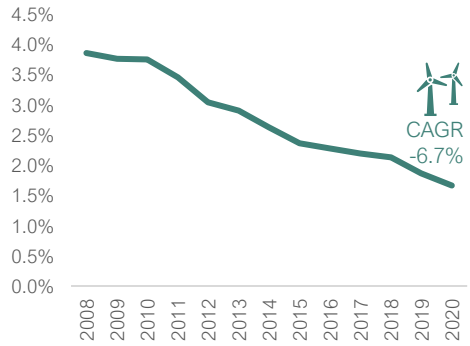
Wind Offshore Installed Capacity

Graph 3 – EDPR Installed Capacity of Wind Onshore – Historical & Forecast (MW)



Source: EDPR and Team Analysis

Graph 4 – EDPR Market Share of Wind Onshore (%)



Source: IRENA, EDPR

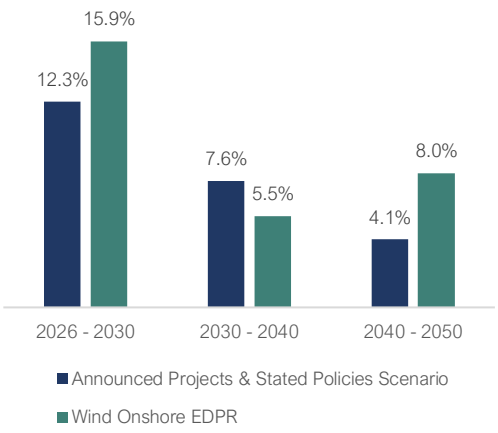
Starting by analysing the assumption of installed capacity, three main time periods were considered: after 2026 until 2030, between 2030 and 2040, and from 2040 to 2050 (considering that these two last periods rely on the same assumptions and so the scenarios considered for these are the same). The reason why installed capacity was not considered to change until 2026 compared to the base scenario is because there is fairly good visibility on pipeline of OW until then and would be unrealistic to expect many more projects to be added than those already announced.

WIND ONSHORE BENCHMARK

Considering the Wind Onshore benchmark scenario previously described, this relies on the assumption that the growth of OW installed capacity after 2026 would be the growth of EDPR's Wind Onshore capacity after 2008 (Graph 3). While relevant, this might not still be the most representative scenario, since EDPR (as a renewables company independent from EDP) entered the Wind Onshore market at a later stage than OW is entering the Wind Offshore market (roughly 5 years later). This means that it might have failed to capture first mover advantage and gain more market share, due to lack of specialization in renewables while integrated in EDP. This can be seen by the fact that even though EDPR entered as a standalone company in the market with 3.9% market share (see Graph 5), this has declined in the years afterwards, and the company grew by approximately half than the market after 2008 (at a CAGR of 8.5% versus 16.3%).

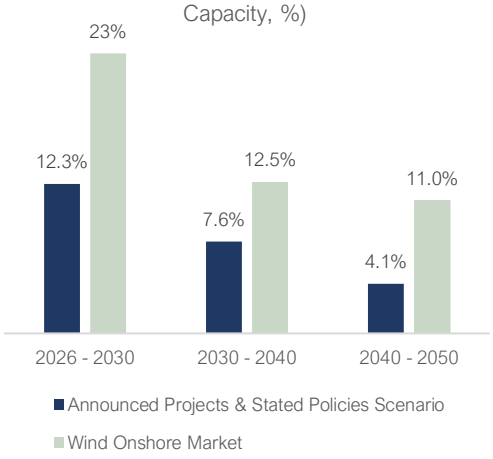
Looking at Graph 1, under OW current pipeline, its market share is forecasted to increase from 0.03% in 2020 to 1.46% in 2026. It is expected that, as OW is getting early in the Offshore market, that it can continue to increase its market share for longer or, at least, to grow at the same pace of the market. Thus, when benchmarking Wind Onshore growth, isolating the capacity effect, two scenarios were traced:

Graph 5 – Base Scenario vs Wind Onshore EDPR Scenario Assumptions (CAGR Installed Capacity, %)



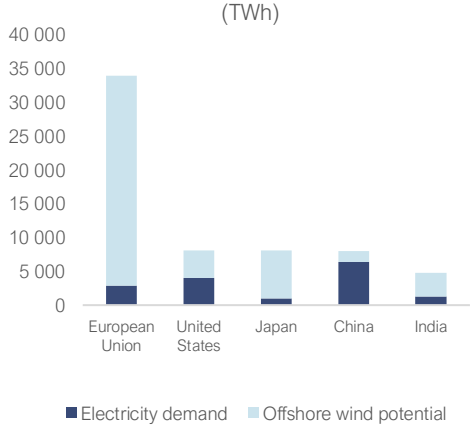
Source IRENA, IEA, Analysis

Graph 6 – Base Scenario vs Wind Onshore Market Scenario Assumptions (CAGR Installed Capacity, %)



Source: IEA; IRENA

Graph 7 - Offshore Wind technical potential and electricity demand, 2018 (TWh)



Source IEA

1. Wind Onshore EDPR Scenario - Growth of Wind Offshore installed capacity after 2026 follows growth of EDPR's Wind Onshore installed capacity after 2008 (i.e. including the loss on market share that EDPR registered in that period);
2. Wind Onshore Market Scenario - Growth of Wind Offshore installed capacity after 2026 follows growth of Wind Onshore market after 2008 (i.e. assuming that Wind Offshore market mimics the Wind Onshore's and that EDPR manages to keep the 1.46% market share).

Under Wind Onshore EDPR Scenario (Graph 5) the growth in capacity, while superior in the first few years, would be lower compared to the base scenario between 2030 and 2040. As such, under this scenario, the share price would be barely unchanged (24.32€, 0.8% above). This contrasts with the conclusion in the 'Introduction', with which, considering a benchmark of Onshore cost trends too, share price would increase to 26.13€. Therefore, higher margins seem to compensate for temporary lower growth of capacity.

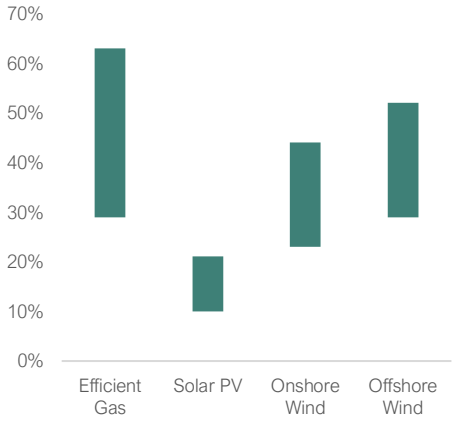
Considering now the Wind Onshore Market Scenario, the differences in assumed growth are much more significant (Graph 6). These would represent a 12.5% increase in share price to 27.15€. Thus, when isolating the change in assumption of installed capacity, EDPR is only clearly undervalued by the model if it is benchmarked with a scenario in which its Offshore capacity could grow after 2026 as much as the Wind Onshore market grew after 2008. While OW is not forecasted to lose market share at the same rate as EDPR lost with Wind Onshore, as it benefits from a stronger competitive positioning; it is also unexpected that it manages to grow with the market for 25 years, since the Wind Offshore opportunity will attract new players to the market. Thus, other scenarios should be assessed.

WIND ONSHORE VS WIND OFFSHORE GROWTH

While benchmarking with Wind Onshore serves as a good motto to understand why OW opportunities might be currently undervalued, its installed capacity growth might be higher than the one that Onshore registered, as it has 'competitive advantages' that should favour the deployment of capacity.

First, electricity demand is now higher in comparison to the period when Wind Onshore was benchmarked. The best 'close-to-shore' sites for construction could provide almost 36,000 TWh of electricity yearly, which is very close to the expected global demand in 2040. At its full theoretical potential, worldwide electricity production through Offshore could reach 420,000 TWh per year, which is 18 times the current demand (Graph 7) (International Energy Agency 2019).

Graph 8 – Average annual capacity factors by technology, 2018 (%)



Source IEA

Moreover, Offshore Wind overcomes limitations that Onshore has to scale, namely the availability of sites with good wind quality. The sites available off-shore are prone to more energy generation, and enable building turbines with higher hub heights and rotor diameters, which explain the higher load factor than Wind Onshore (29% to 52% compared to 23% to 44%, Graph 8), being now competitive in efficiency with gas-fired and some coal power plants.

Finally, there is now a better political and social context for renewables than in the last decade, supported by ambitious country targets, and policy support should be an important driver for Offshore market growth.

Henceforth, it is important to base our analysis on predictions for installed capacity that contemplate these competitive advantages of Offshore to grow faster than Onshore did departing from similar levels of installed capacity.

4 GROWTH SCENARIOS

As the market for renewables is so reliable on policy support, different outlooks on the market are also built on scenario analysis in which the main differentiating assumption is the framework traced by Governments. Under this context, one of the most comprehensive analysis on outlook for Renewable technologies is the one of World Energy Outlook from the International Energy Agency (IEA) that traces 4 scenarios of growth, presented in the Appendix. The Scenario used for estimating growth of installed capacity after 2030 was the Stated Policies Scenario, according to which no further policies will be put in place to foster Renewables growth, only the policies already in place and/or announced.

As such, to further understand the impact of further policy support, EDPR share price reaction to the change in growth of Offshore capacity under each scenario was analysed (Table 1). The difference in share price was lower than expected, with share price increasing only up to 2% in the scenario in which the World would manage to reach Net Zero Emissions in 2050 or in the Sustainable Development Scenario. This is much less than the change in share price in the benchmark scenario because the outlook for Wind Offshore market growth is worse than Wind Onshore's past market growth.

While not the main scope of the present analysis, in order to understand the full influence of the installed capacity growth predicted in each Scenario in the company valuation, a Scenario Analysis was traced in which also Solar and Wind Onshore capacity after 2030 adapt to the respective expected growth. The results are significant: share price would increase from 23% to 29% (Table 2). This indicates that an increase in

Table 1 – Growth of Wind Offshore Installed Capacity under different Scenarios and Effect on Share Price[1]

Scenario	CAGR 20-30	CAGR 30-40	CAGR 40-50	Share Price a) / b)
Stated Policies	17.0%	7.6%	4.1%	24.13€/ 24.11€
Announced Pledges	19.3%	9.8%	4.4%	24.32€/ 24.39€
Sustainable Development	20.7%	9.6%	5.9%	24.45€/ 24.60€
Net Zero Emmissions by 2050	25%	11.5%	4.0%	24.44€/ 24.62€

a) Scenario in which installed capacity between 2026 – 2030 grows with the current Announced Projects
b) Scenario in which installed capacity between 2026 – 2030 grows with corresponding Scenario

Source: IEA, and Analysis

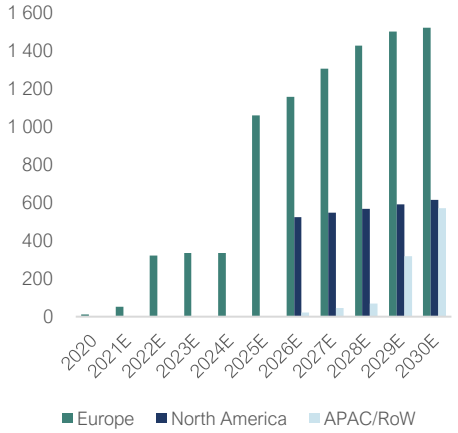
Table 2 – Effect on Share Price of different scenarios assumed after 2030

Scenario	Share Price (a)
Stated Policies	22.31€
Announced Pledges	27.49€
Sustainable Development	28.22€
Net Zero Emmissions by 2050	28.95€

Source: IEA, and Analysis

[1] Growth in 2020 was based on installed capacity of Offshore according to International Renewables Energy Agency (IRENA)

Graph 9 – Installed Capacity by Region under current Ocean Winds pipeline (MW)



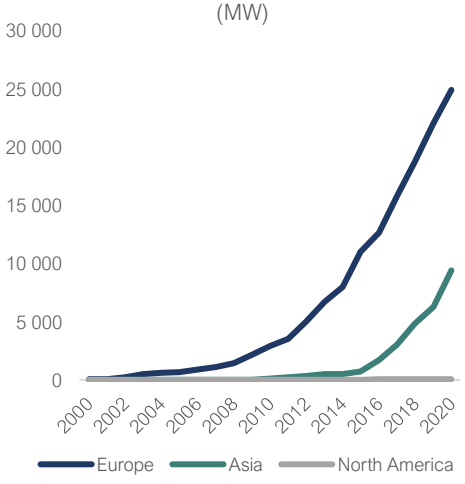
Source: EDPR and Analysis

Table 3 – CAGR of Wind Offshore Capacity per Region, 2026 – 2030 (%)

Region	Announced Projects	Expected Market Growh
Europe	7.1%	18.2%
North America	4.1%	63.8%
APAC w/o China	124.1%	27.5%

Source: IRENA, IEA, EDPR and Analysis

Graph 10 – Wind Offshore Installed Capacity by Continent, 2000 – 2020 (MW)



Source: IRENA

growth of installed capacity of Wind Offshore alone after 2030 would not be relevant to the company, if not integrated in an overall growth of all three technologies.

GEOGRAPHIC FOCUS

Let us now consider the likely geographical differences in growth that are relevant in an international company as EDPR.

OW is entering the Wind Offshore market through Europe, but it is expected that in 2026 enters the North American market with a 2 GW project already secured in the US (Mayflower). While the entry in the APAC market is only assured for 2029, with a 1.5 GW project in South Korea, it was estimated that OW will be able to enter the market sooner (in 2026) considering the high development of the region (Graph 9).

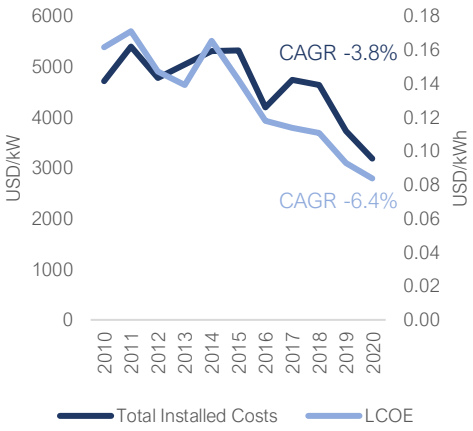
Under the current assumptions, the growth that EDPR is expected to have in both Europe and North America in the period will be lower than that of the market in the region is expected to have (Table 3, Graph 10), thus the effects of incorporating that growth were analysed. APAC growth rate was not changed as the growth in the region is already certain to be way above that of the market. This scenario led to an actual inferior share price of 23.94€. The reason why the share price decreases is that increasing capacity in Europe and North America between 2026 and 2030 should increase Capex by more than the increase in profit. This happens because the forecasted regions' average selling price is decreasing in the period (unlike in APAC), and net profit margin is assumed constant as is Capex per MW. In conclusion, adding capacity in these regions is unattractive until costs further decrease (as the model predicts for after 2030).

CONSIDERATIONS ON MARKET SHARE

Scenarios on installed capacity were all traced under the assumption of which EDPR grows with the market (unless in the EDPR Wind Onshore Scenario in which it would grow by less than the market). While this is a conservative assumption until 2030 in the growth stage that EDPR is currently in for Wind Offshore, it is reasonable in the medium-term (until 2050) as new players are expected to enter the market in the next decades, and the market share will eventually start to decrease (following the tendency of Onshore capacity in the past). As there is no way to predict with accuracy when the plateau of market share will occur, the assumption of keeping it constant from 2026 until 2050 seems to be a safer way to analyse the Offshore capacity development in the company.

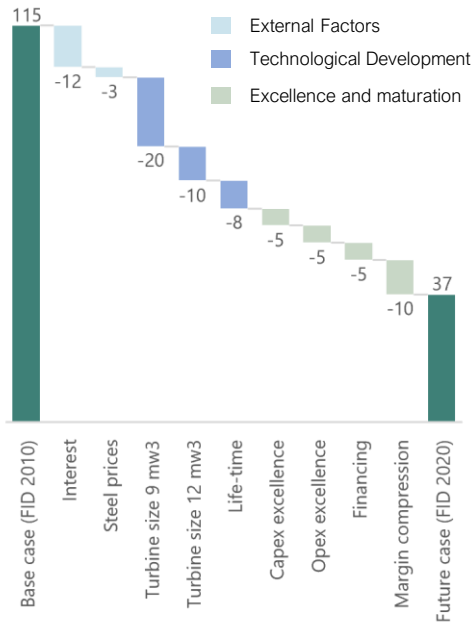
Wind Offshore Costs

Graph 11 – Wind Offshore Cost Evolution



Source: IRENA

Graph 12 - Potential levelized-cost-of-electricity path, normalized (€/mWh)



Source: McKinsey

Since 2010, when the technology was fairly recent, Wind Offshore total costs have decreased 32% and LCOE has decreased around 48% (Graph 11). The decrease in total costs is in line with the one from Wind Onshore in the same period, however the decrease in LCOE is lower than the decrease registered by Wind Onshore (-7.9%), and even by Solar PV (-17.3%). This has to do with the fact that Wind Offshore is still a much smaller market: its installed capacity represents only 5% of Onshore Wind's installed capacity globally. Factors that potentiate technological advancements and cost savings (like economies of scale, a broad and competitive supplier and project developers' landscapes) are not yet as developed in the other renewables.

Moreover, despite the competitive advantage in terms of efficiency, Offshore is still more expensive than Onshore Wind (USD 0.08/kWh of LCOE compared to USD 0.04/kWh of Onshore Wind) and, generally, is still not cost-competitive with fossil-fuel based sources. This is because Wind parks in the sea are more expensive in materials used, but also in installation and maintenance due to harder conditions for both.

However, with Europe and China reaching a more mature stage, and other markets joining the renewables race, conditions for further cost reductions are set. Looking at Graph 12, we can distinguish three main sources of drivers for decrease in costs of Wind Offshore:

1. External factors – include both decrease in interest rates and decrease in steel prices seen in the last decade. Both are likely to be less of a factor in the near future as interest rates are pushed upwards to control inflationary pressures, and steel prices more than doubled in the US in 2021 due to supply chain disruptions. The latter, nonetheless, is expected to return to 2019 values in 2023 as supply rebounds (Bloomberg, Fitch Solutions 2021);
2. Technological development – has to do mostly with improvement in turbines built which increase capacity factors of parks, and their average useful life. Turbine heights and rotor diameters are expected to continue increasing – while turbines of 9 to 12 MW capacity helped reducing considerably the LCOE in the last years, turbines of more than 15 MW are expected after 2024;
3. Excellence and maturation – this category is broad:

- Capex excellence depends mostly on suppliers expertise which is expected to develop in the next decade as the market matures;

- Opex excellence regards the experience of project developers like OW. This is also positively correlated with the market expansion and consolidation;
- Financing regards the cost of capital at which developers finance their operations. This is expected to continue decreasing as risk premiums of Wind Offshore decrease. A decrease of 1% in the cost of capital might bring 5 to 10% improvement in LCOE of renewables (McKinsey 2017);
- Margin compression relates to suppliers decreasing margins in order to remain more competitive. This also happens as the supplier landscape becomes more mature.

Thus, to incorporate the further development of these drivers in regards to cost savings in LCOE, one should consider the three variables that impact the valuation with regards to costs: load factor, net profit margin from Joint Ventures and Associates, and Capex per MW.

LOAD FACTOR

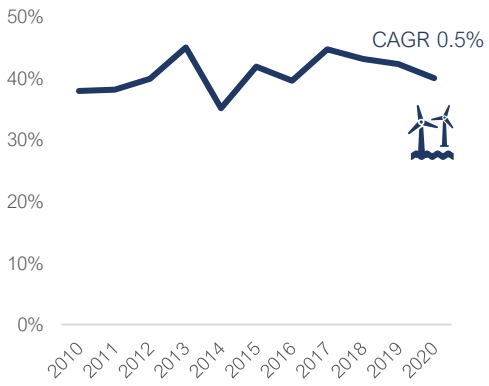
While load factor can be thought of as a revenue driver (which it is, because it influences the energy generation) it is also an LCOE driver as it measures the energy generation per MW (installed capacity). Henceforth, the higher the load factor, the lower the costs per MWh (energy generated) – the lower the LCOE.

As already analysed, Wind Offshore has a higher load factor (above 40%), due to the better sites for wind resource quality and possibility of building bigger turbines, than Wind Onshore and other energy generation sources.

Moreover, this is expected to continue increasing as net capacity factor of Wind Offshore is positively correlated with the growth in the market. This correlation is firstly because market growth translates in more supplier competitiveness and investment in materials which facilitates technological improvements. Secondly, because unlike Wind Onshore, good sites for Offshore will not exhaust any time soon with increased capacity. Thus, the forecasted increase in load factor is related with the forecasted increase in installed capacity already analysed. A clear historical example of this is that, while Wind Offshore's load factor increased 5.5% globally in the last decade (Graph 13), China's load factor increased by 23% for instance (Table 4). This is very much in line with the country having had the highest growth in the same period.

Assessing the model assumptions considering this correlation, load factor of Joint Ventures and Associates until 2030 should not differ much from that predicted in the Equity Research as this was based on forward-looking regional values with fair

Graph 13 – Weighted-average load factor globally (%)



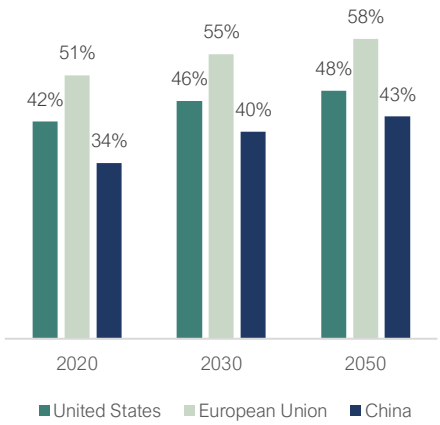
Source: IRENA

Table 4 – Load Factor by Country, 2010 – 2020 (%)

Country	Load Factor 2010	Load Factor 2020	% Change
Belgium	38	41	8%
China	30	37	23%
Denmark	44	50	14%
Germany	46	45	-2%
Japan	28	30	7%
Netherlands	48	47	-2%
United Kingdom	36	38	6%

Source: IRENA

Graph 14 – Wind Offshore Load Factor under IEA Scenarios (%) [2]



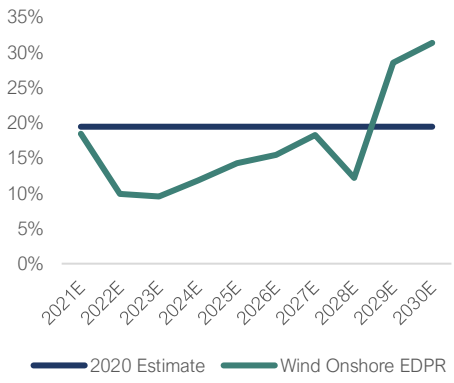
Source: IEA

visibility. However, load factor after 2030 was again based on a Stated Policies Scenario.

While one could assess the impact of changing the Scenario, the changes in load factors and respective growth are not very significant between scenarios. The IEA forecasts rely on the assumptions that the load factor of Wind Offshore of Europe, United States and China will be the same under the Stated Policies, the Announced Pledges and the Sustainable Development scenarios (Graph 14), so the estimate for the growth rate of load factor after 2030 would be the same under the three scenarios: 0.6%. Only in a Net Zero by 2050 Scenario would the growth rate be different, being actually lower (0.5%) as that Scenario estimates that load factor would increase significantly in the next 10 years to then slow down. For that to be true, it would be necessary that installed capacity growth in the next 10 years was also in line with this more ambitious Scenario, which is not the case, as will be discussed in 'Scenario Analysis'

Concluding, while Offshore load factor is an important variable in the assessment of Offshore as a strong alternative to other technologies (with a more likely higher deployment in the future once other costs decrease), its long-term growth is somewhat negligible to the current valuation of EDPR as this should not vary much from that predicted.

Graph 15 – Scenario Net Profit Margin comparison (%)



Source: McKinsey, EDPR and Analysis

NET PROFIT MARGIN

Net profit margin of Joint Ventures and Associates was estimated constant from 2021 onwards at 19.4%, as the value estimated for Net Profit Margin of Wind Offshore projects in 2020 (McKinsey 2017). This assumption has the limitation of not considering improvements in margins due to cost reductions already discussed. As such, alternative scenarios were studied for the net profit margin in the next 10 years.

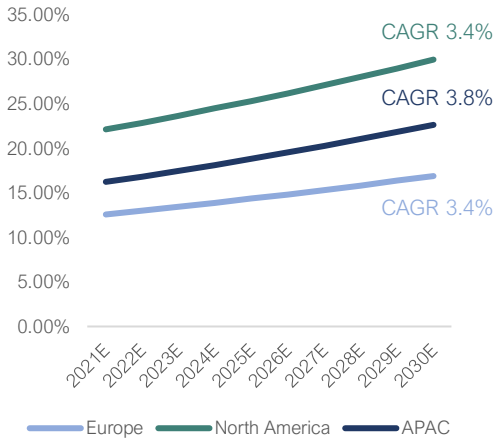
Wind Onshore Benchmark

Following the initial benchmark with Wind Onshore evolution, and isolating now the net profit margin effect, a Scenario was traced in which the net profit margin of Joint Ventures and Associates followed that of EDPR since 2008. This is a good proxy for the net profit margin of Wind Onshore as this was the core business segment of the company (with Solar only representing 4% of EDPR in 2021). Under that assumption the share price would go up to 25.41€.

This result is curious as one can see (Graph 15) that from 2021 until 2028, under such scenario, net profit margin would be lower than the base assumption of 19.4%. However, in 2029,

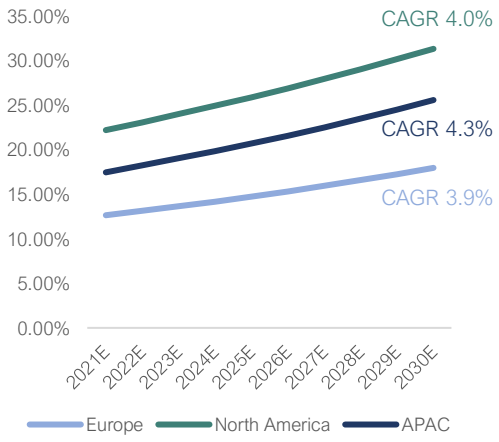
[2] Under the Stated Policies Scenario, the Announced Pledges Scenario and the Sustainable Development Scenario

Graph 16 – Net Profit Margins under Geographic Focus Scenario (%)



Source: IEA, Analysis

Graph 17 – Net Profit Margins under Net Zero Scenario (%)



Source: IEA, Analysis

cost savings would permit net profit margin to increase considerably to 28.48% and in 2030 to 31.24%, which is then assumed constant forever. Such high variation in share price (5.3%) showcases the increase in valuation that Offshore margins improving at the same pace of Onshore's could represent to EDPR shareholders (even more than the opportunity of increasing the capacity).

Wind Onshore vs Wind Offshore Net Profit Margin

Similarly to the benchmark of capacity growth with Wind Onshore, a benchmark of net profit margin evolution with Wind Onshore in EDPR has flaws. First EDPR had a different regional focus in Onshore Wind than OW, being the main difference the fact that it is not present in APAC (like OW is expected to be) while it is in Latin America. Then, EDPR has another important income source, being the Asset Rotation model which generates capital gains and inflates margins, an income source which OW has not shown yet intent to have (nor the Offshore market is yet so developed to do so). Finally, the fact that, while similar, Onshore and Offshore Wind have differences and the technological progress is uncertain to go through the same path - it will, in a large scale, depend on the growth of installed capacity also being similar.

Geographic Focus

To assess these flaws, the previous 4 growth scenarios traced by IEA can be implemented again as these also rely on considerations about the evolution of LCOE, which can be extrapolated to the net profit margin, under a constant prices assumption. Moreover, this evolution is predicted at a regional level, thus it is possible to infer what should be the net profit margin of OW in Europe, North America (using the US as proxy) and APAC (using China as proxy), reaching a more tailored conclusion.

Similarly to what happens with the load factors however, there is no difference between the first 3 scenarios. Thus, under the previously stated assumptions, two scenarios for net profit margin were considered:

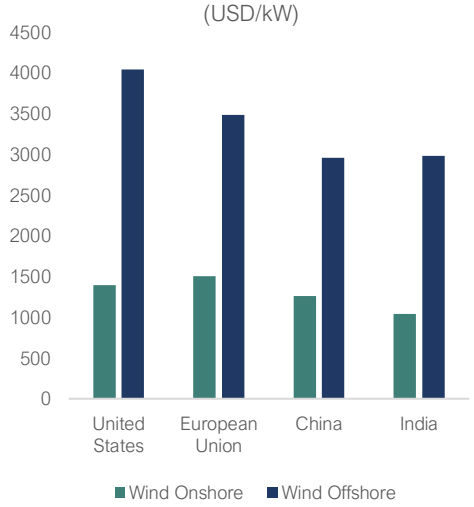
- Geographic focus – follows the first 3 scenarios of the World Energy Outlook and respective assumptions on LCOE. Under these, EDPR share price would be 24.40€ (1.1% above the base scenario);
- Net Zero – follows the Net Zero Emissions by 2050 Scenario and respective assumptions on LCOE. Under this, EDPR share price would be 24.54€ (1.7% above the base scenario).

Scenarios change very slightly (Graph 16 and 17), both

attribute lower LCOE, and thus, higher net profit margins to the regions by inverse order of maturity in the Wind Offshore market: North America, followed by APAC and, only then, Europe. This may be based on net capacity factor differences as Europe has higher load factors than North America and so lower prices can be charged. Both also attribute higher growth in net profit margin to APAC, this is in line with the fact that the region has a higher expected growth of installed capacity, thus cost decreases should be quicker. The differences are slight, thus, being on track for a Net Zero Emissions Scenario in 2050 is not only unlikely, but also will not have a substantial impact in the net profit margin of OW.

Overall the impact in share price is not more substantial because these scenarios assume a lower net profit margin for Europe, which is the biggest share of OW revenues until 2030, than that of the Base Scenario for 2020.

Graph 18 - Capital Costs in 2020 (USD/kW)



Source: IEA and Analysis

Table 5 – CAGR of Capex Cost from 2025 to 2030 under different Scenarios and Effect on Share Price

Scenario	EU	North America	APAC	Share Price
Stated Policies	-4.2%	-4.5%	-4.5%	24.33€
Announced Pledges	-4.3%	-4.9%	-4.7%	24.34€
Sustainable Development	-4.4%	-5.0%	-5.1%	24.36€
Net Zero Emmissions by 2050	-5.6%	-6.4%	-5.8%	24.38€

Source: IEA and Analysis

CAPEX

Capex costs per MW of Offshore Wind were assumed constant from 2020 to 2030 at €0.63 m per MW which is the value derived from EDPR's investment plan until 2025. While this is a reasonable assumption until 2025 because the estimate needs of investment of EDPR already incorporate fluctuations in Capex costs and regional differences, it may be overestimating the Capex costs after 2025.

Wind Onshore Benchmark

According to EDPR's investment plan, the Capex per MW of Offshore Wind will be much lower than that of Onshore Wind (€1.13 m per MW). This is probably because of the fact that Wind Offshore projects are developed within the Joint Venture format and have economies of scale that, otherwise, EDPR would not be able to enjoy from, as capital costs are usually much higher than Onshore (Graph 18). Thus, for Capex costs of OW in particular, and considering the base assumption, the capital costs of Wind Onshore in the past within EDPR might not be the ideal benchmark, specially because these have been fairly irregular, as stated in the Equity Research.

Geographic Focus

While an Onshore benchmark might be hard to establish, it is possible to estimate the evolution of Capex costs based on the Scenarios that have been used throughout the paper, once again with a regional focus approach following the growth rates presented on the Table 5. The latter estimate that North America will be the region with higher decrease of Capex costs in the next decade, followed by APAC, and only then by Europe. This is because North America, being an incomer to

the Wind Offshore market is expected to benefit from a more accelerated cost decrease in the future.

Overall, under the 4 Scenarios from IEA, there seems to be no significant changes to the share price (this increases by 1% in the best case scenario – Table 5), as such Offshore Capex costs evolution from 2026 to 2030 have not a very important impact in the valuation as could have been thought.

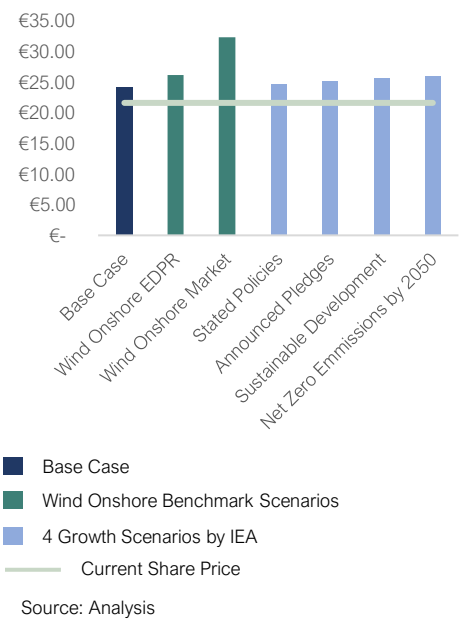
CONSIDERATIONS ON THE AVERAGE SELLING PRICE

It is impossible to dissociate the mentioned decreases in costs without considering the evolution of the average selling price. Prices, as analysed in the Equity Research, are in large measure defined by LCOE's as renewable developers choose the prices to bid in an auction (or other regulatory framework) according to a pre-determined margin over the LCOE. It is to be expected, therefore, that, as Offshore developers explore more cost efficiencies, that prices at which they sell will also be lower as they become more competitive with other energy sources.

As it is hard to estimate the impact of Offshore prices in the overall average selling price of EDPR in a reliable way, due to inexistent discrimination of pricing between technologies, no further analysis will be made on these. However, the DCF model previously presented already incorporates an expected decrease in prices for renewables until 2030 in an aggregate level which should be representative of the decreasing LCOE.

Scenario Analysis

Graph 19 – Wind Onshore Benchmark & 4 Growth Scenarios

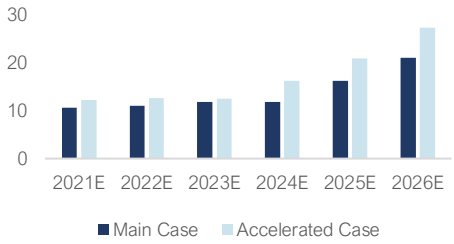


Source: Analysis

The paper assesses the effects on the valuation of changing particular assumptions to better describe expectations about the Offshore market. However, it is key to consider the aggregate change in assumptions under different scenarios. As such, several Scenario analysis were traced (Appendix) using three main sets of scenarios:

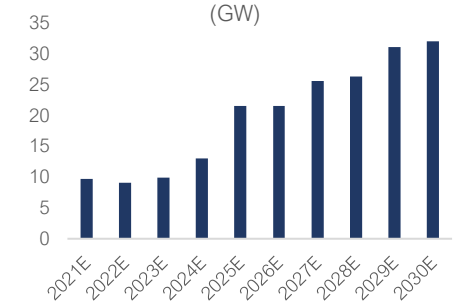
1. Wind Onshore Benchmark Scenarios – which includes a scenario that benchmarks the EDPR development with Wind Onshore and a scenario that benchmarks the Wind Onshore market (Graph 19). This yield respectively, a variation of 8.3% and 33.8% to the share price on the Base scenario, showing that if Wind Offshore develops (in installed capacity and margins) by near as much as Wind Onshore did since 2008, then EDPR might be severely undervalued. The more undervalued, the more market share OW manages to capture under such scenario;
2. 4 Growth Scenarios by IEA – These scenarios (Graph 19) follow the IEA assumptions for the development of

Graph 20 – Forecasted Capacity Additions of Wind Offshore under two Scenarios, by IEA (GW)



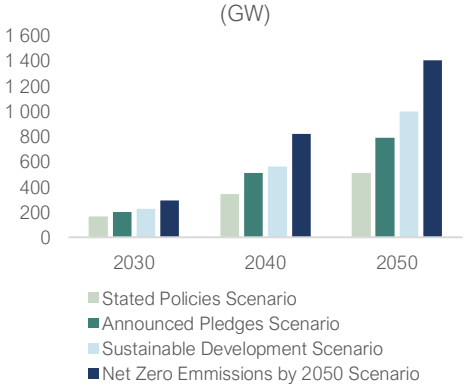
Source: IEA

Graph 21 – Forecasted Capacity Additions of Wind Offshore by GWEC (GW)



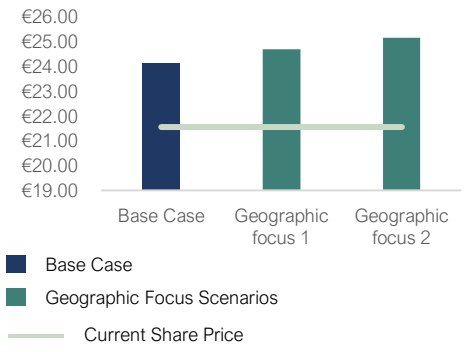
Source: GWEC

Graph 22 - Installed Capacity of Wind Offshore under different Scenarios [3] (GW)



Source: IEA and IRENA

Graph 23 – Geographic Focus Scenarios



Source: Analysis

renewables in the next year. To take conclusions it is important to assess the likelihood of each Scenario. As such, being on track to achieve Net Zero Emissions by 2050 will be very hard by 2030, which would require adding 80 GW additions of Offshore Wind capacity per year until then, when these should not be more than 30 GW in 2026 (20 GW in a Base Case) (Graph 20). Forecasts from GWEC which go further until 2030, also only expect 31.9 GW in capacity additions per year in 2030 (Graph 21). While a Stated Policies Scenario is the most certain (only in a scenario of severe disruption this would be more optimistic than reality), in terms of Wind Offshore capacity in 2030, this falls short of expectations in other studies. The scenario predicts 165 GW of Offshore Installed Capacity by 2030, while other forecasts (BNEF 2021 and 4C Offshore 2021) estimate, respectively, 203 GW and 215 GW in 2030, which is in between the estimates from Announced Pledges Scenario (200 GW) and from Sustainable Development Scenario (225 GW) (Graph 22). Considering expected growth of Offshore capacity between 2026 and 2030 according to GWEC, this is of 18.7%, in between of the expected growth under a Stated Policies (17.0%) and an Announced Pledges (19.3%) Scenarios. Thus, the Announced Pledges Scenario is the most certain Scenario, representing a 4.0% premium in share price compared to the Base Case. In a more optimistic view, if a Sustainable Development Scenario was possible to reach, this premium would increase to 5.5%;

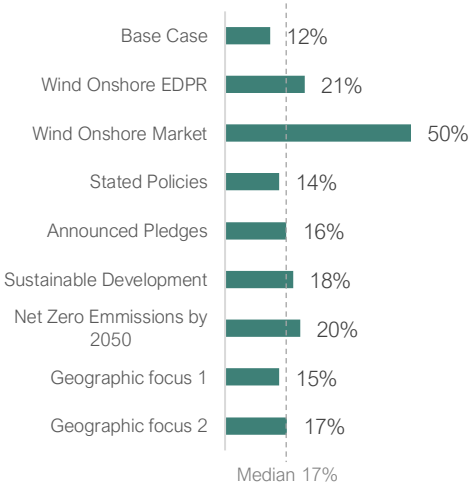
3. Geographic Focus Scenarios – two scenarios were built with a further particular focus on Geographies (Graph 23) – one complemented with a Stated Policies Scenario (Geographic focus 1) and one complemented with an Announced Pledges Scenario (Geographic focus 2). Both are very similar in terms of results with the Scenarios they complement, reaching a premium compared to the Base Case of 2.2% and 4.3% respectively.

Overall, the share price attained in all Scenarios is superior to that estimated in the DCF model of the Equity Research. It is, however, noticeable that Wind Onshore scenarios yield higher premiums (8.3% and 33.8%) than the remaining scenarios mainly sustained in Wind Offshore market outlooks (2.2% to 7.2%). This implies that outlook for Wind Offshore is more conservative in growth and margin evolution forecasted than the one that Wind Onshore managed to attain in the past. The median premium is 4.8% and the average is 8.4% (4.1% and 4.8% disregarding the Wind Onshore Market Scenario outlier).

[3] Datapoints on Wind Offshore were only available for the Stated Policies Scenario and the Sustainable Development Scenario for 2030 and 2040. Installed capacity on 2050 was inferred using information of IRENA on a Climate-Resilient Path, a Scenario similar to the Sustainable Development Scenario. Missing values used the proportional share that Wind Offshore was supposed to represent in terms of total Wind capacity

Conclusions

Graph 24 – Share price upside under different Scenarios of Offshore Wind



Source: Analysis

Under the remarks of the Scenario Analysis, one can conclude that Wind Offshore opportunities are most likely not fully priced in the DCF Price Target established on the Equity Research of 24.13€. Considering the most likely scenarios (Announced Pledges and Geographic focus scenarios) and the statistics of the Scenario Analysis previously analysed, it is likely that the premium compared to the Base Case goes from 4.0% to 4.8%, which corresponds to a share price between 25.09€ and 25.29€ (above the overall price target of the Equity Research considering other valuation methods of 24.29€). This represents an upside of 16.5% to 17.4% compared to the current share price (Graph 24), reinforcing the 'BUY' recommendation issued.

A further analysis could consider other drivers of OW value, as:

1. The timing of predictions – the split in time periods of 2025 until 2030; 2030 until 2050 and 2050 onwards to measure Offshore Wind value, could be questioned. First because this is a new sector for the company, being unlikely that this reaches a growth close to terminal in 2050. More so, because, as analysed, it is unlikely that the Net Zero Emissions by 2050 Scenario will happen, meaning countries will need to continue to stimulate growth of the renewables sector beyond that year;
2. The Joint Venture effect – a step further would analyse the net benefit for EDPR of exploring Offshore projects in a Joint Venture (versus exploring alone). This would imply quantifying all its pros - economies of scale, more investment capabilities and expertise, higher bargaining power and lower Capex costs, for example - against all the cons, like lower absolute income by project, or less exploitation of synergies with remaining portfolio;
3. The WACC – the WACC used to value EDPR was of 4.8%. This is in line with WACC for Solar PV and Wind Onshore projects which is between 3.0% and 6.0%, but is in the low range of Wind Offshore projects, from 4.0% and 7.0% (International Energy Agency 2021). Valuing OW considering the higher risk premium would be relevant.

Nonetheless, the current results, based on the main drivers of Wind Offshore value to EDPR, already offer some visibility that the market could be presently undervaluing it. The undervaluation will be higher if the future increase in capacity of Wind Offshore and the decrease of respective costs, resembles more the Wind Onshore historical path than the market outlook currently traced, but time will tell.

Glossary

CAGR – Compound Annual Growth Rate

Carbon Credits – permit which allows the holder to emit a certain amount of carbon dioxide

Commercial Operation Date (CoD) – date at which renewables projects become operational

GW – a unit of power installed capacity equal to billion watts

GWh – unit of energy generated representing one billion watt hours

Learning rate – percentual reduction in cost for double of cumulative production or capacity

Levelized Cost of Energy – measure of the average net present cost of electricity generation for a generation plant over its lifetime

Load Factor / Net Capacity Factor – electricity generated in a given period as a percentage of the maximum theoretical energy output (i.e. continuous operation at full power)

MW – unit of electric power equal to 106 watts

MWh – equal to 106 watts of electricity used continuously for one hour

Operations & Maintenance (O&M) - are all the activities necessary to run the wind-farm in a reliable, safe and economical way, including for instance maintenance, repair, monitoring and operation

Purchasing Power Agreements (PPAs) - bilateral contract between a generator of electricity (provider) and a power purchaser (host)

P50 – probability figure that measures the average level of electricity generation which output forecasted exceed 50% of the time over the projects' life

Solar DG – solar distributed generation is produced at or near the point it is used

Solar PV – solar photovoltaic is the conversion of light into electricity

Technical availability – ratio between energy actually generated and the energy that would have been generated without any downtime due to internal reasons

Sources: EDPR, Investopedia, Eurostat, S&P Global

Appendix

1. FREE CASH FLOWS MAP 2017 – 2030E

Free Cash Flow to Investors Map														
(EUR millions)	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027	2028E	2029E	2030E
Core Business Cash Flows														
NOPLAT	€438.7	€442.4	€660.7	€668.2	€539.5	€721.1	€744.2	€803.4	€882.5	€1,100.1	€1,225.6	€1,344.5	€1,513.3	€1,677.3
Depreciation and amortization	€563.4	€545.9	€591.6	€600.0	€610.1	€670.6	€711.9	€738.7	€813.2	€899.7	€982.0	€1,050.9	€1,122.0	€1,248.9
Operating Gross Cash Flow	€1,002.0	€988.3	€1,252.3	€1,268.2	€1,149.6	€1,391.6	€1,456.2	€1,542.0	€1,695.8	€1,999.9	€2,207.6	€2,395.4	€2,635.3	€2,926.1
Investment in NWC	-€131.5	€92.6	-€171.2	€161.8	€24.7	-€43.1	-€21.8	-€12.3	-€31.9	-€43.5	-€53.4	-€49.5	-€52.2	-€74.7
CAPEX, Net	-€311.1	-€1,282.5	€66.3	-€827.9	-€1,815.9	-€1,462.7	-€1,056.3	-€2,177.9	-€2,511.7	-€2,503.4	-€2,256.6	-€2,256.6	-€3,629.9	-€3,629.9
Investment in Right-of-use Assets	€0.0	€0.0	-€616.0	-€58.1	-€131.5	-€177.9	-€131.9	-€218.2	-€247.4	-€265.5	-€257.5	-€266.8	-€364.2	-€378.1
Investment in Intangible Assets	-€39.3	-€1.1	-€39.7	-€23.9	-€55.5	-€71.0	-€48.9	-€86.7	-€98.0	-€104.1	-€98.4	-€100.7	-€142.4	-€145.8
Investment in Goodwill	€89.3	-€30.3	€127.4	-€23.5	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Investments in joint ventures and associates	€36.6	-€45.2	-€111.5	-€14.7	-€412.4	-€395.1	-€55.7	-€37.7	-€971.8	-€840.9	-€238.1	-€203.8	-€432.0	-€357.8
Changes in Other Operating Invested Capital	-€234.4	€456.6	€138.1	€9.7	€233.9	€165.9	€85.3	€241.1	€295.3	€290.4	€254.1	€242.8	€437.2	€439.5
Investing Cash Flow	-€590.5	-€810.0	-€606.5	-€776.5	-€2,156.7	-€1,983.8	-€1,229.2	-€2,291.7	-€3,565.4	-€3,467.0	-€2,649.9	-€2,634.5	-€4,183.5	-€4,146.8
Core Free Cash Flows	€411.5	€178.3	€645.8	€491.7	-€1,007.1	-€592.2	€227.0	-€749.6	-€1,869.6	-€1,467.1	-€442.3	-€239.1	-€1,548.2	-€1,220.6
Non-Core Business Cash Flows														
Non-operating result	-€230.3	-€21.1	€65.0	-€219.8	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Investment in non-operating business	-€176.0	-€279.8	-€623.9	-€460.8	-€95.9	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Non-Core Free Cash Flows	-€406.3	-€300.9	-€558.9	-€680.6	-€95.9	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Free Cash Flow to Investors	€5.2	-€122.6	€86.9	-€188.9	-€1,103.0	-€592.2	€227.0	-€749.6	-€1,869.6	-€1,467.1	-€442.3	-€239.1	-€1,548.2	-€1,220.6

Free Cash Flow from Investors Map														
(EUR millions)	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027	2028E	2029E	2030E
Debt Cash Flow														
Net Financial Expenses	-€301.6	-€219.7	-€349.5	-€285.1	-€339.3	-€334.5	-€414.8	-€434.5	-€493.4	-€685.4	-€674.3	-€772.6	-€860.5	-€994.3
Financial tax shield	€149.9	€110.6	€175.2	€148.4	€84.8	€83.6	€103.7	€108.6	€123.4	€171.4	€168.6	€193.1	€215.1	€248.6
Changes in net debt and other claims	€37.3	€230.6	€346.0	€677.7	-€59.5	€1,004.5	€245.5	€736.9	€2,401.0	-€138.6	€1,228.2	€1,098.7	€1,673.7	€2,246.5
Debt cash flow	-€114.3	€121.5	€171.7	€541.0	-€313.9	€753.7	-€65.6	€411.0	€2,030.9	-€652.7	€722.5	€519.3	€1,028.3	€1,500.8
Equity Cash Flow														
Comprehensive income for EDPR equity holders	€123.6	-€153.4	-€403.9	-€184.5	-€163.7	-€355.0	-€319.9	-€369.8	-€409.0	-€479.6	-€614.4	-€660.6	-€764.3	-€828.6
Changes in equity	€210.0	€174.0	€463.8	€374.7	€1,586.8	€268.6	€223.9	€764.1	€293.7	€2,754.7	€480.0	€516.5	€1,410.6	€665.3
Equity Cash Flow	€333.6	€20.7	€59.9	€190.2	€1,423.2	-€86.5	-€96.1	€394.3	-€115.3	€2,275.1	-€134.5	-€144.1	€646.3	-€163.3
Tax Equity Cash Flow														
Changes in Tax Equity	-€156.3	€86.1	€80.5	-€329.6	€116.9	€38.5	€38.6	€38.6	€38.7	€38.7	€38.7	€38.7	€38.7	€38.7
Tax Equity Cash flow	-€156.3	€86.1	€80.5	-€329.6	€116.9	€38.5	€38.6	€38.6	€38.7	€38.7	€38.7	€38.7	€38.7	€38.7
NCI Cash Flow														
Minority Interests	-€180.3	-€158.8	-€147.5	-€127.2	-€121.4	-€115.2	-€113.2	-€107.7	-€103.5	-€106.4	-€105.4	-€104.5	-€103.7	-€102.9
Changes in non-controlling interest	€112.1	€53.2	-€251.5	-€85.6	-€1.7	€1.6	€9.2	€13.4	€18.8	-€87.6	-€79.0	-€70.3	-€61.5	-€52.7
NCI Cash flow	€68.2	€105.6	€399.1	€212.8	€123.2	€113.5	€103.9	€94.3	€84.7	€194.0	€184.4	€174.8	€165.2	€155.6
Free Cash Flow from Investors	-€5.2	€122.6	-€86.9	€188.9	€1,103.0	€592.2	-€227.0	€749.6	€1,869.6	€1,467.1	€442.3	€239.1	€1,548.2	€1,220.6

Appendix

2. BALANCE SHEET 2017 – 2030E

(EUR millions)	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027	2028E	2029E	2030E
Core Business														
Operating Cash	€80.1	€75.6	€82.1	€76.4	€84.6	€97.8	€105.6	€114.6	€128.2	€143.5	€160.7	€176.9	€196.9	€221.6
Inventories	€28.6	€35.6	€34.1	€54.5	€33.8	€39.1	€42.2	€45.8	€51.3	€57.4	€64.3	€70.8	€78.8	€88.6
Accounts receivable - trade, net, current	€323.1	€313.8	€284.1	€256.0	€283.3	€327.5	€353.6	€383.7	€429.2	€480.4	€538.0	€592.5	€659.4	€741.9
Net assets, liabilities held for sale	€58.2	€7.5	€187.4	€12.2	€12.2	€12.2	€12.2	€12.2	€12.2	€12.2	€12.2	€12.2	€12.2	€12.2
Net current taxes (core)	€18.0	€11.6	€6.8	€62.3	€19.7	€26.3	€27.2	€29.3	€32.2	€40.2	€44.7	€49.1	€55.2	€61.2
Operating Current Assets	€507.9	€444.2	€594.5	€461.5	€433.7	€502.9	€540.8	€585.7	€653.1	€733.6	€819.9	€901.4	€1,002.5	€1,125.5
Accounts payable - trade, net, current	-€142.3	-€171.3	-€150.0	-€178.7	-€176.3	-€201.7	-€217.4	-€249.4	-€284.1	-€320.2	-€352.0	-€383.1	-€430.8	-€477.6
Provisions - current	-€5.4	-€5.2	-€5.7	-€5.7	-€5.1	-€5.9	-€6.3	-€6.9	-€7.7	-€8.6	-€9.6	-€10.6	-€11.8	-€13.3
Operating Current Liabilities	-€147.6	-€176.5	-€155.6	-€184.4	-€181.4	-€207.6	-€223.7	-€256.3	-€291.8	-€328.8	-€361.7	-€393.8	-€442.6	-€490.9
Net Working Capital Requirements	€360.3	€267.7	€438.8	€277.0	€252.3	€295.4	€317.1	€329.4	€361.3	€404.8	€458.2	€507.7	€559.9	€634.6
PP&E	€13,185.2	€13,921.8	€13,263.9	€13,491.7	€14,749.0	€15,601.1	€16,011.5	€17,526.6	€19,312.6	€21,016.5	€22,403.0	€23,732.1	€26,379.5	€28,917.3
Right-of-use assets	€0.0	€0.0	€616.0	€674.0	€763.0	€891.3	€969.1	€1,124.7	€1,299.7	€1,482.6	€1,648.3	€1,814.0	€2,063.3	€2,312.6
Intangible assets	€249.5	€250.6	€290.3	€314.2	€360.8	€421.4	€458.2	€531.8	€614.5	€701.0	€779.3	€857.7	€975.6	€1,093.4
Investments in joint ventures and associates	€303.5	€348.7	€460.2	€474.9	€887.2	€1,282.3	€1,338.0	€1,375.7	€2,347.5	€3,188.5	€3,426.6	€3,630.3	€4,062.3	€4,420.1
Accounts receivable - trade, net, non-current	€40.5	€20.5	€18.9	€23.0	€22.7	€26.2	€28.3	€30.7	€34.3	€38.4	€43.0	€47.4	€52.7	€59.3
Accounts payable - trade, net, non-current & PP&E	-€1,032.8	-€1,424.4	-€1,579.5	-€1,606.5	-€1,756.2	-€1,857.7	-€1,906.5	-€2,086.9	-€2,299.6	-€2,502.5	-€2,667.6	-€2,825.8	-€3,141.1	-€3,443.3
Provisions - non-current	-€270.4	-€290.1	-€272.4	-€309.6	-€338.5	-€391.2	-€422.4	-€458.4	-€512.7	-€573.9	-€642.7	-€707.7	-€787.7	-€886.2
Net deferred taxes (core)	-€235.2	-€260.4	-€259.6	-€209.2	-€264.1	-€279.3	-€286.7	-€313.8	-€345.8	-€376.3	-€401.1	-€424.9	-€472.3	-€517.8
Core Invested Capital (excluding Goodwill)	€12,600.7	€12,834.4	€12,976.7	€13,129.7	€14,676.3	€15,989.5	€16,506.7	€18,059.7	€20,811.9	€23,379.2	€25,047.1	€26,630.8	€29,692.2	€32,590.1
Goodwill	€1,296.2	€1,326.6	€1,199.2	€1,222.7	€1,222.7	€1,222.7	€1,222.7	€1,222.7	€1,222.7	€1,222.7	€1,222.7	€1,222.7	€1,222.7	€1,222.7
Core Invested Capital (including Goodwill)	€13,896.9	€14,161.0	€14,175.9	€14,352.4	€15,899.0	€17,212.2	€17,729.4	€19,282.4	€22,034.6	€24,601.8	€26,269.7	€27,853.4	€30,914.9	€33,812.8
Non Core Business														
Other debtors and other assets	€162.9	€480.9	€500.6	€857.9	€857.9	€857.9	€857.9	€857.9	€857.9	€857.9	€857.9	€857.9	€857.9	€857.9
Other liabilities and other payables	-€1,031.3	-€1,094.2	-€550.8	-€331.4	-€331.4	-€331.4	-€331.4	-€331.4	-€331.4	-€331.4	-€331.4	-€331.4	-€331.4	-€331.4
Equity instruments at fair value	€8.6	€8.4	€16.0	€13.3	€14.6	€14.6	€14.6	€14.6	€14.6	€14.6	€14.6	€14.6	€14.6	€14.6
Net current taxes (non core)	-€36.1	-€38.9	-€44.1	-€31.3	-€32.6	-€32.6	-€32.6	-€32.6	-€32.6	-€32.6	-€32.6	-€32.6	-€32.6	-€32.6
Net deferred taxes (non core)	-€55.9	-€28.1	€30.3	-€95.8	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Non Core Invested Capital	-€951.8	-€672.0	-€48.1	€412.7	€508.6	€508.6	€508.6	€508.6	€508.6	€508.6	€508.6	€508.6	€508.6	€508.6
Total Uses of Funds: Invested Capital	€12,945.1	€13,489.0	€14,127.8	€14,765.1	€16,407.5	€17,720.7	€18,238.0	€19,791.0	€22,543.1	€25,110.4	€26,778.3	€28,362.0	€31,423.5	€34,321.4
Net Financial Assets														
Net Debt	€2,987.7	€3,218.3	€3,564.3	€4,242.0	€4,182.5	€5,187.0	€5,432.6	€6,169.4	€8,570.4	€8,431.8	€9,660.0	€10,758.7	€12,432.4	€14,678.9
Non-controlling interests	€1,560.2	€1,613.4	€1,361.9	€1,276.3	€1,274.5	€1,276.1	€1,285.4	€1,298.8	€1,317.5	€1,229.9	€1,151.0	€1,080.7	€1,019.1	€966.4
Net Financial Assets	€4,547.9	€4,831.7	€4,926.1	€5,518.3	€5,457.0	€6,463.2	€6,717.9	€7,468.2	€9,887.9	€9,661.7	€10,811.0	€11,839.4	€13,451.5	€15,645.3
Tax Equity														
Institutional partnerships in U.S. wind farms - restricted cash	-€101.5	-€82.9	-€61.0	-€34.3	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Institutional partnerships in U.S. wind farms - liabilities	€2,163.7	€2,231.2	€2,289.8	€1,933.5	€2,016.1	€2,054.6	€2,093.2	€2,131.9	€2,170.6	€2,209.3	€2,248.0	€2,286.8	€2,325.5	€2,364.3
Deferred income related to benefits provided	€914.6	€961.8	€1,002.9	€799.1	€859.7	€876.1	€892.6	€909.0	€925.5	€942.0	€958.6	€975.1	€991.6	€1,008.1
Liabilities arising from institutional partnerships in U.S. wind farms	€1,249.1	€1,269.5	€1,286.9	€1,134.4	€1,156.5	€1,178.5	€1,200.7	€1,222.8	€1,245.0	€1,267.3	€1,289.5	€1,311.7	€1,333.9	€1,356.1
Tax Equity	€2,062.2	€2,148.3	€2,228.8	€1,899.3	€2,016.1	€2,054.6	€2,093.2	€2,131.9	€2,170.6	€2,209.3	€2,248.0	€2,286.8	€2,325.5	€2,364.3
Equity	€6,335.0	€6,509.0	€6,972.8	€7,347.5	€8,934.4	€9,202.9	€9,426.8	€10,190.9	€10,484.6	€13,239.4	€13,719.3	€14,235.8	€15,646.4	€16,311.8
Total Sources of Funds	€12,945.1	€13,489.0	€14,127.8	€14,765.1	€16,407.5	€17,720.7	€18,238.0	€19,791.0	€22,543.1	€25,110.4	€26,778.3	€28,362.0	€31,423.5	€34,321.4

Appendix

3. INCOME STATEMENT 2017 – 2030E

(EUR millions)	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027	2028E	2029E	2030E
Core Business														
Total Revenues	€1,601.6	€1,511.5	€1,642.1	€1,529.0	€1,692.3	€1,955.9	€2,112.0	€2,292.1	€2,563.6	€2,869.3	€3,213.4	€3,538.7	€3,938.5	€4,431.1
Other Operating Income	€94.9	€192.0	€399.7	€498.4	€271.0	€397.1	€361.4	€387.4	€389.3	€553.2	€555.6	€557.9	€598.7	€602.1
Core Opex	-€427.6	-€460.3	-€439.7	-€445.6	-€500.5	-€570.3	-€610.3	-€691.7	-€779.5	-€869.9	-€948.6	-€1,025.2	-€1,142.4	-€1,257.0
Supplies and services	-€326.9	-€345.3	-€309.0	-€304.4	-€328.9	-€376.2	-€405.4	-€465.2	-€529.9	-€597.3	-€656.6	-€714.6	-€803.5	-€890.8
Personnel costs	-€100.8	-€115.0	-€130.7	-€141.2	-€171.6	-€194.1	-€204.9	-€226.5	-€249.6	-€272.6	-€292.0	-€310.6	-€338.9	-€366.2
Other Operating Costs	-€128.2	-€128.4	-€135.6	-€122.7	-€146.6	-€166.8	-€179.8	-€195.9	-€219.4	-€246.3	-€276.6	-€305.2	-€340.1	-€382.7
Share of net profit in joint ventures and associates	€2.7	€1.6	€3.4	-€6.2	€18.3	€30.7	€41.1	€41.7	€63.3	€93.3	€112.5	€124.7	€139.1	€155.1
Operating Result / EBITDA	€1,143.5	€1,116.4	€1,469.9	€1,452.9	€1,334.5	€1,646.6	€1,724.3	€1,833.6	€2,017.3	€2,399.5	€2,656.3	€2,890.9	€3,193.8	€3,548.6
Provisions	€0.2	-€0.3	-€1.2	-€0.7	-€1.1	-€10.3	-€15.7	-€18.9	-€22.1	-€27.2	-€34.0	-€40.8	-€46.7	-€55.4
Total Depreciation and Amortisation	-€563.4	-€545.9	-€591.6	-€600.0	-€610.1	-€670.6	-€711.9	-€738.7	-€813.2	-€899.7	-€982.0	-€1,050.9	-€1,122.0	-€1,248.9
Core Results before taxes / EBIT	€580.3	€570.2	€877.0	€852.2	€723.4	€965.7	€996.7	€1,076.0	€1,182.0	€1,472.6	€1,640.4	€1,799.3	€2,025.1	€2,244.4
Statutory Taxes	-€145.1	-€142.5	-€219.2	-€213.1	-€180.8	-€241.4	-€249.2	-€269.0	-€295.5	-€368.2	-€410.1	-€449.8	-€506.3	-€561.1
Tax Adjustments	€3.5	€14.8	€6.5	€32.2	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Extraordinary contribution to the energy sector (CESE)	€0.0	€0.0	-€3.5	-€3.2	-€3.0	-€3.2	-€3.3	-€3.6	-€4.0	-€4.3	-€4.6	-€4.9	-€5.5	-€6.0
Core Results (Losses) / NOPLAT	€438.7	€442.4	€660.7	€668.2	€539.5	€721.1	€744.2	€803.4	€882.5	€1,100.1	€1,225.6	€1,344.5	€1,513.3	€1,677.3
Non-Core Business														
Other Comprehensive Income	-€230.3	-€21.1	€65.0	-€219.8	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Actuarial gains/(losses)	€0.0	€0.0	-€0.1	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Tax effect of actuarial gains/(losses)	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Sales of Financial Assets	€0.4	-€0.1	-€0.1	-€3.2	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Cash Flow Hedge	-€15.2	-€47.2	€68.6	-€5.4	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Share of other comprehensive income of joint ventures and associates, net of taxes	€13.6	-€20.4	-€12.9	€13.5	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Reclassification to profit and loss due to changes in control	-€4.2	€0.0	-€1.5	€74.5	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Exchange differences arising on consolidation	-€224.8	€46.6	€11.0	-€299.3	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Non-Core Results (Losses)	-€230.3	-€21.1	€65.0	-€219.8	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Financing														
Net Financial Expenses	-€301.6	-€219.7	-€349.5	-€285.1	-€339.3	-€334.5	-€414.8	-€434.5	-€493.4	-€685.4	-€674.3	-€772.6	-€860.5	-€994.3
Financing Results before taxes	-€301.6	-€219.7	-€349.5	-€285.1	-€339.3	-€334.5	-€414.8	-€434.5	-€493.4	-€685.4	-€674.3	-€772.6	-€860.5	-€994.3
Statutory tax	€75.4	€54.9	€87.4	€71.3	€84.8	€83.6	€103.7	€108.6	€123.4	€171.4	€168.6	€193.1	€215.1	€248.6
Tax Adjustments	€74.5	€55.7	€87.9	€77.1	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Financing Results (Losses)	-€151.6	-€109.1	-€174.2	-€136.7	-€254.4	-€250.9	-€311.1	-€325.9	-€370.1	-€514.1	-€505.8	-€579.4	-€645.3	-€745.7
Income for tax equity														
Income from institutional partnerships in U.S	€225.6	€185.2	€181.6	€201.8	€195.6	€196.2	€196.8	€197.1	€197.3	€197.4	€197.5	€197.5	€197.5	€197.5
Income for tax equity before taxes	€225.6	€185.2	€181.6	€201.8	€195.6	€196.2	€196.8	€197.1	€197.3	€197.4	€197.5	€197.5	€197.5	€197.5
Statutory tax	-€56.4	-€46.3	-€45.4	-€50.4	-€48.9	-€49.1	-€49.2	-€49.3	-€49.3	-€49.4	-€49.4	-€49.4	-€49.4	-€49.4
Tax Adjustments	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Income from tax equity Results (Losses)	€169.2	€138.9	€136.2	€151.3	€146.7	€147.2	€147.6	€147.8	€148.0	€148.1	€148.2	€148.1	€148.1	€148.1
Total Comprehensive Income	€225.9	€451.0	€687.6	€463.0	€431.8	€617.3	€580.7	€625.3	€660.5	€734.1	€868.0	€913.2	€1,016.1	€1,079.6
Non-controlling interests														
Total Comprehensive Income attributable to minority interests	-€180.3	-€158.8	-€147.5	-€127.2	-€121.4	-€115.2	-€113.2	-€107.7	-€103.5	-€106.4	-€105.4	-€104.5	-€103.7	-€102.9
Total Comprehensive Income to EDPR equity holders (including Tax Equity)	€45.6	€292.2	€540.1	€335.9	€310.4	€502.2	€467.5	€517.6	€556.9	€627.7	€762.6	€808.7	€912.5	€976.7
Total Comprehensive Income to EDPR equity holders (excluding Tax Equity)	-€123.6	€153.4	€403.9	€184.5	€163.7	€355.0	€319.9	€369.8	€409.0	€479.6	€614.4	€660.6	€764.3	€828.6

Appendix

4. EDPR's INCOME STATEMENT PER REGION, 2016 – 2030E (€m)

Europe	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Revenues	€913.0	€943.2	€890.8	€924.8	€824.2	€876.1	€949.2	€989.0	€1,064.2	€1,151.4	€1,253.8	€1,381.8	€1,510.2	€1,667.1	€1,862.1
Core OPEX	-€192.3	-€196.3	-€202.7	-€186.8	-€190.3	-€189.3	-€203.0	-€225.8	-€255.7	-€286.0	-€320.3	-€355.1	-€390.3	-€442.5	-€495.4
S&S Costs	-€162.0	-€166.5	-€174.1	-€157.8	-€158.1	-€153.9	-€165.4	-€184.3	-€209.1	-€234.4	-€263.5	-€293.1	-€323.4	-€367.9	-€413.3
Personnel costs	-€30.3	-€29.8	-€28.6	-€29.0	-€32.2	-€35.4	-€37.6	-€41.5	-€46.6	-€51.6	-€56.9	-€62.0	-€66.9	-€74.6	-€82.1
Other operating income	€34.6	€65.9	€29.6	€246.4	€286.8	€25.5	€337.2	€110.3	€118.2	€118.2	€169.7	€169.7	€169.7	€181.8	€181.8
Other operating costs	-€88.8	-€84.2	-€64.9	-€70.9	-€68.4	-€72.2	-€78.2	-€81.5	-€87.7	-€94.9	-€103.3	-€113.9	-€124.5	-€137.4	-€153.5
Share of profit from associates	€1.7	€3.0	€4.5	€3.7	€3.9	€7.1	€17.4	€26.0	€25.1	€45.1	€59.9	€68.1	€76.5	€82.4	€85.0
EBITDA	€668.2	€731.6	€657.3	€917.2	€856.2	€647.2	€1,022.6	€817.9	€864.1	€933.7	€1,059.6	€1,150.6	€1,241.6	€1,351.4	€1,480.0
Provisions	-€4.8	-€0.2	-€0.6	-€1.2	-€0.7	-€0.7	-€0.7	-€0.8	-€0.8	-€0.9	-€1.0	-€1.1	-€1.1	€0.6	€0.7
Total depreciation and amortisation	-€301.9	-€291.4	-€252.8	-€254.2	-€222.3	-€250.0	-€270.8	-€261.8	-€275.7	-€293.7	-€312.1	-€332.3	-€352.3	-€373.3	-€411.6
EBIT	€361.5	€440.0	€403.9	€661.8	€633.3	€396.6	€751.1	€555.4	€587.6	€639.1	€746.6	€817.2	€888.1	€978.7	€1,069.1

North America	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Revenues	€507.6	€598.2	€577.8	€650.8	€669.4	€745.7	€783.1	€806.0	€865.8	€970.4	€1,088.9	€1,220.8	€1,335.8	€1,478.6	€1,654.4
Core OPEX	-€183.4	-€206.0	-€218.6	-€211.5	-€239.4	-€256.2	-€279.7	-€296.7	-€343.9	-€389.6	-€439.0	-€476.1	-€511.2	-€567.0	-€620.4
S&S Costs	-€139.5	-€155.9	-€160.4	-€148.3	-€163.3	-€181.5	-€197.7	-€209.2	-€241.8	-€273.2	-€307.9	-€333.9	-€358.6	-€397.8	-€435.3
Personnel costs	-€43.9	-€50.1	-€58.2	-€63.3	-€76.1	-€74.6	-€82.0	-€87.5	-€102.1	-€116.4	-€131.1	-€142.2	-€152.6	-€169.3	-€185.2
Other operating income	€23.2	€22.1	€148.4	€50.4	€195.1	€226.5	€50.0	€157.9	€169.2	€169.2	€242.8	€242.8	€242.8	€260.2	€260.2
Other operating costs	-€43.5	-€41.3	-€58.4	-€56.7	-€50.1	-€62.3	-€65.4	-€67.3	-€72.3	-€81.1	-€91.0	-€102.0	-€111.6	-€123.6	-€138.2
Share of profit from associates	€0.5	€1.9	-€1.9	-€0.3	-€0.2	€9.3	€11.0	€12.6	€13.9	€15.2	€27.4	€35.9	€38.2	€40.4	€42.7
EBITDA	€304.5	€374.9	€447.4	€432.7	€574.8	€663.1	€498.9	€612.4	€632.5	€684.1	€829.1	€921.4	€994.0	€1,088.6	€1,198.6
Provisions	€0.1	€0.4	€0.3	€0.0	€0.0	-€0.2	-€0.2	-€0.2	-€0.2	-€0.2	-€0.3	-€0.3	-€0.3	-€0.4	-€0.4
Total depreciation and amortisation	-€289.1	-€258.9	-€273.3	-€316.9	-€359.0	-€330.0	-€334.7	-€337.0	-€346.2	-€386.9	-€426.5	-€469.0	-€499.3	-€530.8	-€588.1
EBIT	€15.5	€116.4	€174.4	€115.8	€215.8	€332.9	€164.1	€275.1	€286.1	€296.9	€402.4	€452.1	€494.4	€557.4	€610.1

South America	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Revenues	€34.4	€62.8	€50.0	€74.2	€36.5	€73.0	€142.9	€204.4	€239.1	€310.8	€376.8	€427.2	€475.7	€534.7	€606.6
Core OPEX	-€9.4	-€11.3	-€14.7	-€18.0	-€10.6	-€15.8	-€36.6	-€37.1	-€46.9	-€61.7	-€69.0	-€75.7	-€81.9	-€91.8	-€100.9
S&S Costs	-€7.3	-€9.2	-€12.9	-€15.3	-€9.1	-€14.0	-€32.5	-€33.2	-€42.1	-€55.7	-€62.5	-€68.9	-€74.8	-€84.1	-€92.8
Personnel costs	-€2.1	-€2.1	-€1.7	-€2.7	-€1.5	-€1.8	-€4.1	-€3.9	-€4.8	-€6.0	-€6.5	-€6.8	-€7.1	-€7.7	-€8.1
Other operating income	€1.5	€6.5	€1.8	€88.3	€3.3	€0.5	€0.0	€55.2	€59.1	€59.1	€84.8	€84.8	€84.8	€90.9	€90.9
Other operating costs	-€1.4	-€1.7	-€4.6	-€5.5	-€3.3	-€4.7	-€9.3	-€13.2	-€15.5	-€20.1	-€24.4	-€27.7	-€30.8	-€34.6	-€39.3
Share of profit from associates	€0.0	€0.0	€0.0	€0.0	€0.0	€1.9	€2.2	€2.5	€2.8	€3.0	€5.5	€7.2	€7.6	€8.1	€8.5
EBITDA	€25.1	€56.3	€32.5	€138.9	€26.0	€54.9	€99.3	€211.8	€238.6	€291.1	€373.8	€415.9	€455.5	€507.3	€565.8
Provisions	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0	€0.0
Total depreciation and amortisation	-€8.0	-€10.2	-€13.5	-€15.7	-€8.8	-€22.8	-€32.1	-€69.4	-€69.5	-€86.3	-€112.6	-€124.6	-€136.2	-€147.8	-€167.8
EBIT	€17.1	€46.0	€19.1	€123.2	€17.2	€32.0	€67.2	€142.3	€169.0	€204.7	€261.2	€291.3	€319.3	€359.5	€398.0

APAC / ROW	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Revenues						€1.7	€85.4	€133.9	€162.8	€190.3	€236.1	€296.8	€357.1	€427.0	€505.8
Core OPEX						-€12.6	-€25.9	-€26.2	-€23.6	-€23.5	-€26.8	-€30.0	-€32.9	-€37.8	-€42.3
S&S Costs						-€10.9	-€16.5	-€18.4	-€17.9	-€18.8	-€22.3	-€25.6	-€28.7	-€33.4	-€37.8
Personnel costs						-€1.7	-€9.4	-€7.8	-€5.7	-€4.8	-€4.6	-€4.4	-€4.2	-€4.4	-€4.5
Other operating income						€0.0	€0.0	€26.6	€28.5	€28.5	€41.0	€41.0	€41.0	€43.9	€43.9
Other operating costs						-€0.1	-€5.5	-€8.7	-€10.5	-€12.3	-€15.3	-€19.2	-€23.1	-€27.7	-€32.8
Share of profit from associates						€0.0	€0.0	€0.0	€0.0	€0.0	€0.5	€1.4	€2.3	€8.2	€18.9
EBITDA						-€10.9	€54.0	€125.6	€157.2	€183.0	€235.4	€289.9	€344.3	€413.5	€493.5
Provisions						-€0.2	-€9.4	-€14.7	-€17.9	-€20.9	-€26.0	-€32.6	-€39.3	-€47.0	-€55.6
Total depreciation and amortisation						€0.0	-€25.1	-€35.2	-€38.5	-€36.6	-€37.9	-€44.4	-€50.6	-€56.7	-€66.6
EBIT						-€11.1	€19.6	€75.7	€100.8	€125.5	€171.5	€212.8	€254.5	€309.9	€371.3

5. INTEREST RATE PARITY, 2021 - 2030

Current Exchange Rate	
€/US$	1.16
€/R$	6.34

Spot-Rates on Zero Coupon Bonds	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Euro (Germany Government Bonds)	-0.7%	-0.7%	-0.7%	-0.6%	-0.5%	-0.4%	-0.4%	-0.3%	-0.2%	-0.2%
US Dollar	0.1%	0.4%	0.7%	0.9%	1.1%	1.3%	1.4%	1.5%	1.5%	1.6%
Brazilian Real	9.1%	10.1%	10.2%	10.4%	10.6%	10.7%	10.9%	10.9%	11.0%	11.0%

Forward Rates	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
€/US$	1.15	1.15	1.14	1.14	1.14	1.14	1.14	1.14	1.14	1.14
€/R$	5.77	5.72	5.71	5.70	5.70	5.70	5.69	5.69	5.69	5.70

Source: EDPR, Bloomberg, WorldGovernmentBonds, MacroTrends, ExchangeRates.Org

Appendix

6. BALANCE SHEET ASSUMPTIONS 2017 – 2030E

	Assumptions
Core Business	
Operating Cash	Operating cash was, by definition, established in percentage of revenues. Operating Cash / Revenues ratio is kept constant at a 5% ratio
Inventories	% of Revenues
Accounts receivable - trade, net, current	Average collection period – this has been positively decreasing in the last 3 years, thus we will assume the last value for predictions effect of Accounts Receivables
Net assets, liabilities held for sale	Assumed to be constant
Net current taxes (core)	Net current tax assets mostly refer to VAT taxes, so should depend on the sales and costs of the company, thus predicted with the Core Income before Taxes. These assets increased considerably in 2020. To smooth this outlier, an average of the % of Core Income before Taxes in the last 5 years was assumed.
Operating Current Assets	Assumed to be the sum of the previous 5 categories
Accounts payable - trade, net, current	Average payable period - ass the company has negligible raw materials was considered in relation to Supplies and Services. This value has not presented a trend in the latest years, having, nonetheless, positively increased a lot in the last year. As such an average for the last 2 years was assumed
Provisions - current	Mostly dismantling and decommissioning provisions. This depends on a ratio of expected future dismantling which is unknown and, as such, this was predicted in function of the Revenues, a ratio which has been fairly constant ~-0.3%
Operating Current Liabilities	Assumed to be the sum of the previous 2 categories
Net Working Capital Requirements	= Operating Current Assets – Operating Current Liabilities
PP&E	Estimated via the Team's Capex and Capacity expansions forecasts
Right-of-use assets	Right-of-use assets is a new financial account since 2019 for assets under leases. This have a similar purpose to PP&E, as such, will be predicted by value of assets (in k€) to installed capacity (in MW). The value of assets per MW has been almost constant in the last 2 years, and so an average of both values will be used for prediction purposes.
Intangible assets	Computed on a per MW basis, under the assumption that the ratio is equal to that of 2020
Investments in joint ventures and associates	Estimated via the Team's Capex and Capacity expansions of Ocean Winds forecasts
Accounts receivable - trade, net, non-current	In the last 3 years, EDPR has had an Average Collection Period of non-current receivables fairly constant. As such, an average of these years is assumed
Accounts payable - trade, net, non-current & PP&E	Accounts payable - trade, net, non-current & PP&E include a big portion of payables to suppliers of PP&E. As such, it should develop with this variable. In the last two years the ratio of Receivables to PP&E was constant, and so we will assume this will continue constant
Provisions - non-current	Similarly to current provisions, non-current provisions should be estimated with the evolution of Revenues - these provisions have been between 16 and 20% of Revenues. To adopt a more conservative approach, 20% of revenues will be assumed as future non-current provisions / year
Net deferred taxes (core)	Net deferred taxes, are mostly tax assets and liabilities referring to PP&E (and a smaller portion to Provisions). As such, will be predicted in function of PP&E. Such ratio has been fairly constant in the last 4 years, so an average ratio of those years will be assumed.
Core Invested Capital (excluding Goodwill)	Assumed to be the sum of the previous 9 categories
Goodwill	Goodwill is, by best practices, predicted to stay constant, to prevent accounting variations that can inflate the valuation.
Core Invested Capital (including Goodwill)	Assumed to be the same of the previous two categories
Non Core Business	
Other debtors and other assets	Non-operational account - estimation is unrealistic if secured by other caption. Value has been presenting an increasing tendency, so the last value will be assumed closer to future account values
Other liabilities and other payables	Non-operational account - estimation is unrealistic if secured by other caption. Value has been presenting a decreasing tendency, so the last value will be assumed closer to future account values
Equity instruments at fair value	Non-operational account - estimation is unrealistic if secured by other caption. Value has been presenting an increasing tendency until 2019, so an average of the two last years will be assumed
Net current taxes (non core)	Net current taxes (non-core) are Income and Withholding Tax. As such, they should be applied to the Core and Non-Core Income of the company. Such ratios have been varying between 3% and 6% approximately so an average of the last 5 years was assumed to calculate the ratio
Net deferred taxes (non core)	Non-operational account - estimation is unrealistic if secured by other caption. Value has been presenting very positive and very negative values - will be assumed 0€ to avoid contamination
Non Core Invested Capital	Assumed to be the sum of the previous 5 categories
Total Uses of Funds: Invested Capital	Assumed to be the sum of Non Core Invested Capital and Core Invested Capital (Including Goodwill)
Net Financial Assets	
Net Debt	Change in Net Debt comes from Cash-Flow Map. Company says it wants to keep leverage ratios constant, which more or less holds
Non-controlling interests	Estimated via the team's revenues forecast
Net Financial Assets	Assumed to be the sum of the previous two categories
Tax Equity	
Institutional partnerships in U.S. wind farms - restricted cash	Cash restricted in relation to institutional partnerships have been decreasing in relation to the corresponding liabilities. This is because these are finite funds that were required to be held to pay remaining construction related costs in institutional equity partnerships and so will eventually stop being required. As such we will assume them to be 0, as the remaining value should be negligible
Institutional partnerships in U.S. wind farms - liabilities	Assumed to be the sum of the following two categories
Deferred income related to benefits provided	Cash restricted in relation to institutional partnerships have been decreasing in relation to the corresponding liabilities. This is because these are finite funds that were required to be held to pay remaining construction related costs in institutional equity partnerships and so will eventually stop being required. As such we will assume them to be 0, as the remaining value should be negligible
Liabilities arising from institutional partnerships in U.S. wind farms	Estimated via the team's Income from Tax Equity Forecast
Tax Equity	Assumed to be the sum of Institutional partnerships in U.S. wind farms - restricted cash and Institutional partnerships in U.S. wind farms - liabilities
Equity	
Dividends paid	Dividends were assumed to grow at a 1c per year from 2020 onwards
Capital raise	We believe EDPR will need to place a similar capital increase to proceed with the growth plan in 2025-2030, with a proportional scale to the one made in 2021
Total Sources of Funds	Assumed to be the sum of Net Financial Assets, Tax Equity and Equity

Appendix

7. INCOME STATEMENT ASSUMPTIONS 2017 – 2030E

	Assumptions
Core Business	
Total Revenues	Estimated via the Team's price and energy generated forecasts
Other Operating Income	This is mostly dependent on capital gains. After 2030 we assume no further sell-downs, thus no more capital gains.
Core Opex	Assumed to be the sum of the following 2 categories
Supplies and services	Forecasted by the Team. After 2030: Depends of installed capacity
Personnel costs	Forecasted by the Team. After 2030: constant number of employees and costs per employee growing at inflation
Other Operating Costs	Assumed as a percentage of revenue depending on historic ratios on a per region basis. Includes Impairment losses on trade receivables and debtors. After 2030: depends on revenues
Share of net profit in joint ventures and associates	Forecasted by the team
Operating Result / EBITDA	Assumed to be the sum of Total Revenues, Other Operating Income, Core Opex, Other Operating Costs and Share of Net Profit in Joint Ventures and associates
Provisions	Assumed to be a share of revenue, forecasted on a per region basis
Total Depreciation and Amortisation	Estimated via the Team's Capex and Capacity expansions forecasts
Core Results before taxes / EBIT	Assumed to be the sum of the previous 3 categories
Statutory Taxes	Statutory Tax rate expected to remain constant at 25%
Tax Adjustments	Considered unpredictable and therefore assumed to be negligeble
Extraordinary contribution to the energy sector (CESE)	CESE is calculated based on the company's net assets, namely, PP&E, intangible assets (except industral property elements) and financial assets assigned to concessions or licensed activities. The ratio to those variables should stay constant. After 2030: depends on PP&E and Intangibles which should stay constant
Core Results (Losses) / NOPLAT	Assumed to be the sum of the previous 4 categories
Non-Core Business	OCI is, by nature, non-predictable. As such, its captions will be predicted 0 with the risk of contaminating the forecast if done otherwise (as all variables are extremely volatile).
Financing	
Net Financial Expenses	Net Cost of Debt assumed to continue constant at 2020 levels of 8% of previous year's Net Debt
Financing Results before taxes	Assumed to be the sum of the previous category
Statutory tax	Statutory Tax rate expected to remain constant at 25%
Tax Adjustments	Considered unpredictable and therefore assumed to be negligeble
Financing Results (Losses)	Assumed to be the sum of the previous 3 categories
Income for tax equity	
Income from institutional partnerships in U.S	Assumed to be constant at the average of 2017-2020
Income for tax equity before taxes	Assumed to be the sum of the previous category
Statutory tax	Stuatory Tax rate expected to remain constant at 25%
Tax Adjustments	Considered unpredictable and therefore assumed to be negligeble
Income from tax equity Results (Losses)	Assumed to be the sum of the previous 3 categories
Total Comprehensive Income	Assumed to be the sum of Income from Tax Equity Results (loses), Financing Results (loses), Non-core Results (loses) and Core Results (loses)/NOPLAR
Non-controlling interests	
Total Comprehensive Income attributable to minority interests	Forecasted by the team
Total Comprehensive Income to EDPR equity holders (including Tax Equity)	Sum of the previous 2 categories
Total Comprehensive Income to EDPR equity holders (excluding Tax Equity)	Assumed to be the previous category minus Income from Tax Equity Results (loses)

Appendix

8. REVENUE DRIVERS BY REGION 2016 – 2030E

8.1 Net Installed Capacity

	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
EBITDA MW															
Europe	4 986	5 061	5 272	4 401	4 769	5 395	5 739	6 333	7 114	7 895	8 786	9 678	10 570	11 907	13 244
North America	4 861	5 284	5 562	5 944	6 296	6 669	7 389	7 954	9 371	10 788	12 400	13 715	15 029	17 015	19 000
Latin America	204	331	467	467	436	639	1 522	1 598	2 091	2 848	3 294	3 740	4 186	4 854	5 523
ROW	-	-	-	-	-	500	772	884	886	959	1 174	1 389	1 604	1 927	2 250
Total Installed Capacity (EBITDA MW)	10 052	10 676	11 301	10 812	11 500	13 203	15 422	16 770	19 462	22 489	25 655	28 522	31 389	35 703	40 016
Equity Consolidated															
Europe	177	152	152	152	198	229	498	510	510	1 232	1 330	1 477	1 600	1 673	1 695
North America	179	179	219	398	471	552	622	692	762	832	1 425	1 517	1 610	1 702	1 795
ROW	-	-	-	-	-	-	-	-	-	-	23	45	68	319	571
Total Load Factor (Equity Consolidated)	356	331	371	550	669	781	1 120	1 202	1 272	2 064	2 777	3 040	3 278	3 694	4 061
Total net installed capacity	10 408	11 007	11 672	11 362	12 168	13 984	16 541	17 971	20 733	24 553	28 431	31 562	34 667	39 397	44 077

8.2 Load Factor

	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
EBITDA MW															
Europe	26%	27%	26%	28%	26%	26%	25%	25%	24%	24%	24%	24%	24%	24%	23%
North America	33%	35%	34%	34%	33%	32%	31%	31%	29%	28%	28%	28%	28%	28%	28%
Latin America	35%	43%	40%	43%	38%	38%	38%	41%	42%	42%	42%	42%	42%	42%	42%
ROW						1%	21%	24%	25%	27%	27%	27%	27%	28%	28%
Total Load Factor (EBITDA MW)	30%	31%	30%	32%	30%	29%	29%	29%	29%	29%	29%	29%	29%	29%	29%
Equity Consolidated															
Europe	27%	27%	27%	27%	27%	28%	33%	34%	34%	37%	38%	39%	40%	41%	41%
North America	29%	29%	29%	25%	27%	28%	29%	30%	30%	31%	36%	36%	37%	37%	38%
ROW											36%	37%	37%	38%	38%
Total Load Factor (Equity Consolidated)	28%	28%	28%	26%	27%	28%	30%	32%	32%	34%	37%	38%	39%	39%	39%

8.3 Selling Price per MW

	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E
Europe	€81.47	€81.02	€77.39	€77.29	€80.59	€73.80	€75.55	€76.24	€74.89	€73.27	€73.10	€72.93	€72.77	€72.60	€72.44
North America	$46.4	$46.4	$45.3	$45.3	$44.0	$46.5	$46.6	$46.6	$46.3	$45.8	$45.3	$44.9	$44.5	$44.1	$43.8
Latin America	R$ 216.1	R$ 288.8	R$ 195.4	R$ 205.3	R$ 217.6	R$ 238.5	R$ 229.9	R$ 226.0	R$ 214.5	R$ 204.2	R$ 200.5	R$ 196.8	R$ 193.2	R$ 189.7	R$ 186.3
ROW	€0.00	€0.00	€0.00	€0.00	€0.00	€61.40	€72.67	€71.18	€69.84	€67.38	€67.01	€66.63	€66.26	€65.89	€65.52
Total	€60.51	€59.17	€53.74	€54.66	€53.22	€52.86	€53.45	€53.18	€52.09	€50.44	€49.69	€49.21	€48.78	€48.36	€47.94

Appendix

9. INSTALLED CAPACITY BY COUNTRY, 2016 - 2025E

Net Capacity until 2022E, Gross Capacity 2023E – 2025E

	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E
EBITDA MW										
Europe										
Spain	2 194	2 244	2 312	1 974	2 137	2 208	2 190	2 510	2 860	3 210
Portugal	1 251	1 253	1 309	1 164	1 228	1 363	1 284	1 484	1 684	1 884
France	388	410	421	53	126	166	236	306	376	446
Belgium	71	71	71	-	10	10	10	10	10	10
Italy	144	144	221	271	271	434	478	528	578	628
Poland	418	418	418	418	476	629	744	884	1 034	1 184
Romania	521	521	521	521	521	521	521	521	521	521
Greece	-	-	-	-	-	60	126	186	246	306
Hungary	-	-	-	-	-	-	50	100	150	200
UK	-	-	-	-	-	5	101	197	370	544
Others	-	-	-	-	-	-	-	50	200	350
North America										
US	4 631	5 055	5 332	5 714	5 828	6 043	6 759	7 510	9 103	10 696
Canada	30	30	30	30	68	130	130	427	627	827
Mexico	200	200	200	200	400	496	500	650	950	1 250
Latin America										
Brazil	204	331	467	467	436	639	1 030	1 249	1 879	2 179
Colombia	-	-	-	-	-	-	492	492	592	692
Chile	-	-	-	-	-	-	-	77	77	671
ROW										
Vietnam	-	-	-	-	-	28	28	28	28	28
Others	-	-	-	-	-	472	744	963	1 079	1 265
Equity Consolidated	10 052	10 676	11 301	10 812	11 500	13 203	15 422	18 170	22 362	26 889
Europe										
Spain	177	152	152	152	167	156	156	156	156	156
Portugal	-	-	-	-	31	31	31	31	31	31
France	-	-	-	-	-	-	-	12	12	162
Belgium	-	-	-	-	-	43	43	43	43	43
UK	-	-	-	-	-	-	269	269	269	841
North America										
US	179	179	219	398	471	552	622	692	762	832

10. OCEAN WINDS ANNOUNCED PROJECTS

Name of Project	Stage	Country	Capacity Added (MW gross)	% Owned by Ocean Winds	COD	PPA/Tarfiff secured	Net Capacity for EDPR (MW)	Assumptions
Windplus	Installed	Portugal	25	85.0%	2020	Yes	11	
SeaMade	Installed	Belgium	487	17.5%	2021	Yes	43	
Moray East	Under construction	UK	950	56.6%	2022	Yes	269	
Moray West	Under development	UK	897	61.6%	2025	0	572	
ScotWind	Under development	UK	No information	No information	0	0	0	No visibility - not considered
EFGL	Under development	France	30	80.0%	2023	Yes	12	
Noirmoutier	Under development	France	496	60.5%	2025	Yes	150	
Le Tréport	Under development	UK	496	60.5%	2025	Yes	150	
Mayflower	Under development	US	2000	50.0%	>2025	Yes	500	2GW expected to be added. CoD: 2026, according to early-stage information
B-Wind	Under development	Poland	200	100.0%	>2025	Yes	100	CoD: 2027 and 2028, according to early-stage information
C-Wind	Under development	Poland	200	100.0%	>2025	Yes	100	CoD: 2028 and 2029, according to early-stage information
KF Wind	Under development	South Korea	1500	61.0%	>2025	0	458	CoD: 2029 and 2030, according to early-stage information

Appendix

11. LOAD FACTOR BY COUNTRY, 2016 – 2025E

	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E
EBITDA MW										
Europe										
Spain	26%	27%	26%	28%	25%	27%	26%	26%	25%	25%
Portugal	28%	27%	27%	29%	26%	27%	23%	23%	22%	22%
France	23%	23%	23%	22%	31%	25%	27%	28%	29%	29%
Belgium	21%	21%	21%	22%	0%	28%	0%	0%	0%	0%
Italy	28%	27%	27%	27%	25%	27%	27%	28%	28%	29%
Poland	25%	30%	25%	30%	29%	25%	24%	21%	19%	18%
Romania	25%	28%	23%	25%	26%	25%	26%	26%	26%	26%
Greece	-	-	-	-	-	-	32%	32%	32%	32%
Hungary	-	-	-	-	-	-	13%	13%	13%	13%
UK	-	-	-	-	-	14%	36%	36%	33%	32%
Others	-	-	-	-	-	-	-	13%	17%	18%
North America										
US	33%	35%	34%	34%	33%	32%	30%	30%	28%	27%
Canada	28%	28%	27%	27%	30%	29%	29%	35%	36%	37%
Mexico		39%	40%	42%	41%	46%	45%	41%	35%	33%
Latin America										
Brazil	35%	43%	40%	43%	38%	38%	34%	37%	39%	41%
Colombia	-	-	-	-	-	-	49%	49%	49%	49%
Chile	-	-	-	-	-	-	-	49%	49%	38%
ROW										
Vietnam	-	-	-	-	-	23%	23%	23%	23%	23%
Others	-	-	-	-	-	0%	21%	24%	25%	27%
Equity Consolidated										
Europe										
Spain	27%	27%	27%	27%	27%	27%	27%	27%	27%	27%
Portugal	-	-	-	-	28%	28%	28%	28%	28%	28%
France	-	-	-	-	-			41%	41%	42%
Belgium	-	-	-	-	-	41%	41%	41%	41%	41%
UK	-	-	-	-	-	38%	38%	38%	38%	39%
North America										
US	29%	29%	29%	25%	27%	28%	29%	30%	30%	31%

12. QUALITY OF WIND, BY COUNTRY (Power per sq. meter and Speed, m/s)

	100m		150m		200m		Stdev	
	Power per sq. meter	Speed (m/s)	Power per sq. meter	Speed (m/s)	Power per sq. meter	Speed (m/s)	Power per sq. meter	Speed (m/s)
Europe								
Spain	717	7.73	855	8.53	986	9.13	134.52	0.70
Portugal	552	7.62	680	8.37	804	8.9	126.01	0.64
France	728	8.22	925	9.24	1129	9.95	200.51	0.87
Belgium	552	7.99	773	9.05	992	9.73	220.00	0.88
Italy	691	7.14	784	7.81	885	8.32	97.03	0.59
Poland	478	7.76	688	8.88	896	9.57	209.00	0.91
Romania	411	6.82	542	7.74	679	8.37	134.01	0.78
Greece	797	8.47	915	9.09	1028	9.55	115.51	0.54
Hungary	375	6.73	542	7.76	724	8.47	174.55	0.87
UK	1254	10.18	1555	11.22	1853	12.02	299.50	0.92
North America								
US	991	8.97	1208	10.03	1428	10.78	218.50	0.91
Canada	831	8.72	1066	9.76	1314	10.52	241.53	0.90
Mexico	432	7.1	548	7.92	667	8.55	117.50	0.73
Latin America								
Brazil	326	7.02	474	8.05	632	8.83	153.03	0.91
Colombia	259	5.85	339	6.53	422	7.01	81.50	0.58
Chile	3358	14.12	3695	15.05	4003	15.78	322.61	0.83
APAC								
Vietnam	482	7.21	598	7.98	714	8.57	116.00	0.68

Country-specific assumptions for forecast 2021 - 2025

Spain – Solar load factor used was that of European Union

Portugal – Wind Onshore load factor used for new installed capacity was that of Spain due to similar Wind conditions of the two countries. Solar load factor used was that of European Union for new installed capacity

France – Wind Offshore load factor used for new installed capacity was that of Belgium due to similar Wind conditions offshore between both countries

Poland – Wind Onshore load factor used for new installed capacity was that of Germany due to similar Wind conditions of the two countries. Solar load factor used was that of European Union for new installed capacity

Greece – Wind Onshore load factor used for new installed capacity was that of France due to similar Wind conditions of the two countries

Hungary & UK– Solar load factor used was that of European Union

Mexico, Colombia, Chile & other LatAm countries – Wind Onshore and Solar load factor used for new installed capacity was that of Brazil due to similar renewables quality conditions

Vietnam & other APAC countries - Wind Onshore , Solar and Wind Offshore load factor used for new installed capacity was that of China, due to lack of better data

Appendix

13. EDPR's SELLING PRICE BY COUNTRY, 2016 – 2025E

REGION	2016	2017	2018	2019	2020	2021E	2022E	2023E	2024E	2025E
Europe	€81.47	€81.02	€77.39	€77.29	€80.59	€73.80	€75.55	€76.24	€74.89	€73.27
Spain	€74.10	€74.10	€72.40	€71.10	€78.80	€58.85	€58.67	€60.07	€59.28	€57.94
Portugal	€88.00	€90.00	€90.60	€89.30	€86.30	€86.10	€86.42	€84.16	€80.53	€76.98
France	€90.42	€90.41	€90.32	€90.15	€80.27	€83.90	€85.63	€84.62	€81.50	€78.50
Belgium	€105.83	€105.38	€103.76	€105.59	€111.06	€105.90	€105.90	€105.90	€105.90	€105.90
Italy	€116.69	€120.95	€110.30	€95.34	€90.57	€106.30	€105.31	€103.71	€101.27	€98.75
Poland	€74.54	€62.24	€59.68	€71.81	€77.84	€81.10	€82.61	€84.43	€85.61	€86.15
Romania	€75.73	€73.75	€54.89	€68.13	€70.68	€78.60	€78.60	€78.60	€78.60	€78.60
Greece						€78.60	€72.45	€70.63	€68.04	€65.53
Hungary						€91.82	€89.00	€88.93	€85.02	€81.81
UK						€106.84	€102.87	€98.48	€91.68	€87.75
Others						€87.80	€86.75	€85.95	€83.74	€81.79
North America	$46.4	$46.4	$45.3	$45.3	$44.0	$46.5	$46.6	$46.6	$46.3	$45.8
US	$46.1	$45.5	$44.1	$44.1	$42.7	$44.0	$43.7	$43.4	$42.4	$41.6
Canada	$109.4	$112.1	$112.8	$110.7	$110.3	$82.4	$82.4	$75.2	$72.7	$70.7
Mexico		$59.5	$64.4	$65.4	$66.9	$65.7	$65.7	$63.8	$60.6	$58.3
Latin America	R$ 216.1	R$ 288.8	R$ 195.4	R$ 205.3	R$ 217.6	R$ 238.5	R$ 229.9	R$ 226.0	R$ 214.5	R$ 204.2
Brazil	R$ 216.1	R$ 288.8	R$ 195.4	R$ 205.3	R$ 217.6	R$ 238.5	R$ 232.7	R$ 228.4	R$ 213.9	R$ 207.5
Colombia						R$ 238.5	R$ 223.2	R$ 223.2	R$ 216.8	R$ 209.7
Chile						R$ 238.5	R$ 271.4	R$ 208.2	R$ 208.2	R$ 172.5
ROW						€61.40	€72.67	€71.18	€69.84	€67.38
Vietnam						€61.40	€61.40	€61.40	€61.40	€61.40
Others						€75.00	€73.24	€71.48	€70.05	€67.50
Total	€60.51	€59.17	€53.74	€54.66	€53.22	€52.86	€53.45	€53.18	€52.09	€50.44

Appendix

14. MARKET PRICE BY COUNTRY, 2021E – 2030E

REGION	2021E	2022E	2023E	2024E	2025	2026E	2027E	2028E	2029E	2030E
Europe										
Spain	€101.9	€123.2	€73.4	€56.9	€48.8	€45.8	€43.1	€40.5	€38.1	€35.8
Portugal	€101.9	€123.2	€73.4	€56.9	€48.8	€45.8	€43.1	€40.5	€38.1	€35.8
France	€105.5	€126.3	€83.1	€66.5	€67.2	€63.2	€59.4	€55.8	€52.4	€49.3
Belgium	€93.7	€115.7	€79.8	€68.6	€63.4	€59.6	€56.0	€52.7	€49.5	€46.5
Italy	€105.3	€130.8	€90.7	€76.3	€74.5	€70.0	€65.8	€61.8	€58.1	€54.6
Poland	€75.7	€94.3	€94.0	€92.8	€97.7	€91.8	€86.3	€81.1	€76.2	€71.6
Romania	€56.5	€86.7	€73.2	€58.4	€59.7	€56.1	€52.7	€49.5	€46.6	€43.8
Greece	€56.5	€86.7	€73.2	€58.4	€59.7	€56.1	€52.7	€49.5	€46.6	€43.8
Hungary	€73.8	€127.1	€89.5	€77.0	€77.8	€73.1	€68.7	€64.5	€60.7	€57.0
UK	€124.8	€125.5	€94.6	€82.4	€86.0	€80.9	€76.0	€71.4	€67.1	€63.1
Others	€89.6	€114.0	€82.5	€69.4	€68.3	€64.2	€60.4	€56.7	€53.3	€50.1
North America										
US	€41.1	€49.6	€40.3	€37.8	€37.8	€37.1	€36.3	€35.6	€34.8	€34.1
Canada	€77.0	€84.6	€77.3	€70.6	€64.5	€63.2	€61.9	€60.7	€59.4	€58.2
Mexico	€61.4	€67.4	€61.6	€56.3	€51.4	€50.4	€49.4	€48.4	€47.4	€46.4
Latin America										
Brazil	€238.5	€271.4	€233.3	€200.5	€172.4	€163.6	€155.3	€147.4	€139.8	€132.7
Colombia	€238.5	€271.4	€233.3	€200.5	€172.4	€163.6	€155.3	€147.4	€139.8	€132.7
Chile	€238.5	€271.4	€233.3	€200.5	€172.4	€163.6	€155.3	€147.4	€139.8	€132.7
ROW										
Vietnam	€61.4	€69.9	€60.1	€51.6	€44.4	€42.1	€40.0	€37.9	€36.0	€34.2
Others	€75.0	€85.3	€73.4	€63.1	€54.2	€51.5	€48.8	€46.3	€44.0	€41.7

15. SOURCES FOR MARKET PRICE ESTIMATES, 2021E – 2030E

REGION	SOURCE
Europe	
Spain	Bloomberg - For 2021, 1Y average of contract prices for monthly Jan-22, for the following years, last 3M average annual Jan-[22/23/24/25] future contract prices (retrieved on 1/12/21)
Portugal	Equal to Spain considering the it is a shared market with extremally similar prices (which is to be expected, considering that it is a commodity) - OMIP
France	Bloomberg - For 2021, 1Y average future contract prices of monthly DEC-21, for the following years, 3M average yearly future contract prices (retrieved on 1/12/21)
Belgium	Bloomberg - For 2021, 1Y average of contract prices for monthly Jan-22, for the following 3 years, last 3M average annual Jan-[22/23/24/25] future contract prices, 2025 assumes CAGR 2022-2024 (retrieved on 1/12/21)
Italy	Bloomberg - For 2021, 1Y average future contract prices of monthly DEC-21, for the following years, last 3M average annual Jan-[22/23/24/25] future contract prices (retrieved on 1/12/21)
Poland	Bloomberg - For 2021, 1Y average of contract prices for monthly Jan-22, for the following 3 years, last 3M average annual Jan-[22/23/24/25] future contract prices, 2025 assumes CAGR 2022-2024 (retrieved on 1/12/21)
Romania	OPCOM - Future Contracts negotiated on the 17/11/21 & 25/11/21 & 1/11/21 https://www.opcom.ro/rapoarte/ropexfm.php?lang=ro
Greece	Assumed to be equal to Romania considering geographic proximity
Hungary	Bloomberg - For 2021, 1Y average of contract prices for monthly Jan-22, for the following 3 years, last 3M average annual Jan-[22/23/24/25] future contract prices, 2025 assumes CAGR 2022-2024 (retrieved on 1/12/21)
UK	Bloomberg - For 2021, 1Y average of contract prices for monthly Jan-22, following years last 3M average of yearly Gregorian future contracts (difference in timing, based on the Gregorian calendar, these were more liquid) (retrieved on 1/12/21)
Others	Assumed to be the average price of the region
North America	
US	Bloomberg - For 2021, 1Y average future contract prices of monthly Jan-21, for the following years, 3M average yearly future contract prices -> Values given as the average costs in Texas, California and NY (retrieved on 1/12/21)
Canada	Values assumed to have an equal pattern to the US, both in terms of ratio between the contracted and market price and between the growth rates
Mexico	Values assumed to have an equal pattern to the US, both in terms of ratio between the contracted and market price and between the growth rates
Latin America	
Brazil	Price evolution given as the global average
Colombia	Assumed to be the same price as Brazil, since the company reports the price of South America equal to Brazil
Chile	Assumed to be the same price as Brazil, since the company reports the price of South America equal to Brazil
ROW	
Vietnam	Assumed to be the average price of the region and evolution in line with global evolution
Others	Price per MWh of Sunseap's portfolio, decreasing at global average

Appendix

16. SCENARIOS WORLD ENERGY OUTLOOK

	Net Zero Emissions by 2050 Scenario	Announced Policies Scenario	Stated Policies Scenario	Sustainable Development Scenario
Definitions	A scenario which sets out a narrow but achievable pathway for the global energy sector to achieve net zero CO_2 emissions by 2050. It doesn't rely on emissions reductions from outside the energy sector to achieve its goals.	A scenario which assumes that all climate commitments made by governments around the world, including Nationally Determined Contributions (NDCs) and longer-term net zero targets, will be met in full and on time.	A scenario which reflects current policy settings based on a sector-by-sector assessment of the specific policies that are in place, as well as those that have been announced by governments around the world.	An integrated scenario specifying a pathway aiming at: ensuring universal access to affordable, reliable, sustainable and modern energy services by 2030 (SDG 7); substantially reducing air pollution (SDG 3.9); and taking effective action to combat climate change (SDG 13).
Objectives	To show what is needed across the main sectors by various actors, and by when, for the world to achieve net zero energy related and industrial process CO_2 emissions by 2050 while meeting other energy-related sustainable development goals.	To show how close do current pledges get the world towards the target of limiting global warming to 1.5 °C, it highlights the "ambition gap" that needs to be closed to achieve the goals agreed at Paris in 2015.	To provide a benchmark to assess the potential achievements (and limitations) of recent developments in energy and climate policy.	To demonstrate a plausible path to concurrently achieve universal energy access, set a path towards meeting the objectives of the Paris Agreement on climate change and significantly reduce air pollution.

Source: World Energy Outlook, IEA

17. EDPR's PEERS ANALYSIS FOR UNLEVERED BETA CALCULATION

Company	Market Cap (€m)	Net Debt (€m)	Current EV (€)	Raw Beta (5Y)	Adj. Beta	Weight	D/EV	E/EV	D/E	Unlevered Beta
ENEL SPA	€ 73 363	€ 51 858	€ 139 443	0,91	0,94	31,90%	0,37	0,63	0,59	0,61
ENGIE	€ 30 027	€ 22 452	€ 58 376	0,65	0,77	13,06%	0,38	0,62	0,62	0,49
IBERDROLA SA	€ 63 979	€ 45 178	€ 125 286	0,72	0,81	27,82%	0,36	0,64	0,56	0,54
ACCIONA SA	€ 9 018	€ 4 759	€ 15 193	0,78	0,85	3,92%	0,31	0,69	0,46	0,60
ORSTED A/S	€ 51 478	€ 1 407	€ 55 909	1,00	1,00	22,38%	0,03	0,97	0,03	0,98
VOLTALIA SA- REGR	€ 2 122	€ 613	€ 2 944	0,54	0,69	0,92%	0,21	0,79	0,26	0,56
TOTAL	€ 229 988			0,77	0,84	16,67%	0,28	0,72	0,42	0,66

Source: Bloomberg

Appendix

18. Board Members Overview

Name	Position	Date of First Appointment	Nationality	Education	Work Experience
Antonio Sarmento Gomes Mota	Chairman	12/04/2021	Portuguese	PhD from ISCTE	Dean ISCTE
Miguel Stilwell de Andrade	CEO	19/01/2021	Portuguese	MBA from MIT	CFO EDP Group
Rui Manuel Rodrigues Lopes Teixeira	CFO	29/10/2019	Portuguese	MBA from Nova	CEO EDP Spain
Vera de Morais Pinto Pereira Carneiro	Director	26/02/2019	Portuguese	MBA from INSEAD	Director of MEO
Ana Paula Garrido de Pina Marques	Director	19/01/2021	Portuguese	MBA from INSEAD	VP of NOS
Miguel Nuno Simões Nunes Ferreira Setas	Director	12/04/2021	Portuguese	MBA from Nova	CEO EDP Brazil
Manuel Menéndez Menéndez	Director	06/04/2008	Portuguese	PhD from Uni. Of Oviedo	CEO Liberbank
Acácio Liberado Mota Piloto	Director	26/02/2013	Portuguese	Post Grad Ludwig Maximilian Univ.	Chairman BII International
Allan J. Katz	Director	04/09/2015	American	BSc from UMKC	US Ambassador in Portugal
Joan Avalyn Dempsey	Director	19/01/2021	American	US Navy	White House Advisor
Rosa María García García	Director	12/04/2021	Spanish	BSc from Univ. Autonoma de Madrid	President Siemens Spain
José Manuel Félix Morgado	Director	12/04/2021	Portuguese	Post Grad Univ. de Lisboa	CEO Banco Montepio

Source: EDPR

19. ESG Scores EDPR & Peers

	EDPR	ENEL	ENGIE	IBERDROLA	ACCIONA	ORSTED	Average
ESG Summary							
Grade	B+	A	B+	A	A	B+	A-
Score	73.39	90.75	71.54	83.89	88.72	72.63	80.15
Environment							
Grade	A	A+	B+	A+	A	A-	A
Score	88.14	94.74	69.81	92.62	90.64	80.23	86.03
Social							
Grade	B+	A+	A-	A+	A+	B-	A-
Score	72.26	94.97	77.00	93.12	96.00	57.6	81.83
Governance							
Grade	C+	A-	B+	B-	A	A-	B+
Score	49.79	78.50	66.81	57.04	76.01	79.28	67.91

Note: Voltalia ESG Data not available on Eikon provider
Source: Eikon

Appendix

20. EDPR YoY ESG Changes

Pillar	Category	Grade	FY2020	FY2019	Y/Y Change
Summary	ESG Score	B+	73.39	66.79	+6.61
Environment		A			
	Resource Use		83.42	70.00	+13.42
	Emissions		92.82	84.11	+8.71
	Environmental Innovation		87.57	87.28	+0.29
Social		B+			
	Workforce		85.61	87.25	(1.64)
	Human Rights		72.39	73.65	(1.26)
	Community		59.27	59.75	(0.48)
	Product Responsibility		60.34	15.9	+44.44
Governance		C+			
	Management		48.08	39.38	+8.7
	Shareholders		54.49	56.88	(2.39)
	CSR Strategy		51.32	49.34	+1.97

Source: Eikon

Appendix

21. Regulatory Frameworks

Country	Regulatory Framework
Portugal PT	· WFs awarded after 2006 receive 20-year FiT · PVs awarded through auctions under 15-year FiT
Spain ES	· All capacity allocated through competitive auctions since 2016 · New 2021 scheme auctions awarded 12-year CfDs
Brazil BR	· Feed-in tariffs for pre-2008 installations · 20-year PPAs through competitive auctions since 2008
USA US	· Sales can be made under Hedges, Merchant prices or PPAs (up to 20-year) · Green Certificates dependent of state regulation
Canada CA	· 20-year feed-in tariff (Ontario) · Renewable Energy support agreement (Alberta)
Mexico MX	· Technology-neutral auctions. Global package for 3 products (capacity, generation, GC) · Bilateral Electricity Supply Agreement for 25-year timeframe
Vietnam VN	· 20-year FiT and long term PPAs
Chile CL	· Prior to 2021: 20-year PPAs · Since 2021: 15-year PPAs
Poland PL	· WFs prior to 2018: Green Contract scheme / since 2018: 15-year two side CfD · Electricity contracts can be established through bilateral contracts
UK GB	· FiT 20-year scheme · Generation and Export tariffs regulations
France FR	· Established WFs receive feed-in tariff for 15-year period · Auctions for 20-year CfD
Belgium BE	· Market price + Green Certificate scheme. Min GC price set at €65 · Option to negotiate long term PPAs
Italy IT	· WFs on 2013-2017 allocations: 20-year floor CfD scheme · Since: 20-year two-sided CfD scheme
Hungary HU	· PV assets benefit from a 15-year CfD awarded through auctions
Greece GR	· 20-year non-indexed CfD through tender allocation
Romania RO	· Green Certificates scheme
Colombia CO	· 15-year contracts through pay-as-you-bid auctions
Offshore	· UK: 15-year CPI-indexed CfD allocated through tender · France: 20-year feed-in tariff · Belgium: 17-year CfD

Source: EDPR

Appendix – Is the Wind Offshore opportunity priced in?

SCENARIO ANALYSIS - RESULTS

Overall Scenario	Installed Capacity (2025 - 30)	Installed Capacity (2030 - 50)	Load Factor	Net Profit Margin	Capex/MW	Share Price	Variation (target price)	Variation (current price)
Base Case	Announced Projects	Stated Policies	Stated Policies	2020 Estimate	EDPR Estimate	24.13 €	0.0%	13%
Wind Onshore EDPR	Wind Onshore EDPR	Wind Onshore EDPR	Stated Policies	Wind Onshore EDPR	EDPR Estimate	26.13 €	8.3%	21%
Wind Onshore Market	Wind Onshore Market	Wind Onshore Market	Net Zero Emissions	Wind Onshore EDPR	EDPR Estimate	32.28 €	33.8%	50%
Stated Policies	Stated Policies	Stated Policies	Stated Policies	Geographic focus	Stated Policies	24.66 €	2.2%	14%
Announced Pledges	Announced Pledges	Announced Pledges	Announced Pledges	Geographic focus	Announced Pledges	25.08 €	3.9%	16%
Sustainable Development	Sustainable Development	Sustainable Development	Sustainable Development	Geographic focus	Sustainable Development	25.46 €	5.5%	18%
Net Zero Emissions by 2050	Net Zero Emissions by 2050	Net Zero Emissions by 2050	Net Zero Emissions by 2050	Net Zero Emissions by 2050	Net Zero Emissions by 2050	25.87 €	7.2%	20%
Geographic focus 1	Geographic focus	Stated Policies	Stated Policies	Geographic focus	Stated Policies	24.66 €	2.2%	15%
Geographic focus 2	Geographic focus	Announced Pledges	Announced Pledges	Geographic focus	Announced Pledges	25.12 €	4.1%	17%

Base Case

Wind Onshore Benchmark Scenarios

4 Growth Scenarios by IEA

Geographic Focus Scenarios

SCENARIO ANALYSIS - INPUTS

Wind Offshore Installed Capacity CAGR, 2025 - 2030

	Announced Projects	Wind Onshore EDPR	Wind Onshore Market	Stated Policies	Announced Pledges	Sustainable Development	Net Zero Emissions by 2050	Geographic focus
2026 - 2030	12.3%	15.9%	23%	17.0%	19.3%	20.7%	25.0%	
Europe	7.1%	15.9%	23%	17.0%	19.3%	20.7%	25.0%	18.2%
North America	4.1%	15.9%	23%	17.0%	19.3%	20.7%	25.0%	26.8%
APAC	124.1%	15.9%	23%	17.0%	19.3%	20.7%	25.0%	27.5%

Installed Capacity by Technology CAGR, 2030 - 2050

	Stated Policies	Wind Onshore EDPR	Wind Onshore Market	Announced Pledges	Sustainable Development	Net Zero Emissions by 2050
Wind Offshore						
2030 - 2040	7.6%	5.5%	12.5%	9.8%	9.6%	11.5%
2040 - 2050	4.1%	8.1%	11.0%	4.4%	5.9%	4.0%

	Stated Policies	Announced Pledges	Sustainable Development	Net Zero Emissions by 2050
Wind Onshore				
2030 – 2040	3.4%	5.6%	6.1%	7.2%
2040 - 2050	2.1%	2.5%	2.2%	2.1%

	Stated Policies	Announced Pledges	Sustainable Development	Net Zero Emissions by 2050
Solar PV				
2030 - 2040	5.9%	7.4%	7.6%	8.3%
2040 - 2050	3.2%	3.9%	3.9%	2.8%

Wind Offshore Load Factor CAGR, 2030 - 2050

	Stated Policies	Announced Pledges	Sustainable Development	Net Zero Emissions by 2050
2030 - 2050	0.6%	0.6%	0.6%	0.5%

Net Profit Margin by Region, 2021 - 2030

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Europe										
2020 Estimate	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%
Wind Onshore EDPR	18.35%	9.88%	9.47%	11.75%	14.20%	15.43%	18.19%	12.12%	28.48%	31.24%
Geographic focus	12.55%	12.97%	13.40%	13.85%	14.32%	14.80%	15.30%	15.81%	16.34%	16.89%
Net Zero Emissions by 2050	12.62%	13.13%	13.65%	14.19%	14.76%	15.35%	15.96%	16.60%	17.26%	17.95%
North America										
2020 Estimate	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%
Wind Onshore EDPR	18.35%	9.88%	9.47%	11.75%	14.20%	15.43%	18.19%	12.12%	28.48%	31.24%
Geographic focus	22.11%	22.87%	23.65%	24.46%	25.29%	26.16%	27.06%	27.98%	28.94%	29.93%
Net Zero Emmissions by 2050	22.21%	23.08%	23.98%	24.92%	25.89%	26.90%	27.95%	29.04%	30.18%	31.35%
APAC										
2020 Estimate	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%	19.35%
Wind Onshore EDPR	18.35%	9.88%	9.47%	11.75%	14.20%	15.43%	18.19%	12.12%	28.48%	31.24%
Geographic focus	16.19%	16.81%	17.44%	18.10%	18.79%	19.50%	20.24%	21.01%	21.80%	22.63%
Net Zero Emissions by 2050	17.48%	18.24%	19.03%	19.85%	20.70%	21.60%	22.53%	23.50%	24.52%	25.58%

Capex/MW in €m, 2021 - 2030

	2026	2027	2028	2029	2030
Europe					
EDPR estimate	0.63 €	0.63 €	0.63 €	0.63 €	0.63 €
Stated Policies	0.61 €	0.58 €	0.55 €	0.53 €	0.51 €
Announced Pledges	0.61 €	0.58 €	0.55 €	0.53 €	0.51 €
Sustainable Development	0.60 €	0.56 €	0.53 €	0.50 €	0.47 €
Net Zero Emissions by 2050	0.60 €	0.56 €	0.53 €	0.50 €	0.47 €
North America					
EDPR estimate	0.63 €	0.63 €	0.63 €	0.63 €	0.63 €
Stated Policies	0.61 €	0.58 €	0.55 €	0.53 €	0.50 €
Announced Pledges	0.60 €	0.57 €	0.54 €	0.52 €	0.49 €
Sustainable Development	0.60 €	0.57 €	0.54 €	0.52 €	0.49 €
Net Zero Emissions by 2050	0.59 €	0.55 €	0.52 €	0.49 €	0.45 €
APAC					
EDPR estimate	0.63 €	0.63 €	0.63 €	0.63 €	0.63 €
Stated Policies	0.60 €	0.58 €	0.55 €	0.53 €	0.50 €
Announced Pledges	0.60 €	0.57 €	0.55 €	0.52 €	0.50 €
Sustainable Development	0.60 €	0.57 €	0.54 €	0.51 €	0.49 €
Net Zero Emissions by 2050	0.60 €	0.56 €	0.53 €	0.50 €	0.48 €

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