02

02 STRATEGIC APPROACH

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WATER
ENERGY

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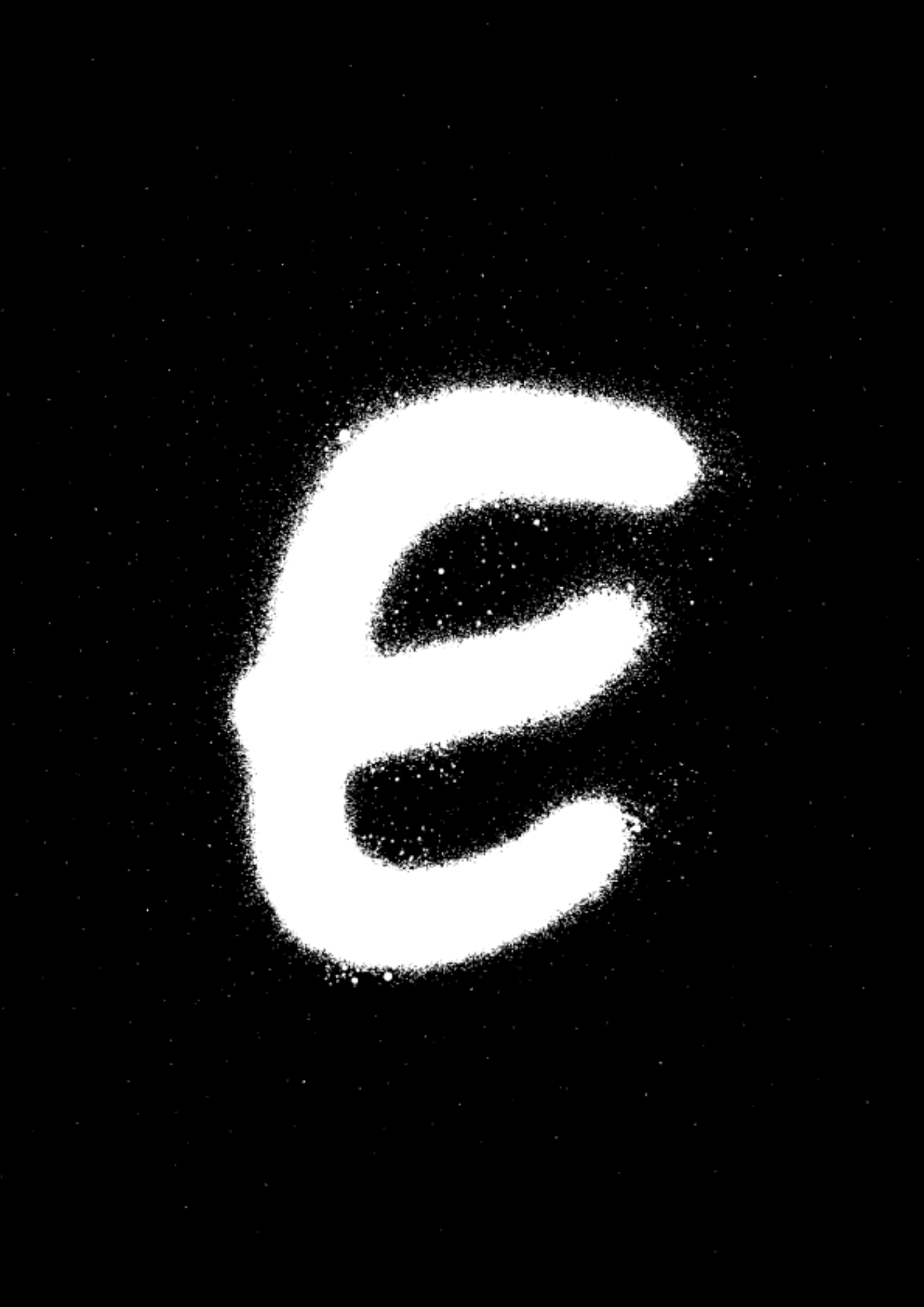


02

STRATEGIC APPROACH

2.1. BUSINESS ENVIRONMENT

2.1.1 RENEWABLE ENERGY IS A COST-EFFECTIVE WAY TO FIGHT CLIMATE CHANGE

2.1.1.1 THE NEED TO STRENGTHENING CLIMATE PLEDGES

According to the World Meteorological Organization (WMO)[1], the year 2019 concludes a decade of exceptional heat, retreating ice, record sea levels and continued ocean acidification, driven by rising greenhouse gases from human activities. Average temperatures during the 2010-2019 period are almost certain to be the highest on record, while 2019 has become the second warmest year since we have data according to the National Oceanic and Atmospheric Administration (NOAA) and NASA. In fact, average temperature in 2019[2] was around 1.1°C above the pre-industrial period.

In December 2015, virtually all Parties to the United Nations Framework Convention on Climate Change (UNFCCC) signed the so-called "Paris Agreement" to limit the rise in average temperature to "well below 2°C" and ideally 1.5°C by the end of the century. However, we are far from achieving the target. In fact, since the Paris Agreement, global carbon emissions have risen 4%[3]. In the absence of strengthen policies, latest projections from the UNEP Emissions Gap report conclude that global warming is expected to reach around 3.2°C at the end of the century, highlighting the substantial gap between the Paris Agreement's target and current pledges from the Governments. According to the

COP 25: key outcomes agreed at the UN climate talks in Madrid

The 2019's United Nations climate talks, known as COP 25, were held in Madrid (although under Chilean presidency) between the 2nd and the 15th of December. Despite the disappointment regarding the contents of the outcome (in particular the postponement of decisions regarding carbon market rules), several announcements made during the two-week conference indicated progress. The European Union, for example, committed to carbon neutrality by 2050, and 73 nations announced that they will submit an enhanced NDC5. Greater ambition for a cleaner economy was also evident at a regional and local level, with 14 regions, 398 cities, 786 businesses and 16 investors committing to achieve net-zero CO_2 emissions by 2050.

[1] PROVISIONAL STATEMENT ON THE STATE OF THE GLOBAL CLIMATE, RELEASED IN DECEMBER 2019
[2] JANUARY TO OCTOBER 2019. SOURCE: WMO
[3] ACCORDING TO THE GLOBAL CARBON PROJECT

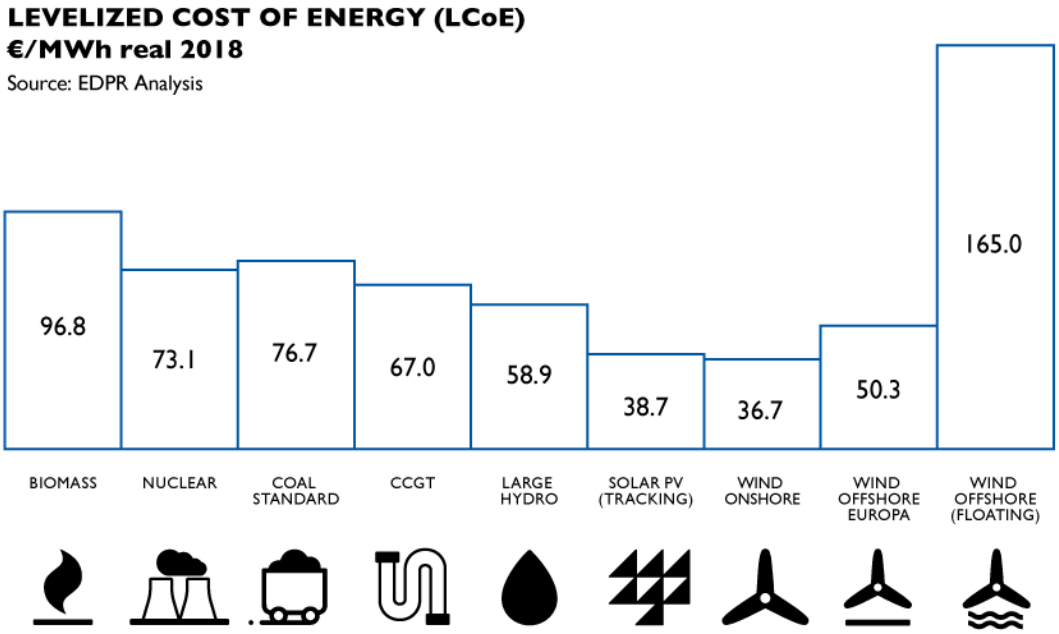
report, we need to reduce emissions by 7.6% every year from 2020 to 2030 if we want to keep global warming below 2°C. The urgency of the challenge was also highlighted by the United Nations' IPCC[1] in a landmark report[2] published in 2018 in which the Panel warned that global warming could exceed the 1.5°C limit as soon as 2030, a threshold expected be catastrophic for people and ecosystems if crossed.

2020 is expected to be a crucial year for climate. Under the Paris Agreement all parties committed to, not only submitting Nationally Determined Contributions[3] (NDCs) for cutting emissions, but also to enhance their pledges every 5-year period (starting in 2020) to reflect progress toward their highest possible ambition. Therefore, since the first round of NDCs pledged under the Paris Agreement proved to be insufficient to meet the targets, the 2020 NDC round will be crucial to address the climate threat, decarbonize our economies and achieve multiple Sustainable Development Goals[4].

2.1.1.2 SCALING WIND AND SOLAR PV: IT'S TIME FOR ACTION

Climate science is consistently warning us that we are running out of time if we want to avoid the worst consequences of global warming. As stated above: unless global greenhouse gas emissions fall by 7.6% each year between 2020 and 2030, the world will miss the opportunity to get on track towards the 1.5°C temperature goal. The Emission Gap Report[5] stresses the important role that energy (mostly electricity) will need to play in the much-needed decarbonization process. Although the report details different pathways to reduce emissions, it highlights an "easy win" decarbonization option that would rely on three pillars: i) a vast expansion of renewable electricity generation, ii) a smarter and much more flexible electricity grid and iii) a huge increase in the products and processes that run on electricity (in buildings, transport and industry).

Wind and Solar PV are expected to be the cornerstone of the energy transition. Not only these technologies are fully mature and affordable, they have also become increasingly competitive as their costs has rapidly declined (and keeps doing so). In most parts of the world, renewables have become the lowest-cost source of new power generation. Indeed, according to Bloomberg New Energy Finance (BNEF), around two-thirds of the world's population now live in countries in which wind or solar PV are the lowest-cost ways of generating power. Therefore, although wind and solar PV are only generating around 8.5% of global electricity, they are expected to reach 48% of total electricity mix by 2050, according to BNEF estimates.



[1] INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, WHICH IS UN'S BODY FOR ASSESSING THE SCIENCE RELATED TO CLIMATE CHANGE
[2] SPECIAL REPORT: GLOBAL WARMING OF 1.5°C, RELEASED IN OCTOBER 2018
[3] NDC ARE PLEDGES MADE BY THE COUNTRIES IN THE PARIS AGREEMENT TO CONTRIBUTE TO THE ACHIEVEMENT OF THE LONG-TERM TEMPERATURE GOAL
[4] AMONG OTHERS: AFFORDABLE AND CLEAN ENERGY, CLIMATE ACTIONS, SUSTAINABLE CITIES AND COMMUNITIES, NO POVERTY AND GOOD HEALTH AND WELL-BEING
[5] RELEASED ON NOVEMBER 26, 2019 BY THE UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)

2.1.2 THE EVOLUTION OF RENEWABLES AROUND THE WORLD IN 2019

European Green Deal: a new opportunity for wind and solar PV

The EU Commission presented on 11 December 2019 its "European Green Deal" which is an ambitious plan to achieve carbon neutrality by 2050 and reduce emissions up to 55% by 2030 (replacing the former 40% objective). These goals will be enshrined in a climate law, planned in March 2020.

The Green Deal in a comprehensive plan that covers different sectors including transport, energy, agriculture, buildings, textiles and construction among others. It also considers a carbon border tax, to be proposed in 2021, aimed at protecting the European industry against unfair competition from other countries that do not respect international climate targets. According to Goldman Sachs, utilities could absorb nearly half of the Green Deal investments, which, in their view, could trigger unprecedent earnings growth and regulatory stability.

Achieving these goals require a more robust renewables' strategy. On this basis, the Plan calls for a power sector largely based on renewable sources. The Plan's targets involve that by 2030, carbon-free power generation could reach 60-65% of the EU mix vs. 35% today.

Wind and Solar PV, which are the most mature and more competitive technologies, appear as the ones with more potential to play a fundamental role, and Goldman Sachs foresees that could represent 29% and 12% of the power generation mix in 2030 (vs. 12% and 4% today respectively). According to Bernstein's estimates, the 50-55% emissions reduction target by 2030 has the potential to increase wind and solar PV capacity by an additional 65-211 GW during the next decade[1].

WIND

Global wind additions are likely to witness considerable growth in 2019[2], with analysts forecasting around 58-71 GW[3] of new capacity, vs 51.3 GW in 2018. These figures, if confirmed, could represent the highest level of wind energy ever commissioned in a single year. This sharp increase is mainly explained by a positive year in China, North America and Europe, and, an outstanding growth in the offshore field.

China remained the undisputed world's wind power leader, adding around 26 GW of wind energy, according to the China Electricity Council, surpassing the 200 GW landmark of total installed capacity.

The US crossed in 2019 the 100 GW milestone, enough to power around 32 million American homes, according to AWEA[4]. Although no final data is available yet[2], 2019 is expected to become the second-best year in history, with around 10 -11 GW of new wind capacity (vs 7.6 GW in 2018).

Europe added 4.9 GW of new wind energy capacity in the first half of 2019, according to figures released by Wind Europe. This data is particularly encouraging considering that wind installations are typically higher in the second half of the year, mainly due to the strongest activity in summer months, suggesting that total 2019 additions could surpass the 10 GW threshold. Although Germany is expected to deliver weak results in the onshore wind field, other markets, including the UK, Spain, Norway and Sweden, are expected to deliver outstanding results. Specifically, in Spain, the latest data[5] of Red Eléctrica reveal that 1,634 MW of onshore wind farms had been connected in the first 11 months of 2019 (vs. only 392 MW in 2018 or 96 MW in 2017).

2019 was also the best year ever for offshore wind, with around 7.7 GW[6] of new installations connected all around the world, surpassing the previous record (4.7 GW) achieved in 2017. However, 2019 growth remained highly concentrated in China (around 2.6 GW), the UK (around 2.3 GW) and Germany (around 1.6 GW).

[1] DEPENDING ON MODELLED EFFICIENCY GAINS AND THE SHARING OF THE BURDEN BY OTHER SECTORS OF THE ECONOMY.
[2] AT THE TIME OF PREPARATION OF THIS REPORT DATA FROM THE GLOBAL WIND ENERGY COUNCIL (GWEC), THE AMERICAN WIND ENERGY ASSOCIATION (AWEA) OR WIND EUROPE, HAVE NOT BEEN RELEASED.
[3] EXPERTS CONSULTED INCLUDE: GWEC, IHS MARKIT, BLOOMBERG NEW ENERGY FINANCE, INTERNATIONAL ENERGY AGENCY AND WOOD MACKENZIE
[4] "US WIND INDUSTRY THIRD QUARTER 2019 MARKET REPORT" PUBLISHED BY THE AMERICAN WIND ENERGY ASSOCIATION (AWEA)
[5] NOVEMBER 2019
[6] ACCORDING TO BLOOMBERG NEW ENERGY FINANCE

SOLAR PV

2019 is expected to become a record year for solar PV, with analysts[1] forecasting between 98 and 124 GW of new facilities connected, compared to the 97 GW installed in 2018[2].

China remains the largest market, despite a sharp slowdown of its yearly installations which are expected to decrease to 20-28 GW in 2019, from 44 GW in 2018. However, other countries in the region are expected to deliver good results, namely in India (around 9-10 GW), Vietnam (around 5 GW) or Australia (around 4-4.5 GW).

The US is expected to witness its best year on record in terms of solar PV additions, with around 13 GW installed in 2019 according to the Solar Energy Industries Association (SEIA). California clearly dominated the US solar market with around 26 GW of solar PV capacity installed, followed by North Carolina (5.6 GW), Arizona (3.9 GW), Texas and Florida (both 3.4 GW) according to latest SEIA's estimates.

In Latin America, Mexico remained the largest market for solar PV, with analysts forecasting between 2.6 and 3.3 GW, followed by Brazil with additions ranging 1.3-2.6 GW.

In Europe, 2019 was also the best year ever for solar PV. According to data provided by Solar Europe, 16.7 GW were connected, a 104% increase over the 8.2 GW installed in 2018. Spain was the most dynamic market with 4.7 GW installed, followed by Germany (4 GW), the Netherlands (2.5 GW), France (1.1 GW) and Poland, which nearly quadrupled its installed capacity reaching 784 MW.

2.1.3 SUPPORTIVE POLICY INSTRUMENTS

A wide range of remuneration schemes has traditionally supported Renewables' projects. However, the most frequent schemes are:

- FEED-IN TARIFF (FIT) SYSTEMS: most popular scheme due to its simplicity and visibility for investors, where generators receive either a fixed payment for each unit of electricity generated regardless of the market price, or a payment on top of the market price ("Feed-in premium" and "Contract-for-difference" schemes).

- QUOTA OBLIGATIONS: on top of the market price, generators receive certificates for their final energy ("Green Certificates" or "GC") which can be sold to the off-takers obliged to fulfill a specific quota (a share of energy that must come from renewable sources), therefore providing additional income to the generators.

- TENDERS AND AUCTIONS: are becoming increasingly popular, they do not represent a support category per se as they are used to allocate financial support to different renewables technologies and to determine the support level of other types of support schemes, such as feed-in systems, in a competitive bidding procedure.

- OTHER: includes investment grants, low interest loans and tax exemptions to support renewables.

[1] EXPERTS CONSULTED INCLUDE: IHS MARKIT, BLOOMBERG NEW ENERGY FINANCE, INTERNATIONAL ENERGY AGENCY AND WOOD MACKENZIE
[2] ACCORDING TO IRENA

The table below describes the overall current regulation in the geographies where EDPR operates.

COUNTRY	SHORT DESCRIPTION

UNITED STATES OF AMERICA	• Sales can be agreed under PPAs (up to 20 years), Hedges or Merchant prices
	• Green Certificates (Renewable Energy Credits, REC) subject to each state regulation
	• Sales can be agreed under PPAs
	• Tax Incentive:
	  • PTC collected for 10-years since COD ($25/MWh in 2019)
	  • Wind farms beginning construction in 2009 and 2010 could opt for 30% cash grant in lieu of PTC

CANADA	• Feed-in Tariff (Ontario). Duration: 20-years • Renewable Energy Support Agreement (Alberta)
MEXICO	• Technological-neutral auctions (opened to all technologies) in which bidders offer a global package price for the 3 different products (capacity, electricity generation and green certificates) • EDPR project: bilateral Electricity Supply Agreement under self-supply regime for a 25-year period
BRAZIL	• Old installed capacity under a feed-in tariff program ("PROINFA") • Since 2008, competitive auctions awarding 20-years PPAs • Sales can be agreed under PPAs
SPAIN	• Wind energy receives pool price and a premium per MW in order to achieve a target return defined by regulation • RDL 17/2019 has set the target return (TRF) @7.398% for WF's prior to 2013 and @7.09% for new installations until 2031 • Premium calculation is based on standard assets (standard load factor, production and costs) • Since 2016, all the new renewable capacity is allocated through competitive auctions
PORTUGAL	• Wind farms commissioned before 2006 are subject to a FIT whose value is correlated with production and indexed with CPI. Initial tenure was the soonest of 15 years (or until 2020) or 33 GWh/MW but in was increased 7 years (tariff extension) with a cap and floor scheme in exchange of annual payments between 2013 and 2020 • Wind farms under the new regime (COD after 2006) are subject to a FIT for the soonest of 20 years from COD of 44 GWh/MW. Tariff value is also indexed wit CPI • Solar PV projects awarded in the latest auction (July 2019) are subject to a flat FIT during 15 years. Projects will bear the cost of imbalances
BELGIUM	• Market price plus green certificate (GC) scheme. The minimum price for GCs is set €65/GC • Option to negotiate long-term PPAs

COUNTRY	SHORT DESCRIPTION
FRANCE	• The majority of existing wind farms receive Feed-in tariff for 15 years: • First 10 years: €82/MWh; Years 11-15: depending on load factor €82/MWh @2,400 hours to €28/MWh @3,600 hours; indexed • Wind farms under the CR 2016 scheme receive 15-yr CfD which strike price value similar to existing FIT fee plus a management premium • Auctions (20-year CfD)
POLAND	• Electricity price can be stablished through bilateral contracts • Wind farms before 2018 are subject to a GC scheme. Wind receive 1 GC/MWh during 15 years that can be traded in the market. Electricity suppliers have a substitution fee for non-compliance with GC obligations • Wind farms awarded in 2018 and 2019 auctions are subject to a two-side CfD with a tenure of 15 years
ROMANIA	• Wind assets (installed until 2013) receive 2 GC/MWh until 2017 and 1 GC/MWh after 2017 until completing 15 years. 1 out of the 2 GC earned until Mar-2017 can only be sold from Jan-2018 and until Dec-2025. Solar assets receive 6 GC/MWh for 15 years. 2 out of the 6 GC earned until Dec-2020 can only be sold after Jan-2021 and until Dec-2030. GC are tradable on market under a cap and floor system (cap €35 / floor €29.4) • Wind assets (installed in 2013) receive 1.5 GC/MWh until 2017 and after 0.75 GC/MWh until completing 15 years • The GCs issued starting in Apr-2017 and the GCs postponed to trading from Jul- 2013 will remain valid and may be traded until Mar-2032
ITALY	• Wind farms in operation prior to 2012YE are under a feed-in-premium scheme applicable for the first 15 years of operation • Wind farms commissioned from 2013 onwards awarded in competitive auctions until 2017 are subject to a 20-years floor CfD scheme • Wind farms winning the 2019 auction will benefit from a 20-years two-side CfD scheme
GREECE	• 20 years non-indexed CfD, allocated through tenders
COLOMBIA	• Colombian wind farms have been awarded 15-years long-term contracts though competitive pay-as-bid auction. Contracts are signed with several Colombian distribution counties • Additionally, Colombian wind farms secured reliability charge contract, a monthly payment in exchange of having part of its capacity available when the system is under tight supply conditions
OFFSHORE	• UK: 15 years CPI indexed CfD, allocated by tender, at £57.5/MWh (2012 tariff- based) • France: 20-year indexed feed-in tariff

2.1.4 REGULATION OVERVIEW

EU REGULATORY DEVELOPMENTS

NATIONAL ENERGY AND CLIMATE PLANS

The National Energy and Climate Plans (NECPs) are a key instrument of the European Union to achieve the 2030 climate and energy targets. Following the adoption of the Regulation on the Governance of the Energy Union in December 2018, Member States (MS) were required to develop National Energy and Climate Plans on a 10-year rolling basis (for the period 2021-2030). These plans must ensure that the Union's 2030 targets for greenhouse gas emission reductions, renewable energy, energy efficiency, research and innovation, and electricity interconnection are reached.

Initially, MS had been required to submit a draft NECP by 31 December 2018. In June 2019, the European Commission (EC) published an assessment on the draft NECPs as a whole, accompanied by country-specific recommendations. At this stage, the EC identified a gap between the NECPs ambition levels and the EU's collective targets. In particular, the EC concluded that draft NECPs were insufficient for the achievement of the 32% renewable energy target[1] and encourage MS to raise their ambition.

Subsequently, MS were required to submit their final NECP by 31 December 2019 although some countries have missed the deadline. Every two years (starting in 2023), each MS will need to submit a progress report. In 2024, and every five years thereafter, the Governance regulation requires each country to review its NECP taking into account recent developments and results of the global stocktake of the Paris Agreement[2].

EUROPE AND SOUTH AMERICA: 2019 REGULATORY DEVELOPMENTS

This chapter describes the most relevant recent regulatory developments (if any) in the European-Brazilian countries where EDPR is present.

Spain

On November 22, the Royal Decree Law 17/2019 was passed, introducing a series of measures aimed at guaranteeing a stable regulatory and economic framework to encourage the development of renewable energy generation in Spain. The RDL updates the "reasonable" profitability for renewable generation for the next regulatory period starting on 1 January 2020 at a level of 7.39% for assets before RDL 9/2013 and 7.09% for the new ones. In addition, the Ministry for the Ecological's Transition (MITECO) presented in January 2020 a draft bill determining the rest of the remuneration parameters for standard renewable energy facilities.

Portugal

Portugal held in July 2019 its first Solar PV energy auction. The auction awarded 1.4 GW of grid connection capacity reservation. This auction responds to the objective of reaching 80% of electricity from renewable sources by 2030, which translates in 9 GW[3] of solar PV installed capacity. EDPR secured a 15-year contract for a 142 MW solar project.

France

On 8 November the Energy and Climate Law, which sets the framework and targets of French climate policy for the next 30 years, was formally enacted. The adoption of the Energy-Climate law constitutes a major step toward achieving the government's ambition to address climate change by becoming carbon neutral by 2050. For this purpose, the law provides for the reduction of fossil fuel consumption by 40% by 2030 and for the end of coal based electricity generation by 2022. Regarding wind energy, the law redefines the authority responsible for permitting onshore wind projects, on the other hand, for offshore wind its included a higher target of auctioning 1 GW of capacity until 2024.

Due to the high volume of projects potentially wishing to benefit from the CR 2016 Regime (the so-called "Complément de Remunération" which grants a 15-year Contract-for-Difference "CfD" with a strike price at a level close to the former feed-in tariff), the Ministry of Ecological Transition (Ministère de Transition écologique et solidaire) decided in December 2019 to close the scheme once the first 1,800 MW of contracts are signed.

Italy

The Italian Ministry of Economic Development signed in July 2019 a decree implementing a new set of auctions to be held between 2019 and 2021, and seeking to allocate around 5.5 GW of wind and solar PV. The Decree was published on the Official Gazette No. 186 of 9 August 2019.

The first auction round was opened on 30 September 2019 for a total of 500 MW of renewable capacity. Auction's participants had to bid a discount on a reference tariff, set at €70/MWh for wind and solar PV.

[1] DRAFT NECPS WOULD ONLY REACH A RENEWABLE ENERGY SHARE BETWEEN 30,4% AND 31,9% IN 2030, ACCORDING TO EC'S COMMUNICATION PRESENTED ON 18 JUNE 2019
[2] AS A KEY ELEMENT IN THE PARIS AGREMENT, COUNTRIES ARE REQUIRED TO REVIEW THEIR NDC EVERY 5 YEAR AND INCREASE THEIR LEVEL OF AMBITION
[3] ACCORDING TO FINAL NECP

Belgium

On 4 April 2019, the Belgian Parliament adopted a law introducing a competitive bidding procedure to award domain concessions for new offshore wind farms. This regulation sets out a general framework for the competitive bidding procedure.

In July, a Royal Decree establishing the new marine spatial plan for the period 2020-2026 was published, which amongst other things describes the potential locations for new offshore concessions for renewable electricity production installations.

Poland

On June 25, the government approved a set of amendments to the Renewable Energy Sources Act with the main objective to allow auctions for new renewable energy projects in 2019.

In December 2019, the Polish energy regulator launched a wind and solar PV tender, granting 2.2 GW of new capacity (most of the capacity was granted to onshore wind projects). EDPR secured 15-year CfDs to sell electricity produced by a portfolio of 11 wind farms with a total capacity of 307 MW.

Greece

Greece held three renewable energy auctions in 2019 (April, July and December). EDPR secured two contracts-for-difference ("CfD") for two wind projects of 30 MW and 33 MW.

Brazil

On March 6, Portarias MME n° 151 and n° 152 setting the calendar of energy tenders for the years 2019, 2020 and 2020 were published. Portaria 151 sets the dates for "new energy tenders" (leilões de energia nova) while Portaria 152 envisages tenders for existing energy assets (leilões de energia existente). The calendar envisages two tenders per year for new assets (A-4 and A-6) and two for operational (A-1 and A-2), following the same structure for each of the three years.

UK

In June 2019, a new legally binding net-zero emissions target by 2050 was passed into law. This target will require the UK to bring all greenhouse gas emissions to net zero by 2050, compared with the previous target of at least 80% reduction from 1990 levels. In order to achieve the target, several measures are proposed: increase the share of electricity from renewable sources (up to 57% of variable renewables by 2050), increase the capacity of wind and solar PV up to 81 GW by 2050 (from 29 GW current level), support new renewables with contract-for-difference awarded through tenders, among other measures.

The results of the third CfD Allocation Round were announced on 20 September 2019. Six offshore projects with a combined capacity of 5,466 MW secured CfD deals. In September 2019, the UK also announced the fourth leasing round, that was opened in October 2019, offering areas capable of supporting 7 GW of offshore wind before 2030.

Colombia

Up until recently, Colombia had not a robust renewables' (ex-hydro) regulatory framework. However, in 2019 the government set a mandatory target for electricity suppliers to procure 10% of their electricity from non-conventional renewable energy sources from 2022 onwards ("Resolución 40715").

In October 2019, Colombia's National Mining and Energy Planning Unit allocated 1.3 GW of solar PV and wind power generation capacity in the country's first renewable energy auction. Eight projects (5 wind and 3 solar PV projects) secured a 15-year PPA. EDPR was awarded two wind projects totaling 502 MW.

NORTH AMERICA: CONTINUE LEADING THE WAY

United States of America

Historically, the typical framework for wind and solar developments in the US has been decentralized, with no national feed-in tariff, resulting in a combination of three key top line drivers:

- PTCs: Production Tax Credits are the dominant wind incentives in the US and represent an extra source of revenue per unit of electricity generated ($24/MWh in 2018), over the first 10 years of the asset's life.
- ITCs: Investment Tax Credits equals to 30% of the initial capex and are the primary solar incentives.
- PPAs: long-term, bilateral Power Purchase Agreements by which a renewable developer can sell its output to another company at a fixed price, usually adjusted for an agreed escalator.

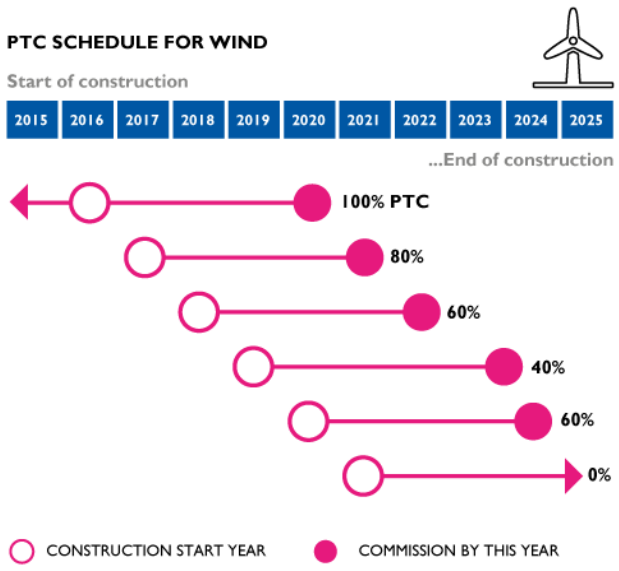
In addition, many states have passed legislation, mainly in the form of Renewable Portfolio Standards (RPS), that require utilities to purchase a certain percentage of their energy supply from renewable sources, setting penalties to those that do not accomplish. Typically, states use Renewable Energy Credits (RECs) as the compliance mechanism. Utilities or other subject entities are required to procure enough RECs to meet their obligations under the RPS. Utilities can choose to invest directly in renewable generation assets and generate a REC for each unit of renewable energy produced or, alternatively, can purchase RECs produced by other renewable generators either through long-term bilateral contracts or in the secondary market. As a result, many utilities set up auction systems to seek long-term power purchase agreements with renewable energy generators by which they procure renewable energy and RECs.

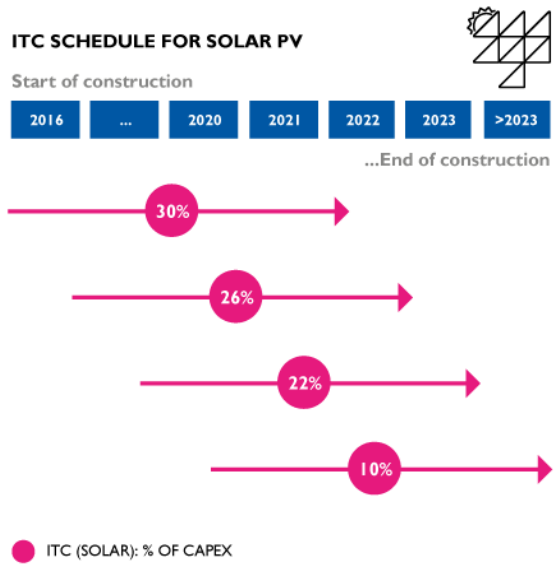
The relevant recent regulatory developments are below described.

On December 2015, the US Congress approved the "Consolidated Appropriations Act, 2016" that included an extension of the PTC for wind (including the possibility of a 30% ITC instead of PTC) and an extension of the ITC for solar. As part of the extensions, Congress also introduced a phase out of the credits. Wind projects that start construction in 2020 or later will not be eligible for the PTC or ITC and solar projects placed in service after 2023 will qualify for just 10% ITC. On May 2016, the US Internal Revenue Service (IRS) issued guidance that wind farms have 4 years from their start of construction to be placed in service and qualify for the PTC. As a result, projects that start construction prior to year- end 2019 and are placed in service prior to year-end 2023 will be eligible for the PTC. The IRS ruling also includes a provision that allows developers to secure the PTC if 5% of a project's capital components by dollar value are safe harbored in a given year and construction is completed within 4 years. Thus, if a developer safe harbors 5% of project Capex in 2016 for a given project, the project will qualify for the 100% PTC if construction is completed by year-end 2020.

On 22 June 2018, the IRS released Notice 2018-59, which provides guidance to determine when a solar project begins construction for ITC purposes and specifies that projects have until 2024 to be placed in service and qualify for the ITC at levels above 10%. The ITC percentage for a solar project is determined based on the year in which construction of the project begins – provided the solar project is also placed in service before Jan 1, 2024 – as follows: (i) before Jan 1, 2020, 30%; (ii) in 2020, 26%; (iii) in 2021, 22%; and (iv) any time thereafter (regardless of the year in which the solar project is placed in service), 10%. Similar to the IRS guidance regarding the wind PTC, establishing the beginning of construction is deemed by (i) engaging significant physical work or (ii) paying or incurring 5% of the ultimate tax basis of the project. Thus, if a developer safe harbors 5% of project Capex in 2019, the project will be qualified for a 30% ITC if the construction is concluded before Jan 1, 2024. Similarly, if a developer safe harbors 5% of project Capex in 2021, the project will be qualified for a 22% ITC if the construction is concluded before Jan 1, 2024. The graphic below depicts the phase-out calendar:

On 20 December 2019, the President signed the Taxpayer Certainty and Disaster Tax Relief Act of 2019. The act changes the phase down schedule for the Production Tax Credit for onshore wind energy projects. Under prior law, the PTC phased down to 40% for projects beginning construction in 2019 and then to 0% for facilities for which construction began in 2020. The new act leaves in place the 40% PTC rate for 2019 projects, then increases the PTC to 60% for projects beginning construction in 2020. Projects beginning construction in 2021 & later will have no PTC. The act made no changes to the solar ITC. The act also did not include the creation of any new tax credits for offshore wind or energy storage, despite previously proposed legislation that sought to do so.

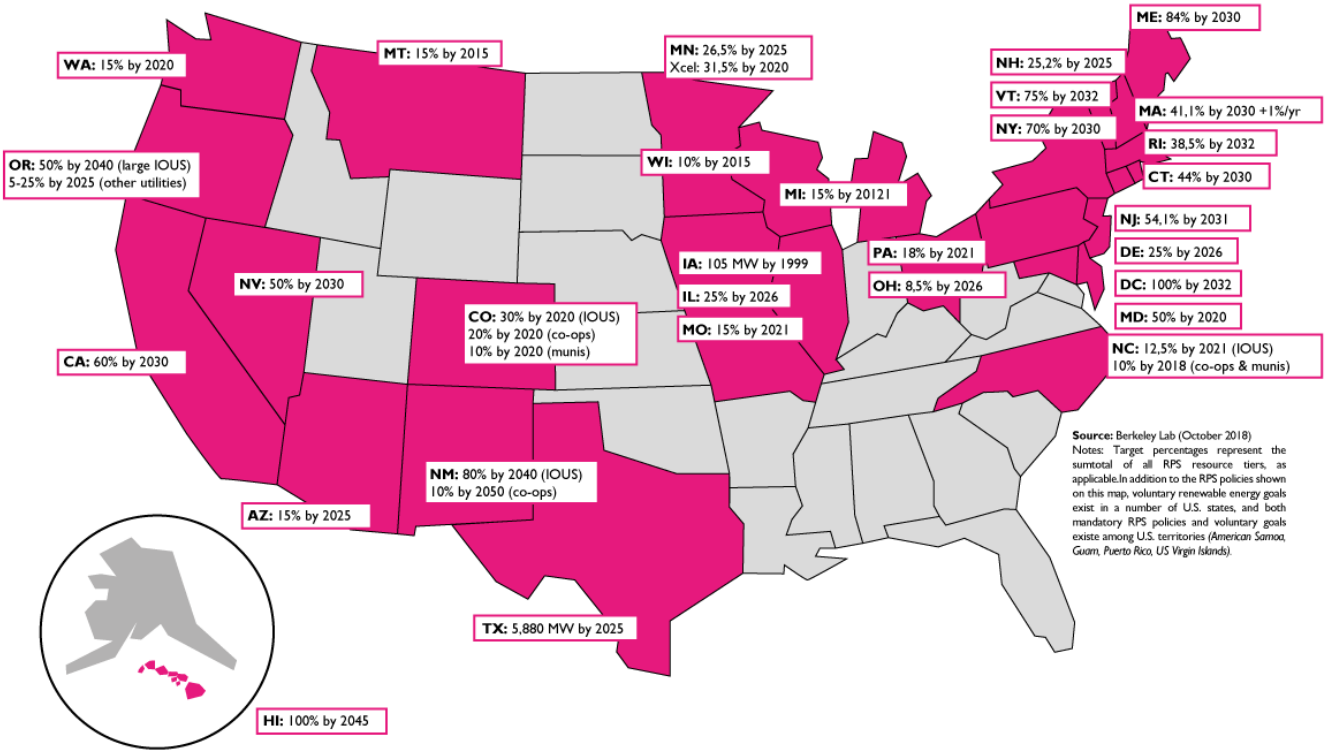




Regarding RPS, states have continued to upgrade their targets in 20182019. Also, some states have mandated "clean energy" or "carbon-free" energy goals in addition to or in lieu of RPS goals. These types of targets are different from RPS targets in that they generally allow a wider range of resources – such as nuclear energy – to qualify. Changes to state RPS's and clean energy goals in 2019 include: Maine passed legislation to increase its RPS to 80% by 2030 and 100% by 2050; New Mexico passed legislation requiring 100% of its electricity come from carbon-free resources by 2045; Nevada passed a bill requiring 50% renewable electricity by 2030 and 100% carbon-free electricity by 2050; and Washington passed a law requiring 100% clean energy by 2045. In contrast, Ohio passed a law that, among other energy-related provisions, shrank its RPS from 12.5% to 8.5%.

RPS obligations as a percent of state retail consumption (as of July 2019) are shown in the map below. Some states have separate goals for different types of utilities such as investor-owned utilities (IOUs), cooperatives (co-ops) or municipal power companies (munis). Other states like Iowa and Texas, have set targets for installed capacity, rather than for a percentage of sales.

Map of State RPS's



Another regulatory factor that could affect demand for renewable energy is national legislation or rule-making regarding carbon emissions. On August 2015, the Environmental Protection Agency (EPA) announced the Clean Power Plan (CPP), a rule to cut carbon pollution from existing power plants. On February 2016, the Supreme Court stayed implementation of the CPP pending judicial review and on October 2017, the EPA, led by Scott Pruitt, announced that it would sign a proposed rule to repeal the CPP. On 21 August 2018, the EPA proposed the Affordable Clean Energy (ACE) rule to replace the CPP to establish emissions guidelines for states to develop plans to address GHG emissions from existing coal-fired plants. The rule would allow states full discretion to set heat-rate improvements (HRI) for unit-specific emissions standards. The HRIs may be overstated, since they appear to be based on potential improvements at inefficient plants that have already retired; i.e. the existing fleet may have already applied BSER measures and therefore do not have room for improvement. The Affordable Clean Energy (ACE) rule was issued by the Environmental Protection Agency ("EPA") June 19, 2019. This rule will replace the prior administration's Clean Power Plan in efforts to support energy diversity. Environmental advocates and state attorneys general signaled they would file lawsuits to block the EPA's ACE rule, which they say will be significantly less effective than the Obama-era Clean Power Plan. On a state level, some states already participate in carbon reduction programs. For example, California is a member of a carbon allowance market along with Quebec and Ontario. Meanwhile, some states in the eastern US (Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island and Vermont) are members of the Regional Greenhouse Gas Initiative which seeks to reduce carbon emissions from the power sector. New Jersey joined RGGI in 2019 with Virginia lawmakers discussing actions to also join while coal-heavy Pennsylvania has committed to join July 2020.

As a result of the 2018 mid-term elections, the 116th United States Congress is comprised of a Republican-majority Senate and a Democratic-majority House of Representatives. In the prior Congress, Republicans held majorities in both the Senate and the House of Representatives. Representatives of New York and Massachusetts released the Green New Deal legislation in early February, regarded as one of the most notable and aggressive pieces of climate legislation debated at the national stage. While the resolution includes provisions to address climate responsibility, it does not address the issue of cost or how to pay for the public investments it envisions. No significant climate change legislation has been passed by both chambers during this Congress. Climate change has been a leading topic of discussion among the 2020 Democratic Nomination and depending on the results of the 2020 elections, major climate change legislation could become likely to be passed by the 117th Congress.

GROWTH PROSPECTS

Growth in the US is motivated by several forces, including primarily the planned coal capacity retirements, RPS compliance in several states and demand from commercial and industrial entities (C&I).

RPS	**29 states** +DC	• Renewable Portfolio Standards defined at state level • RPS policies cover 56% of total US retail electricity sales
COAL & NUCLEAR	**>52 GW** retirements until 2030E	• Coal (19% fleet): many units old & non-compliant w/ environmental regulations, independent of CO_2 issues; ~44GW proposed retirements until 2030 • Nuclear: ~8 GW proposed retirements until 2025
C&I	**>13.6 GW PPAs** signed in the US in 2019	• Renewable demand from RE100 companies represents 228 TWh globally, as of YE2018, up from 19 TWh in 2014

Canada

Historically, new Canadian renewable supply is largely determined by provincial procurements, as an example, in Alberta, a price is imposed on carbon emissions, coal generation is scheduled to be eliminated from the province by 2030, and a requirement is in place for 30% of electricity generation to come from renewables by 2030.

Mexico

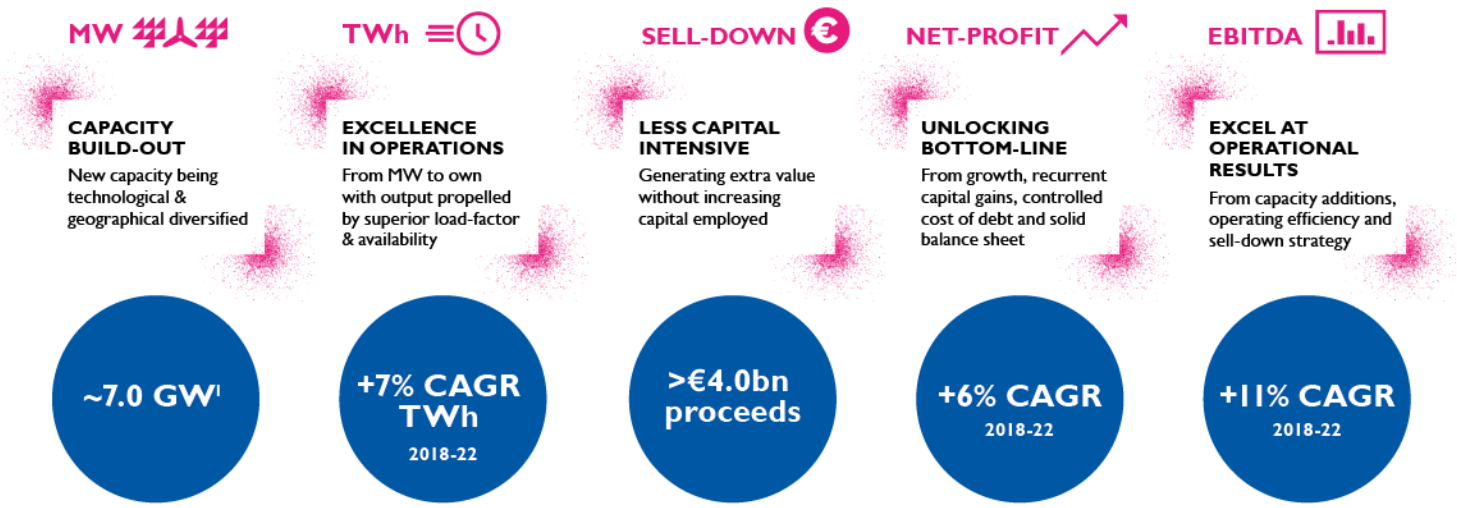
Mexico redesigned its energy sector beginning with the constitutional amendment in 2013 and ending with implementation by end of 2018. The country has conducted three long-term supply auctions to procure new renewable electricity. While the long-term ramifications of President Obrador's actions are difficult to forecast, it seems prudent to consider the possibility that changes will occur in the way new wind and solar supply is contracted and remunerated.

2.2. STRATEGY

EDPR'S STRATEGY IS SUPPORTED BY ITS THREE MAIN PILLARS:

Since its inception, EDPR has been performing a strategy focused on selective growth, by investing in quality projects with predictable future cash-flows, and seamless execution, supported by core competences that yield superior profitability, all embedded within a distinctive and self-funding model designed to accelerate value creation. As a result of undertaking such strategy, at the same time flexible enough to accommodate changing business and economic environments, EDPR remains today a leading company in the renewable energy industry.

EDPR Business model to deliver solid and ambitious growth targets through 2022 positioning to successfully lead a sector with increased worldwide relevance.



(1) OF WHICH ~50% TO OWN.

2.2.1 SELECTIVE GROWTH

Growing selective is the key principle behind EDPR's investment selection process, with new projects having long-term PPAs secured or being awarded long-term contracts under stable regulatory frameworks, as well as exhibiting above portfolio average load factor. As presented in March 2019, EDPR plans to add c.7.0 GW for the 2019-2022 period, of which 5.2 GW are already secured and to be installed until 2022. EDPR will diversify geographically and technologically growing on wind onshore, offshore and solar along with the entrance in new markets.

EDPR MAIN GROWTH MARKET DRIVEN BY PPAS SECURED

North America is EDPR's main growth market, with 6.3 GW installed capacity, representing half of EDPR total portfolio. **The US, Canada and Mexico will account for 60% of the total 7.0 GW targeted capacity additions.**

EDPR has secured 66% of such target. More than 2.8 GW of projects in the US, of which 2.1 GW related to wind onshore projects, where 1.1 GW for 2020 and 0.4 GW for 2021, along with 0.7 GW related to solar projects, some of them with storage batteries, of which 0.2 GW for 2021 and 0.4 GW for 2022.

In 2019, EDPR also built 0.6 GW of wind onshore and 0.1 GW of solar PV in the US.

FOCUS ON LOW RISK REGULATORY FRAMEWORKS

EDPR growth in Europe is supported by identified short-term opportunities along with medium-term pipeline options and PPA appetite.

In 2019-2022, **EDPR plans to add 1.4 GW in Europe, representing 20%** of the total capacity to be added in the period 2019-2022.

From the 1.4 GW, **EDPR already secured 0.8 GW related to wind onshore** projects of which 0.2 GW for 2020, 0.5 GW for 2021 and 42 MW for 2022, **along with 0.1 GW of solar** projects for 2022.

In 2019, EDPR built 0.2 GW of wind onshore in Europe.

PROJECTS WITH LONG-TERM PPAS

Brazil represents a 10% of the 7.0 GW total capacity to be added in the 2019-2022 period.

EDPR has been active in upcoming Brazilian opportunities, namely auction opportunities, given the strong fundamentals of the country, with high growth of electricity demand, robust renewable resources and availability of long-term energy supply agreements through an auction system.

EDPR has currently more than 1 GW of renewable energy projects under development, of which 0.2 GW of solar with start of operation expected for 2021, 0.4 GW of wind for 2022 and 0.6 GW of wind for 2023 and 2024, all of them with long-term contracts secured.

WORLDWIDE OPPORTUNITIES LOW RISK + REGULATORY STABILITY

EDPR will expand its footprint along new countries with a dedicated team screening several markets and developing the best strategy for each market.

New countries are targeted at 10% of EDPR 2019-22 targeted growth. In 2019, **EDPR managed to secure >87% of such target** with the entrance in Greece and Colombia in its portfolio.

EDPR secured 120 MW in Greece through different auctions under a remuneration scheme providing 20 years CfD and to be commissioned between 2020 and 2022.

In the other side of the globe, **492 MW were awarded** through capacity auction **in Colombia** to be operational in 2022.

INVESTING IN OFFSHORE WIND TECHNOLOGY

Offshore wind energy is becoming an essential part of the global energy transition, leading to the market's rapid growth and increased competitiveness.

In 2019, a **Joint Venture** was announced by **EDPR and ENGIE** for worldwide offshore wind investments opportunities to bring together the industrial expertise and development capacity of both companies. EDPR and ENGIE will combine their offshore wind assets and project pipeline, starting with a total capacity of 1.5 GW under construction and 4.0 GW under development, with a **target of 5 to 7 GW of projects in operation** or construction **and 5 to 10 GW under advanced development by 2025.**

The Joint Venture is expected to be operational by 2020.

2.2.2 SELF FUNDING BUSINESS

EDPR self-funding model has been a cornerstone of EDPR's strategy and its success has been crucial for funding and propel growth.

The self-funding model relies on a combination of the cash generated from operating assets and EDPR's strategy of selling stakes in projects in operation or under development, along with the US Tax Equity structures to finance the profitable growth of the business. This model allows the company to create value while recycling capital.

SELL DOWN STRATEGY

Proceeds from selling majority stakes in operational or under development assets are also important sources of funds for the self-funding model of EDPR in financing its profitable growth. Under this strategy, EDPR sells majority stakes in projects in operation or in late stage of development, allowing the company to recycle capital, with up-front cash flow crystallization, and create value by reinvesting proceeds in accretive growth, with the option to provide operating and maintenance services. On the top of these, the Sell Down strategy makes visible the value creation on reported financial statements, with capital gains being booked in the income statement.

As of 2019, EDPR already announced €1.3 billion out of the >€4.0 billion of sell down proceeds for 2022, representing 33% of such target.

Fully exit	**997 MW** *491 net MW*	**8** *years* *assets age*
€0.8 bn *proceeds*	**€1.6bn** *entreprise value*	**€226m** *capital gains*

Transaction completed in July 2019

Fully exit	**137 MW** *137 net MW*	**1** *year* *assets age*
R$0.6bn *proceeds*	**R$1.2bn** *entreprise value*	**€87m** *capital gains*

Transaction completed in February 2020

2.2.3 OPERATIONAL EXCELLENCE

One of the strategic pillars that has always been a keystone of the company, setting it apart in the industry, is the drive to maximize the operational performance of its wind and solar plants. In this area, EDPR's teams, namely in operations and maintenance (O&M), have established a strong track record. EDPR has set targets for three key metrics: Load Factor, Technical Availability and Core Opex per MW. These metrics provide an overall view of the progress in EDPR wind assessment, O&M and cost control efforts. They also serve as good indicators for the overall operational efficiency of the company.

MAINTAINING HIGH LEVELS OF AVAILABILITY

Availability is the ratio between the energy actually generated and the energy that would have been generated without any downtime due to internal reasons, namely due to preventive maintenance or repairs. Therefore, it is a clear performance indicator of the company's O&M practices as it focuses on reducing to a minimum any malfunctions and performing maintenance activities in the shortest possible timeframe.

With a target of more than 97.5%, EDPR will continue to improve availability through new predictive maintenance optimisation measures supported by the 24/7 control and dispatch center, reducing damages most common during extreme weather and improving the scheduling of planned stops. Also, a new spare parts warehousing strategy will be key in reducing downtime during unexpected repairs. The company has always maintained high levels of availability, having registered availability of 97% as of December 2019.

LEVERAGING QUALITY GROWTH ON DISTINCTIVE WIND ASSESSMENT TOWARDS 33% LOAD FACTOR

Load factor (or net capacity factor) is a measure for the renewable resource quality, that reflects the percentage of the maximum theoretical energy output, in a given period. EDPR 2019-22 Business Plan target a 33% load factor, mainly on the back of the increase competitiveness of new capacity additions. In 2019, EDPR reached a load factor of 32%.

INCREASING EFFICIENCY, BY REDUCING CORE OPEX/ AVG. MW

In addition to all company initiatives to boost production, EDPR also focuses on strict cost control efforts to improve efficiency and profitability. Leveraging on the experience accumulated over time, EDPR plans to reduce Core Opex/ avg. MW by -1% CAGR 2019-22. Core Opex is defined by Supplies and Services (including O&M activities) and Personnel costs, which are the costs that EDPR can actively manage. The target of reducing the manageable company costs structure, also benefits from the economies of scale of a growing company.

In 2019, adjusted by IFRS16, offshore costs, one-offs and forex, Core Opex per average MW was flat YoY and adjusted Core Opex per MWh decreased 4% YoY.

M3 PROGRAM AND SELF-PERFORMANCE

Based on EDPR's expertise, under the M3 program O&M teams will decide on the optimal balance between external contractors and in-house maintenance. This new program has quickly generated savings in operational expenses and increased control over quality. The self-perform program is a step further in EDPR's integration of maintenance tasks and activities, which is being implemented in the US, and consequently minimizes third-parties' dependency. EDPR targets to increase the share of its fleet under the M3 and Self-Perform program to c.60% by 2022, from c.30% levels in 2015, while at the same time keeping flexibility to choose the most competitive sourcing contract.

2.3. RISK MANAGEMENT

In line with EDPR's controlled risk profile, Risk Management process defines the mechanisms for evaluation and management of risks and opportunities impacting the business, increasing the likelihood of the Company in achieving its financial and sustainability targets, while minimising fluctuations of results.

RISK MANAGEMENT PROCESS

EDPR's Enterprise Risk Management Process is an integrated and transversal management model that ensures the minimisation of the effects of risk on EDPR's capital and earnings, as well as the implementation of best practices of Corporate Governance and transparency.

EDPR's Enterprise Risk Management Process is inspired on Basel Committee on Banking Supervision's principles, guidelines and recommendations and is similar to other risk management frameworks.

The process aligns EDPR's risk exposure with the Company's desired risk profile. Risk management policies are aimed to mitigate risks, without ignoring potential opportunities, thus, optimising return versus risk exposure.

The process is closely followed and supervised by the Audit, Control and Related Party Transactions Committee, an independent supervisory body composed of non-executive members.

Risk management is endorsed by the Executive Committee, supported by the Risk Committee and implemented in day-to-day decisions by all managers of the Company.

EDPR created three distinct meetings of the Risk Committee in order to help decision-making, separating discussions on execution of mitigation strategies, from those on the definition of new policies:

- **Restricted Risk Committee:** Held every month, it is mainly focused on development risk and market risk from selling energy (electricity price, basis, profile, GCs and RECs). It is the forum to discuss the evolution of projects under development and construction and the execution of mitigation strategies to reduce merchant exposure. It also monitors the limits of defined risk policies, with regards to counterparty risk, operational risk and country risk.

- **Financial Risk Committee:** Held every quarter, it is held to review main financial risks and discuss the execution of mitigation strategies. Exchange rate risk, interest rate risk and credit risk from financial counterparties are most relevant risks reviewed in this committee.

- **Risk Committee:** Held every quarter, it is the forum where new strategic analysis is discussed and new policies and procedures are proposed for approval to the Executive Committee. Additionally, EDPR's overall risk position is reviewed, together with EBITDA@Risk and Net Income@Risk.

RISK MAP AT EDPR

Risk Management at EDPR is focused on covering all risks of the Company. In order to have a holistic view, they are classified in five Risk Categories. Within each Risk Category, risks are classified in Risk Groups. The full description of the risks and how they are managed can be found in the Corporate Governance chapter. The graph below summarises the Risk Categories, the Risk Groups and the Risk Management mitigation strategies at EDPR.

RISK CATEGORIES

Market Risks

It refers to the risk to EDPR resulting from movements in market prices. Due to the relationship between wind production and energy price, production risk is considered within market risk. In particular, market risks are changes in energy prices, energy production risk, interest rates, foreign exchange rates and other commodity prices.

Counterparty Risk

Risk that counterparty to a transaction could default before final settlement of the transaction's cash flows. A direct economic loss would occur if transactions with the counterparty had positive economic value at the time of default. Even in the case of not defaulting, it may not comply with its contract obligations (timing, quality, etc.), implying additional higher costs due to its replacement or to delays in fulfilling the contract.

RISK GROUPS

- Energy Price Risk
- Energy Production Risk
- Commodity Price Risk
- Liquidity Risk
- Inflation Risk
- Exchange Rate Risk
- Interest Rate Risk

- Counterparty Credit Risk
- Counterparty Operational Risk

MITIGATION STRATEGIES

- Close analysis of natural hedges to define best alternatives
- Hedge of market exposure through long term power purchase agreements (PPA) or short and medium term financial contracts
- Natural FX hedging, with debt and revenues in same currency
- Execution of FX hedging for net investment (after deducting local debt)
- Execution of FX hedging to eliminate FX transaction risk, mainly in Capex
- Execution of interest rate hedging
- Execution of inflation hedging
- Alternative funding sources such as Tax equity structures and Multilateral/ Project Finance agreements

- Counterparty exposure limits by counterparty and at EDPR level
- Collateral requirement if limits are exceeded
- Monitoring of compliance with internal policy

RISK CATEGORIES

Operational Risk

Defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events (such as an increase in equipment default rates, increasing O&M, or natural disasters).

Business Risk

Potential loss in the Company's earnings due to adverse changes in business margins. Such losses can result, above all, from a serious increase in equipment prices or changes in the regulatory environment. Changes in energy prices and energy production are considered market risks.

Strategic Risk

It refers to risks coming from macroeconomic, political, social or environmental situation in countries where EDPR is present, as well as those coming from a change in competitive landscape, from technology disruptions, from changes in energy markets or from governance decisions (investment decisions criteria, Corporate Governance and Reputational issues).

RISK GROUPS

- Development Risk
- Legal Claims Risk (Compliance, Corruption, Fraud)
- Execution Risk
- Personnel Risk (health and safety, human rights, discrimination)
- Operation Risk (Damage to Physical Assets, Equip. Performance, Environmental)
- Processes Risk
- Information Technologies Risk

- Regulatory Risk (renewables)
- Equipment Price Risk
- Equipment Supply Risk

- Country Risk
- Competitive Landscape Risk
- Technology Disruptions Risk
- Invest. Decisions Criteria Risk
- Reputational Risk
- Meteorological Changes
- Corp. Organisation and Governance
- Energy Planning

MITIGATION STRATEGIES

- Supervision of suppliers by EDPR's engineering team
- Flexible CODs in PPAs to avoid penalties
- Partnerships with strong local teams
- Monitor recurrent operational risks during construction and development
- Close follow-up of O&M costs, turbine availability and failure rates
- Insurance against physical damage and business interruption
- Strict compliance with legal requirements and zero tolerance for discrimination, unethical behavior or fraud
- Attractive remuneration packages and training for personnel
- Revision and compliance with all regulations that affect EDPR activity (H&S, environmental, taxes…)
- Control of internal procedures
- Redundancy of servers and control centers of wind farms

- Careful selection of energy markets based on country risk and energy market fundamentals
- Diversification in markets and remuneration schemes
- Diversification in technologies
- Follow-up of regulation changes in markets where EDPR is present to adjust strategy if needed
- Active involvement in major industry associations in all EDPR markets
- Signing of medium-term agreements with equipment manufacturers to ensure visibility of prices and supply
- Relying on a large base of equipment suppliers to ensure supply

- Careful selection of countries
- Worst case profitability analysis of every new investment considering all risks factors
- Risk-return metrics at project and equity level
- Profitability resilience metrics
- Consideration of stress case scenarios in the evolution of energy markets for new investment decisions
- Follow-up of cost effectiveness of renewable technologies and potential market disruptions

During 2019, EDPR performed a thorough review of the Enterprise Risk Management Framework and the structural limits that set risk appetite at the Company. EDPR's structural risk limits for Market, Counterparty and Operational risks, as well as a holistic limit which includes all risk sources, reflected in Net Income at Risk, were backtested and updated according to the new size and reality of the Company.

Counterparty Risk Policy was reviewed in order to update global limits and include specific limits to Community Choice Aggregators in the US.

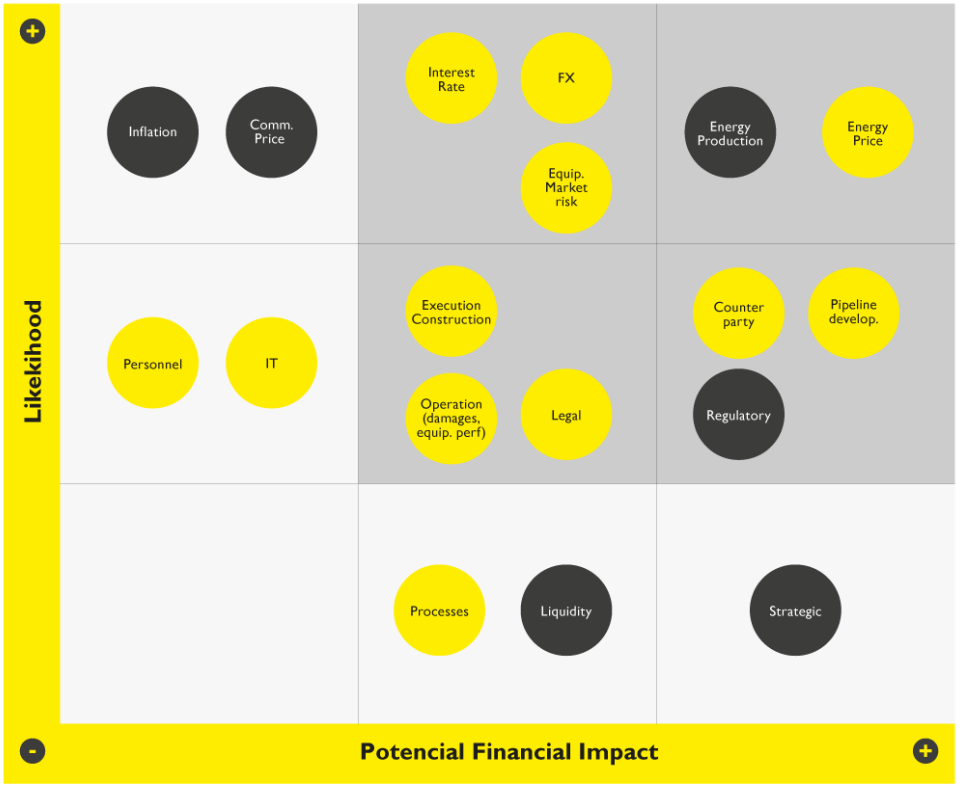
Also, during the year EDPR reassessed the Operational Risk for the company by executing a bottom-up analysis across all departments, as stated in EDPR's Operational Risk Policy. A review of existing Business Continuity Management System was performed, with the main purpose of aligning it to the recently published ISO 22301.

Finally, EDPR updated its REC (Renewable Energy Certificate) Short Term Trading Policy, by introducing trading limits, new execution requirements aimed at decreasing counterparty risk and a more streamlined internal reporting procedure.

EDPR RISK MATRIX BY FINANCIAL IMPACT

EDPR Risk Matrix is a qualitative assessment of likelihood and impact of the different risk categories within the Company. It is dynamic and it depends on market conditions and future internal expectations.

REVIEWED POLICIES OR PROCEDURES IN 2019



EDPR SUSTAINABILITY RISKS

EDPR's commitment with its stakeholders means that the Company cares about assuring best practices in corporate social responsibility. EDPR has identified five risk factors key to the sustainability of the Company. The highest standards have been put in place to mitigate these risks:

- **Corruption and Fraud Risk**: EDPR has implemented a Code of Ethics and an Anti-Corruption Policy. The Code of Ethics has its own regulation that defines a process and channel, open to all stakeholders, to report any potential claim or doubt on the application of the code. The Ethics Ombudsperson is behind this communication channel, and is responsible for analysing and presenting to the Ethics Committee any potential ethical problem. The Compliance Channel is also available to report any questionable practice and wrongdoing.

- **Environmental Risk**: EDPR has implemented an Environmental Management System, certified with the ISO 14001:2015, in order to follow best practices in the sector.

- **Human Resource Risk**: EDPR forbids any kind of discrimination, violence or behaviour against human dignity, as stated in its Code of Ethics. Strict compliance is enforced, not only making the Ethics Channel available to all stakeholders but also through constant awareness for all employees of the Company.

- **Health and Safety Risk**: EDPR has deployed a H&S management system, complying with OHSAS 18001:2007, pursuing the "zero accidents" target.

- **Human Rights Risk**: EDPR has committed, through its Code of Ethics, to respect international human rights treaties and best work practices. All suppliers which sign a contract with EDPR are committed to be aligned with EDPR's Code of Ethics principles.

In addition, quantification of the financial impact on the Company's performance of these five sustainability risk factors is included within the Operational Risk analysis. Every year, EDPR evaluates the economic impact of its Operational Risk, following the guidelines of Basel III. The analysis includes the identification, estimation and mitigation of individual operational risks belonging to the short, medium and long term in all its geographies. For this purpose, EDPR takes into account present and future relevance of these risks, as well as historical data of their impact, with the help of department heads. The final results of the Operational Risk analysis are then communicated to the Executive Committee and shared with every department involved. In 2019, the Operational Risk analysis was performed at the end of the year, and its results approved by the Executive Committee.

In 2019, none of the five sustainability risk factors had a material financial impact on the Company's performance, even though EDPR was not able to reach its "zero accidents" target. Nonetheless, health & safety frequency rate was lower than last year and during 2020, EDPR will continue to work towards achieving the "zero accidents" goal.

EMERGING RISK AT EDPR: CONCENTRATION OF EQUIPMENT MANUFACTURERS

In the last couple of years, the renewables sector has witnessed a higher concentration of equipment manufacturers, mainly due to two factors: acquisitions/mergers between players and financial distress of smaller manufacturers. This trend has mostly affected the wind market, but it is also susceptible to impact the solar market in the future.

In the renewable energy sector, concentration of manufacturers could affect the profitability of projects under development, due to the potential impact on equipment prices and availability of supply. Additionally, this emerging risk could also translate into higher maintenance costs for existing projects, as a result of the disappearance of smaller manufacturers with proprietary technology and the consequent difficulty to replace or repair spare parts.

In order to mitigate this risk, EDPR pursues a strategy of technological diversification and seeks medium-term commitments with creditworthy manufacturers, reducing the concentration in a single technology or manufacturer.