New Business Opportunities

DSM and Energy Efficiency Initiatives

EDP Group 2020

CONTENTS

1. FRAMEWORK

Energy Policies worldwide have reinforced the need to promote the improvement of energy efficiency as one of the main drivers to decarbonising all sectors of activity. In Europe, the New Green Deal is the current framework establishing a set of policy initiatives aiming at making the EU climate neutral by 2050. The ambitious goals set introduce new challenges/opportunities for the business sector. The current framework includes EU legislation (Directives) on Energy Efficiency, Renewable Energies and Energy Performance of Buildings Directives and envisages to achieve the 2030 32.5% headline target on energy efficiency and to pave the way for further energy efficiency improvements beyond that date.

Under this framework, Portugal set the ambitious target of 35% minimum reduction of primary energy consumption in 2030 and Spain 39,6%, supported on the National Energy and Climate Plans (NECPs) - https://ec.europa.eu/energy/topics/energy-strategy/national-energy-climate-plans_en.

These ambitious goals, combined with the market opportunities they induce, have led to the development of demand-side management initiatives, for instance in the fields of energy efficiency, fuel switching, load optimization, distributed generation and sustainable mobility. Additionally, the economic crisis experienced in southern Europe increased the appetite for energy savings that can be achieved through energy services.

Active promotion of demand side management is one of the top commitments of the EDP Group, along with the anticipation of customer needs. In this context, EDP adapted its organizational structures, business models and operational plans in order to strengthen its leading position and benchmark in the global energy market, by developing and offering their customers innovative products and services related to energy efficiency, distributed generation and electric mobility, supported on communication campaigns and partnerships with other operators in the industry.

EDP has assumed energy efficiency as one of the most material issues for the company's performance with high impact on its business, in line with its climate strategy.

Moreover, EDP considers innovation as a key element to energy efficiency improvement. Under this framework, EDP Group implemented an innovation governance model based on 5 strategic areas: Cleaner Energy; Smarter Grids; Customer-Focused Solutions; Data Leap; and Energy Storage and Flexibilty.

In order to promote the deployment of energy efficiency, EDP also created synergies for increasing energy efficiency through the management of the distributed generation/storage/consumers.

In this respect, EDP assumed the following commitments:

Generate Economic Value		
Provide customers with continuous access to low carbon, energy efficiency products and services allowing significant savings and avoiding about 15 MtCO2 in the period 2015-2030.	Provide electricity customers with sustainable services by 2025, such as: mobility services (180 k clients); green electricity and/or gas offset (100% of the clients); descentralised solar (3.7 GW); electric vehicles charging points (>40k) .	Expand the installation of smart meters to 100% of EDP's low voltage power network delivery points worldwide by 2030, through new smart grid technology.

Antecipating the new energy paradigm, we are convicted that EDP is preparing its presence in a future where production, distribution and consumption will be increasingly decentralized. Therefore EDP provides a range of energy solutions oriented to the specific needs of the differents customers' segments, through a diversified offer of competetitve products and services.

Among these services, sustainable mobility is a key issue for society and one of EDP's priorities. This is one of the areas that will most affect the energy sector and will be essential for the decarbonization of transport, which currently accounts for about 25% of global CO2 emissions. For EDP, the decarbonization of the economy involves a significant increase in the penetration of production from renewable sources, followed by strong energy consumption electrification, in particular in the transport sector.

In the following chapters we detail this diversified offer (chapter 2) as well as the initiatives related to energy service provision (chapter 3), namely those that allow customers to change the amount and/or timing of use of electricity in response to supply conditions: smart grid paradigm, electric storage and other services.

In summary, the present document focus on customer solutions, which covers energy efficiency products and services offered by the supply companies (EDP Brasil, EDP Comercial, EDP España and EDP Serviço Universal), as well as projects and initiatives that are being developed by EDP Distribuição (distribution company in Portugal) and EDP Inovação (innovation company), regarding smart grids, electric storage, distributed generation and other services.

2. BUSINESS UNITS

This chapter presents the Business Units that are involved in energy efficiency services.

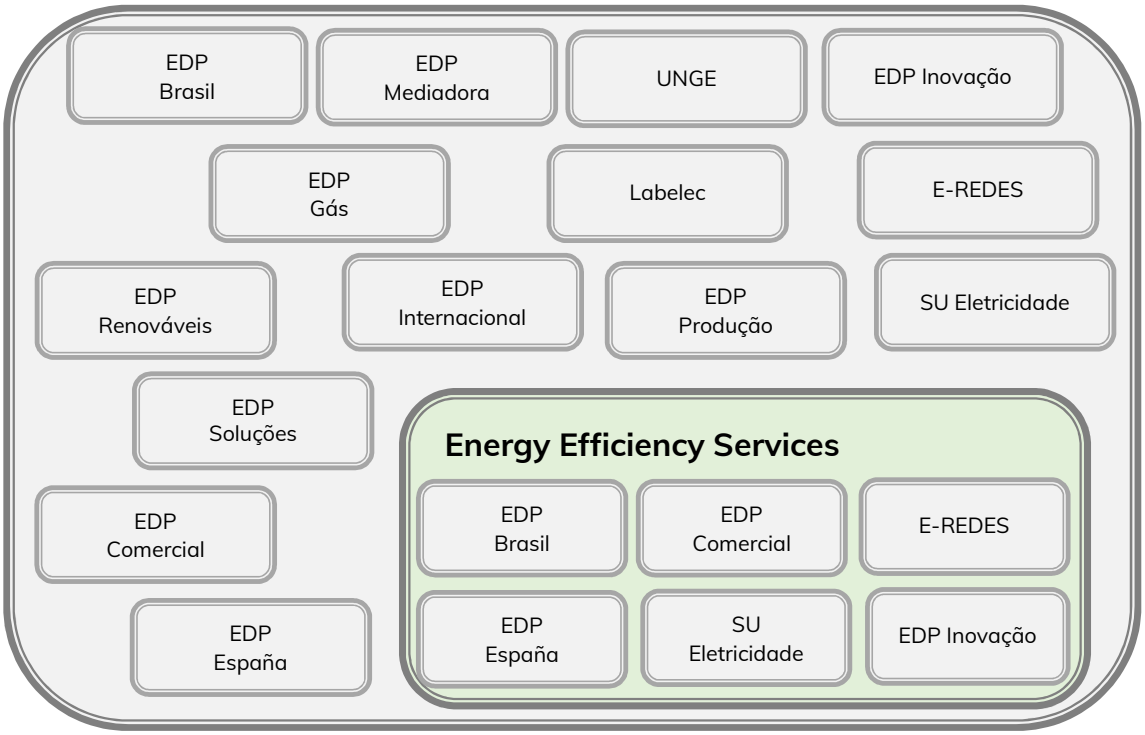

Figure 1- EDP Companies involved in energy services initiatives

EDP Brasil

EDP Brasil plays a key-role in consolidating new energy services businesses, strengthening the development of both energy efficiency and distributed photovoltaic generation projects, as well as investments towards transmission, which ensures EDP Brasil's operations in all segments of the eletric sector.

EDP Brasil believes that the opening of the free market will be a reality in the medium term. Accordingly, in line with its strategy and future vision, in 2019 the company created EDP Smart, a brand comprising a full portfolio of products and services for business and residential free market customers. The focus is on offering integrated solutions in the areas of free market commercialization, retail commercialization, energy efficiency, solar energy, electric mobility and end consumer services.

For the business market, EDP Smart offers solutions such as biomass-based steam co-generation, energy consumption management, smart monitoring, distributed generation and auto-generated solar production, lighting, refrigeration and air conditioning retrofits, among others.

The company also introduced the offer of a series of services for the residential market in 2019, including insurance and general services, such as electricians, locksmiths, 24-hour residential assistance, distributed generation and electric mobility.

Despite the difficulties imposed by the pandemic, in 2020 EDP made important achievements in the B2B segment. The largest delivery was the construction of a photovoltaic plant in Porteirinha (MG) to serve the Banco do Brasil branches in the state. The plant has an installed capacity of 6.54 MWp and should avoid the emission of approximately 14,900 tCO2 in 25 years of operation. The Company also built plants to supply Johnson & Johnson, in São José dos Campos (SP), Brametal, in Linhares (ES), NGK, in Mogi das Cruzes (SP) and Tim and Claro, both in Taubaté (SP). Altogether, the plants have an installed capacity of 18.39 MWp, with the capacity to avoid, on average, the emission of approximately 1,460 tCO2 per year. The energy efficiency projects implemented at customers totaled energy savings of 39,229MWh in 2020, and, in conjunction with steam co-generation projects, avoided emissions of 30,103.90 tCO2eq.

In 2020, we will advance in our electric mobility projects, launching new electroposts and establishing partnerships for the management of electric vehicle fleets. The investment in this technology is aligned with our New Business Ethics, since it contributes directly to preventing global warming by reducing greenhouse gas emissions. The model also represents an advantage in relation to the reduction of noise and pollution levels in large cities, also contributing to the improvement of the quality of life of their inhabitants. Therefore, to lead this transition in the country, we are working on building the necessary infrastructure to meet the demand of this segment and provide new services, as well as following the sectorial and legal discussions about the theme.

EDP Smart has a wide network of pubic chargers, and also works together with partners to expedite the energy transition in B2B customers through fleet electrification. In this model, we supply all the consulting and engineering support for the installation of charging points in the parking lots of the customers' operation bases or along the vehicles' route. Currently, we sell electric vehicle chargers through our e-commerce and in customized projects. In 2020, EDP Smart sold over 100 electric vehicle chargers, serving customers such as Porto Seguro, Audi and EZTEC.

Since May 2016, distributors have to allocate 0.4% of their net operational revenue to energy efficiency programs, on a yearly basis. Prior to that, the mandatory allocation percentage was 0.5%, according to the national regulatory entity requirements (ANEEL - National Agency for Electrical Energy). In 2020, the Company invested R$22.15 million in energy efficiency initiatives with Distribution customers, which led to energy savings of 5.05 GWh/year in São Paulo and 1.27 GWh/year in Espírito Santo, resulting in approximately 362 tCO2 of avoided emissions.

.One of the main investments of the company has been concentrated, in the last years, in the Transmission segment. The transmission lots total approximately 1,441 km of transmission lines, of which 316 km are in operation (Lots 11 and 24) and 1,125 km are under construction in five Brazilian states. In March, due to the need for social distancing, it was necessary to

halt work at our construction sites. Construction resumed in early June, with the challenge of not compromising the schedule due to the challenges posed by the global crisis scenario. Even in the face of adversity, it was possible to mitigate the delays and maintain the anticipated schedules.

We highlight the conclusion of the works and commercial operation of Lot 11 with the delivery in August of the Chapadinha – Miranda stretch. The delivery was accomplished 12 months ahead of the regulatory deadline. For 2021, we expect for the first quarter the completion of stretch 01 of Lot 21 in Santa Catarina and Lot 07, in Maranhão, in its entirety. By the end of the year, the completion of Lot 21 and Lot 18 in the states of São Paulo and Minas Gerais is planned.

EDP Comercial

Since 2009, the organizational structure of the Commercial area went through reorganization steps to become a more competitive company, innovative and agile enough to take less time to lead the energy and service markets in the new energy transitions to the new energy paradigm, in the retail market of new downstream, while also becoming the preferred company of customers.

During this period, from 2012 to 2020, EDPC has promoted several protocols with sectorial and business associations to promote energy efficiency opportunities covering some of the more intensive processing industries as plastic, ceramic, chemistry, melting, textile and metallurgical, as well as the fast-growing tourism sector.

In the new Business Plan for 2021-2025, EDPC has defined a set of strategic objectives for the B2C and B2B segments, regarding not only electricity but also new products and services aligned with smart grid solutions and reinforced the commitment to develop the energy solutions offer as an important differentiator and additional source of revenues and profitability.

The 2021 targets have also been declined in annual targets and specific action plans and commitments. Some of the EDPC strategic priorities for 2021 are:

- Extract value from the traditional core through a proactive market management and the penetration of new products/services.
- Innovate with new products/services, capturing blue ocean dynamics;
- Focus on efficiency optimizing the Client experience and the Talent attraction;
- Restructuration of the business in Spain with Solar/Mobility B2C and Energy/Services B2B;
- Diversification to new geographies coping business models applied on the Iberian Peninsula.

In 2020, EDP Comercial continued to invest in the international expansion of its activity through the companies created in Poland, Italy and France. Additionally, EDP maintained its position as a company more connected to people with the reinforcement of its brand and values: diversity, inclusion, sustainability and innovation are some of the values reflected in EDP Comercial, reflecting a company even closer to its customers, innovative and enthusiastic - and who is committed to being “the energy of people”. Finally, it is important to highlight the

company's efforts to expand to new business models that are essential for energy transition, namely with the development of new products and offers in Solar Energy and Intelligent Mobility.

In 2020, numerous macro initiatives were maintained to boost the business, residential and innovative energy services offer.

In B2B segment, we continued our effort to promote bundle offers, putting together electricity and energy efficient services. Some successful examples of this approach include Decathlon, Revigrés, Bonduelle and Sporting Clube de Portugal.

Our portfolio of energy and efficient services continues to grow. EDP and NOS signed a long-term (10 years) PPA - Power Purchase Agreement, with 62 GWh/ano. Power Purchase Agreements offer greater price stability and significant price cuts, resulting in savings in electricity costs compared to short-term contracts. The energy supplied under this agreement will consist of renewable energy produced in the Iberian Peninsula by EDP Renewables starting 2023.

In the B2C segment, considering the leadership role it aims to assume in the energy market, EDP Comercial invested once again in the continuous development of innovative and differentiated products, as well as in a greater proximity and service quality to its clients.

In B2C, main achievements in solar energy worth emphasize with the installation of more than 40.000 solar energy systems, we managed to lead this emerging market with an estimated 80% market share in solar.

Taking into account the leadership of EDP in the electricity supply market in Portugal, as well as the growing market's appetite for Energy Efficiency solutions, EDP remains in an excellent position to lead this market for energy services (as the main Demand Side Manager enabler) and maintain at the forefront of business models innovation, continually developed in pilot tests, with the support of EDP Inovação and external suppliers for further dissemination in the market.

In addition, EDP has focused on the area of electric mobility, being a priority in the group's strategic agenda. Not only motivated by the responsibility of responding to customers' needs, but also by believing that, in the long term, mobility will be an important business growth vector. EDP also argues that a collective effort is needed to ensure that transport makes the necessary contribution to the decarbonization, through a growing electrification of the fleets.

In 2020, EDP Comercial launched a new range of charging solutions for residential customers with new prices and products, from a reinforced electrical plug in recommended for plug-in hybrid vehicles, to the new Premium Charger EDP, to charge electric vehicles in condominiums, with a special electric mobility green home tariff with 20% discount at night.

EDP EV.Charge platform (App and Portal), which was created as a digital interface with the electric mobility client, started to integrate all e-mobility use cases - charging at home (housing and condominium), at work and public charging. EDP EV.Charge was also a finalist in the international World Summit Awards (WSA), in the Smart Settlement & Urbanization category.

In October 2019, EDP launched its condominium charging solution, which enables customers to charge their electric vehicles in shared parking areas, allowing them to segregate consumptions and automatically settle energy costs with the condominium digitally, providing a transparent and seamless experience for both EV driver and condominium. All the charging information is available to users and condominiums via mobile app EDP EV.Charge and web portals EV.Charge. In 2020 we consolidated our condominium charging solution by adapting our offer to condominium needs and introducing a new charger with OCPP protocol, which will allow us to continuous improve our solution over the years as technology evolves.

The EDP group's commitment to this area has been to raise awareness and promote electric mobility, an objective fulfilled through the launch of EV.X, an app created with the objective of simulating the life of a customer with an electric vehicle; it provides users with information about potential financial savings and carbon reductions that they could achieve if they were to drive an EV in lieu of their standard internal combustion engine vehicle. In 2020, EDP EV.X reached 25,000 downloads and 9,8 Million Km travelled by the users, adding to the curriculum the distinction as a portuguese winner in the Environment & Green Energy category of the WSA Awards and a distinction in the Global Emerging Energy Solutions for Customers of the Edison Electric Institute.

EDP is investing in a new network of fast electric charging stations for company fleets. This network, which will be complementary to the public infrastructure of loaders, represents an important step in the mobility strategy of the group and gives a clear response to the growing consumption needs and the challenges currently facing cities in urban planning.

At the end of 2020, EDP Comercial was the player with most organic growth in public charging, with more than 700 charging points contracted on the public charging network in electric mobility partnerships and concession contracts:

- Public concession of 3 lots in the MOBI.E pilot network tender, for a total of 382 charging points spread over 90 municipalities;
- New electric mobility partnerships with key partners, namely Porto City Council, Saba, Sporting Clube de Portugal, Intermaché and Hospital da Luz;
- Partnership with Brisa, BP and Repsol to install a fast and ultra-fast charging network on national highways - 48 charging points.
- EDP also leads the CEME market and have one of the most competitive tariffs in the market for public charging:
- It is the simplest for the customer: he pays the same for the energy regardless of the time and day to which it charges with 100% green energy;
- For customers with an EDP energy contract at home, the CEME tariff has a discount of 20%;
- In addition, and for customers with Charger EDP (home charging solution), we offer a flat rate plan for the house with a 20% discount in the empty period.
- For clients who contract EDP's CEME tariff and a Charger EDP for their home, we offer the first 50kWh of green energy in public charging network.

Additionally, in order to promote a greater relationship with the EDP brand and encourage energy transition, in September 2020, a relationship program called Planeta ZERO was launched, available through the Zero app. On this platform, the customer begins by knowing

his potential for saving CO2 in electricity and is then invited to enter Planeta Zero where he will participate in initiatives that promote a more sustainable life. In each participation, the client receives Zs that allow him to have access to experiences, benefits and prizes that promote environmental and social sustainability.

Planeta Zero promotes challenges that include changing individual behaviors, participating in voluntary actions, efficiency in energy consumption and adherence to more sustainable EDP solutions, such as Solar, Electric Mobility, Green Energy and efficient equipment.

By participating, customers receive and accumulate Zs, which allows them to advance to higher levels and have access to prizes, experiences, benefits with partners and to vote on social and environmental projects. All prizes and benefits awarded under the program contribute to a change in behavior and range from the electric car draw to online workshops on waste and savings.

During 2020 the Planet developed voluntary and support actions for institutions such as:

- volunteering actions that included i) a partnership with the ERP, European Recycling Platform, in which for one month all EDP stores received small appliances from customers, ii) cleaning the beach with the Brigada do Mar association, iii) social support with the offer of Christmas baskets with the Defense of Life Movement and iv) association with Pinheiro Bombeiro;
- promoting support for institutions and associations related to environmental and social sustainability, through customers vote, allocating a total of 42 thousand euros.

By the end of December, the program had 300 thousand registered customers and more than 100 thousand transactions. The study carried out with customers using the EDP ZERO app, indicates a Planet Zero satisfaction of 7.8 and EDP Comercial's NPS is 23 versus 16 of customers not using the Planet. EDP ZERO was also considered by consumers as the best application in Energy, with the 5 Stars award and was elected Product of the Year.

Planeta Zero, in addition to strengthening the relationship with the EDP brand, reinforces the positioning of the EDP brand in sustainability to the extent that it is a catalyst for sustainable activities that allow EDP, customers and partners to positively impact society. It also promotes the energy transition of consumers to the extent that it promotes the purchase of products and services that make it possible to achieve greater efficiency in energy consumption, and finally promotes digitalization and self-care through an integrated digital experience.

To communicate all these new business strategies, we have been intensively using digital channels like our own website edp.pt, LinkedIn, Instagram, YouTube, customized email marketing, google AdWords and portuguese press..

In 2020, EDPC has generated EUR 66.5 million (vs. EUR 49.9 million in 2019) in energy efficiency services, including, for instance, energy audits and certifications, Save to Compete program and other initiatives Please see EDPC's website with all offered products and services (https://www.edp.pt/).

E-REDES

In what concerns energy efficiency and energy transition, E-REDES, as the main Portuguese Distribution System Operator, has a public obligation and a mission to foster energy efficiency and act as a market facilitator to accelerate the energy transition, contributing to worldwide decarbonisation efforts, a more rational use of electricity, endogenous resources and reinforcing its position in terms of innovation and sustainability.

Focused on theses goals, E-REDES has established an active coworking envolving Universities, Manufactures,Research Centres, etc.,to develop the smart grid concept, an essential axis of the European energy policy with demanding goals on emission reductions, energy efficiency, integration of renewable energies and a more proactive role of the final customers. Furthermore, E-REDES also participates in R&D programmes, under the European Commission's FP7, Horizon 2020, promoting research and innovation fostering Energy Transition. One example is the InteGrid project, lead by E-REDES, bridging the gap between citizen and technology/solutions offered by utilities, aggregators, manufacturers and other agents providing energy services, including the analysis of storage, EV charging, smart appliances and production within a flexibility framework that includes a market hub facilitating the interaction between these stakeholders.

In April 2020, E-REDES concluded the Sustainable Berlenga Project. This project aimed to replace 3 diesel generators with renewable energy production. The best solution founded for this project was the installation of 70 kWp of phovoltaic panels, 150 kWh of batteries, 1 emergency generator and inverters, remote control and monitoring system.

The FlexIP Pilot Project is another exemple of energy service, as part of the integration of intelligent solutions in street light network. This pilot, allows the remote control of the public lighting system reducing energy consumption by up to 70% without jeopardizing safety, comfort and functionality.

E-REDES prepared in 2016 the Development and Investment Plan on the National Distribution Network (High Voltage and Medium Voltage network) for the 2017-2021 period, which was approved by the Portuguese Government in June 2018. This plan includes EUE 30.9 million (primary costs) associated with the promotion of access to new services, which includes the promotion of Smart Supervision, Operation and Telecommunication Systems, and Innovation, fostering the transition towards a smart grid.

In 2018, E-REDES delivered to the Portuguese Government the Development and Investment Plan on the National Distribution Network (High Voltage and Medium Voltage network) for the 2019-2023 period, although the plan was not approved. This plan was on track to proceed with the investment in projects fostering the access to new services, which was proposed to be around EUE 26.9 million (primary cost) for the period.

In 2020, E-REDES delivered to the Portuguese Government the Development and Investment Plan on the National Distribution Network (High Voltage and Medium Voltage network) for the 2021-2025 period, undergoing the approval process. This plan is on track to proceed with the investment in projects fostering the access to new services, which is proposed to be around EUE 39.5 million (primary cost) for the period, allowing E-REDES to complete the roll-

out od Distribution Transformer Controllers, a keystone of the smartgrid infrastructure, by 2024.

In 2020 E-REDES installed around 685,000 smart meters in end-user's facilities, reaching a total of around 3.208.209 smart meters (around 53% of LV instalations).

E-REDES has also been promoting the improvement of its office buildings energy efficiency, taking into account national and EU policies, namely the 2012/27/EU Directive. Hence, as an energy efficiency measure, E-REDES installed 351 kWp of renewable energy production units (photovoltaics) for self-consumption. This measure reduces the building's energy dependency on the electrical grid and its greenhouse gas emissions. In 2020, these photovoltaic panels produced 286,7 MWh, saving 48.000€ and avoiding the emission of around 100 tCO2e.

E-REDES is also developing new projects regarding electric mobility "smart charging", which will not only help mitigating the challenges that arise from charging electric vehicles but also has the potential for reducing the cost and time frame of grid connection, allowing value stacking from system services and increasing the distribution grid utilization as well as renewable penetration.

In 2020, E-REDES had already a total of 258 electric vehicles (around 15% of the fleet) and 226 charging stations in their buildings.

As for European research and innovation initiaves, E-REDES activily participate in several European projects and energy policies to that promote Citizen/Consumer and Costumer engagement, Energy efficiency and Flexibility, including through DSM, in order to obtain a more inclusive and sustainable energy system. Several H2020 Projects, described in chapter 3.3.4, have been contributing to these aims, namely: EUniversal, DOMINOES, Sharing Cities, InteGrid and InterConnect.

EDP España

In Spain, Energy Efficiency activities have been carried out since 2010 by the Energy Services Company. The aim of this unit is to develop and coordinate the necessary mechanisms to achieve an appropriate positioning of the energy services business, allowing the Group to expand its commercial offer. Promotion of Energy Efficiency is namely encouraged through the website https://www.edpenergia.es/eficienciaenergetica/es/, which describes the activities undertaken by the Group and details the products and services offered by segments and technologies: optimisation and consumption management, facilities management, distributed generation and integrated energy solutions.

Based on the activities carried out throughout the year 2020, savings of 19.6 GWh have been achieved in customers, a figure that could reach 45.6 GWh if all the efficiency measures identified in the audits carried out were implemented.

These customer savings translate into 4.9 tons of CO2 avoided, a figure that could also rise to 12.6 tons if these measures were taken into account..

There are 30 photovoltaic projects with a capacity of approximately 14.1 MWp. Of these, 5 MWp have been put into operation and 3.6 MWp are under construction. The remaining (5.5 MWp) are in engineering/processing phase.

Outside the photovoltaic sector, the most relevant projects implemented in 2020 are as follows:

- DOY (DeSOX+ 3.9 MW simple cycle), currently under construction and due to be commissioned on March 21

- Solvay. Replacement of seven compressors and 4 dryers. In operation.

EDP Inovação

EDP Inovação is the key promoter for innovation within the EDP Group. It was established in 2007 with the objective of creating an autonomous entity responsible for internal innovation activities as well as fostering stronger links with the interpreneurial ecosystem.

EDP seeks to integrate in it's business new technologies, processes and products, as well as innovative business models, in order to enhance competitiveness and create value for stakeholders. EDP Inovação follows an Open Innovation philosophy that engages and promotes adoption both from within and without.

Among the innovation tools that EDP Inovação has establisghed to foster and interact with startups lie the startup engagement program (EDP Starter), the acceleration program (Starter Acceleration Program) and the venture capital fund (EDP Ventures). These act at different levels of startup's maturity in order to support them from inception to investment.

The Governance model for Innovation in the EDP Group is based on five strategic areas:

- **Client-focused Solutions**, addressing retail, and focusing on diversification, by channelling its innovation work towards a wider range of supply with innovative products and services and new business models and improved customer satisfaction and involvement. The solutions developed seek to transform EDP into an agile, customer-oriented company through intelligent pricing and aggregation systems, energy efficiency and increased electrification;

- **Smarter Grids**, focusing on the development of smart grid infrastructures and customer-focused applications and operations, to ensure that their central role in the energy system meets business needs. These new smart grids will have to address, in particular, energy efficiency improvement targets, with the growing integration of intermittent renewable sources, as well as the increasing penetration of electric vehicles and storage;

- **Cleaner Energy**, focusing on identifying and promoting the development of new energy generation methods through renewable sources or through reductions in greenhouse gas emissions and new technologies to improve the operations and efficiency of existing energy production assets;

- **Data Leap & AI**, a cross-cutting area, which seeks to leverage the latest developments in Information and Communication Technologies (IT) to accelerate innovation in all business areas. Its main focus is the use of new ICTs, such as Big Data, Cloud Computing, Advanced

Analytics and the Internet of Things and the identification of opportunities for operational optimization and business development through digital innovation and data use.

- **Energy Storage & Flexibility**, seeking to understand the rapid changes in energy storage & flexibility technologies and their application to energy systems. The challenges of intermittent power, microgeneration, electric mobility and increased customer training require technological solutions that increase the flexibility of electrical systems in which supply and demand must be constantly balanced. Storage & Flebility is therefore a key tool in addressing these areas throughout the energy value chain.

For each of these strategic areas there is an Innovation Workgroup operating under the sponsorship of EDP Group's Executive Board.

SU Eletricidade

SU ELETRICIDADE, is the portuguese last resort supplier, and its main activities include the acquision of all the Special Regime generation (Renewables + Cogeneration) and in spot and future markets the real consumption of its customer's portfolio, as well as the supply of electricity to final customers, under regulated tariff.

Regarding the activity of buying the PRE production, as the producers reach the end of subsidized tariffs, SU ELECTRICIDADE, since 2020 has a new function: Market facilitator (DL76/2019) so while there are no alternative buyers for the producers, it is obliged to acquire the energy of PRE producers once in the market without subsidized tariffs under the conditions approved on the auctions already occurred and to be held in the future (already 1000MW for 2022 has been auctioned) and then sell it in the market or in systems services.

According to its business principles, the company assumes as a fundamental pillar of its relationship with the customer the delivery of an exemplary commercial service (in accordance with the standards set by the quality of service regulation) and the ability to advise the client about the efficient use of electric power as well as facilitating the transition to a cleaner and descentralized energy production and consumption communities, which will empower much more Demand Side Initiatives to be developed into the market.

Providing information about market liberalization in Portugal, which is expected to be concluded by the end 2025. The previously deadline of December 2020 was postponed in march 2020 , to ensure enough time for a smooth transition to liberalise players as the regulated tariff still has around 1 million customers (5% of the market) being served by regulated tarifs will be maintained as a business commitment in alignment with the objective of a liberalized european energy market.

Through the presence and remote contact, EDP Serviço Universal will provide all sort of clarification about how to move to the liberalised market and where the customer can find information about the commercial players available in the market.

During 2020 the regulated company also changed its name and its brand to "SU ELETRICIDADE" and launched a new independent commercial system for final consumers and renewable sproducers as well as a set up of 18 independent shops, one in each of the 18

portuguese district, as a regulated imposition in order to increase the transparency of the distinction of EDP regulated and liberalized markets and its commercial companies.

Participation on the PPEC – National Program to promote Efficiency on Consumption (PPEC) Efciency

During 2020, SU ELETRICITY, with its long experience of participation since 2008, with managing tangible an intangible measures, still being reported as energy and C02 savings in the 7.1 in this report, participated in the public consultation of the new edition regulation lead by the Portuguese Energy Services Regulatory Authority (ERSE - www.erse.pt), and started to prepare its innovative and high impact measures to aplly in the coming tender, expected to be launched in late 2021.

In accordance to the EU Directive 2018/2001, from 11 december 2018, since then the concepts of renewable energy individual autocomsumpion and collective communities, allows them to produce, consume, storage, share and sell energy without increasing disproportional costs, and SU participated in the following iniatives and assumed new roles:

Solar Capacity Auctions

A first auction for the allocation of solar capacity was held in july 2019, in which there was a very high number of competitors. The total capacity of 1004 MW was allocated within the scope of the guaranteed remuneration.

Extensive work was been carried out to establish the model for the energy purchase contract. Procedures for the sale of energy on the market and the sharing of charges, including deviations from programming, were also approved.

The first photovoltaic plants awarded in the July auction are expected to be connected to the grid by the end of 2021.

The 2nd solar auction took place in 2020, with 12 lots being auctioned, with a total power of 700 MW. There were very significant discounts based on the tender's bidding basis. The photovoltaic plants are expected to be completed by mid 2024. Energy storage capacity has also been tendered, which competitors may or may not submit.

Market Aggregator

According to Decree-Law 76/2019, of June 3, the last resort supplier was assigned the role of market aggregator for power plants whose power is less than 1 MW. This set includes conventional plants, as well as production units for self-consumption.

The purchase price of energy is the hourly closing prices of the daily market, allocated to the Portuguese area of the Iberian Electricity Market.

A charge will be billed to the producers, which will include deviations from the schedule programming, the network access tariff and other charges.

Coming Prospects

Progressive use of solar energy, either through conventional power plants subject to auction, or through small production units or production units for self-consumption will be helded. It

will be a challenge for distribution networks to operate in an active way and for counting equipment to give added value to consumers.

The excess production of renewable energy and the development of new and dedicated renewable power plants may support the production of green hydrogen, taking advantage of good renewable resources of the country, promoting economic growth and reducing the country´s energy dependence.

With regard to wind farms, namely floating, the expansion will involve the sea and the implementation of off-shore power plants, of which there is already a prototype of 25 MVA.

3. CLIENT-FOCUSED PRODUCTS AND SERVICES

Throughout its value chain, EDP makes available a wide variety of Energy Services related to its electricity and gas activities, ranging from the ashes and gypsum resulted from the electricity generation, to the decentrilized solar solutions offered by the supply companies.

Energy services are classified into ten categories, which were established within the EDP Group by taking into account the comprehensive concept proposed and developed by Bertoldi & Rezessy of the European Commission (Energy Services Guide for the EDP Group):

1. Energy analysis and audits.
2. Project design and implementation.
3. Energy management.
4. Monitoring and evaluation of savings.
5. Maintenance and operation.
6. Property/facility management.
7. Energy and/or equipment supply).
8. Provision of service (space heating/cooling, lighting, etc.).
9. Integrated energy systems[1].
10. Other energy services.

The set of measures envisaged in the European Commission's policy framework "Energy Clean For All EUropean", in the downstream segment, retail and services, where Europe wants to strengthen customer protection, renewable energy penetration and energy efficiency targets and consequent reduction in emissions, are in total alignment with EDP's vision in the commercial business and business targets. Since 2009, EDP Comercial (EDPC) has been developing a strategy and enabling the company to leverage the energy transition, the technological change and acess in the energy retail market to develop and supply innovative offers of decentralized generation, distributed storage and electric mobility with increasingly scale in the retail market.

In terms of business alignment via KPI's, EDP Group has implemented sustainability indicators for all companies, areas and employees since 2017, which in case of EDPC enables the development and achievement of the DSM and EE strategy and targets. Specifically, in addition to energy efficiency revenues (10%) and customer satisfaction (10%), the company's KPI still has an indicator of corporate sustainability performance (5% weight) and all areas and employees define the most appropriate to its area of work, with the validation of the sustainability and corporate center, in order to ensure alignment with the main drivers of value creation in the medium term. Energy Efficiency – EDPC top material issue – results of its strategic exercise of sustainability materiality with the top management and first line directors, focusing EDPC as a development platform of innovative business models and development of attractive DSM and EE value propositions for retail customers.

[1] New category, introduced by the EDP Working Group, when services cover more than one category.

3. PRODUCTS AND SERVICES

In 2020, and despite the pandemic situation, the EDP Group generated around EUR 245 million revenues from energy efficiency products and services (up 56% vs. 2019) and invested 100.97 million euros, which represent 2.7% of EDP's gross CAPEX..

Some of these products and services are described in the following subchapters, by energy services category, and main improvements during 2020 are highlighted.

For each category, a brief description on the type of products and services covered is provided, based not only on the comprehensive concept proposed and developed by Bertoldi & Rezessy of the European Commission, but also on EDP's reality in terms of services provided throughtout its value chain (Energy Services Guide for the EDP Group).

3.1.1. Energy Analysis and Audits

The company acts as a consultant in energy rehabilitation, provides energy analyses for identification of actions with improved profitability to obtain the desired reduction in energy consumption.

3.1.1.1 Energy audits (Portugal | B2C and B2B segments; Spain and Brazil | B2B segment)

Energy audits are made available by EDPC both for B2C and B2B segments. In Spain and Brazil this services is done only for B2B customers. A remote auditing was launched to fasten penetration of this basic initial service. In Spain, following the publication of the Royal Decree 56/2016, a periodic conduct of energy audits in large companies was made mandatory. This has triggered the contracting of this type of services by EDP, resulting in 34 contracts to audit 546 installations that consume 408 GWhe and 79 GWht.

In 2018, Equipment Check-up was launched as an integral part of the Funciona service, with 10.813 check-ups being carried out since then. The Lighting auditing service was called Lighting Check-up, and 21.656 check-ups were performed with 39.157 lamps installed.

In 2020 the B2B segment delivered 280 Energy Audits to their customers in Portugal.

3.1.1.2 Energy certification (Portugal and Spain | B2C and B2B segments)

Energy certification are available for both B2C and B2B segments in Portugal and Spain, with EDP quality assurance, which is mandatory when buying/selling real estate.

In Portugal, EDP is the market reference since 2012, with over 110.000 Energy Certificates issued to date.

A gas certification service, aiming at facilitating gas contracting and subsequent promotion of the dual offer (electricity + gas) is also provided by EDP. In 2020, edp sold around 200 B2B Gas certificates in Portugal.

3.1.1.3 Improvement in power quality (Spain | B2B segment)

EDP identifies energy supply anomalies and alternatives to a better service supply, adjusting it to the requirements of the productive processes.

Also, EDP acts as a legal advisor to occurrences that affect the quality of supply.

3.1.2. Project Design and Implementation

This category includes the design of a project including demand management measures as a priority. Energy needs are covered by more efficient energy supply / equipment whenever economically feasible.

3.1.2.1 Efficienct Lighting (Portugal and Spain | B2B Segment)

EDP Comercial has developed an efficient lighting offer for B2B customers that guarantees companies the reduction of their costs, ensuring the maintenance of the luminous comfort levels of the installations.

Through the Save to Compete new platform, now it's possible for the client to simulate the annual redution potencial of each business electricity installation and choose between two different options: retrofit or replacement. Both solutions use more efficient and longer lifespan technologies, such as LEDs.

3.1.2.2 Advisory Energy Service (Portugal and Spain | B2B segment)

EDP acts as an energy advisor, allowing industrial and commercials customers to have a more rational use of energy, minimizing energy costs.

An on-site study is performed to understand the processes' requirements and to maximize fuel use efficiency.

Improving areas such as lighting, motors and variable speed drivers, climatization and heating and cooling processes are identified.

A detailed report is developed regarding the actual situation and the proposed measures. Assistance on measure implementation is provided.

In Spain, during 2018, the Customized Projects area analyzed 115 opportunities, for an approximate amount of 30 M€, being awarded 12 Projects for a total amount of 10.3 M€. Many of the open opportunities are related to electricity self-consumption projects due essentially to the regulatory change that took place in the last quarter of 2018.

In Portugal, during 2020, the Customized Projects area delivered 539 Projects for a total amount of 30.5 M€.

3.1.2.3 B.O.T (Portugal and Brazil | B2B segment)

This service (Build, Operate and Transfer) includes the design, operation and maintainance of measures to achieve the final energy use defined in the energy contract.

3.1.3. Energy Management

The company acts as a consultant, providing energy demand management measures.

3.1.3.1 Energy management systems (Portugal, Spain and Brazil| B2B Segment)

In Portugal, there is a regulatory framework, the SGCIE (Sistemas de Gestão dos Consumos Intensivos de Energia - Intensive Energy Consumption Management System), that aims to certify and promote energy efficiency in the industry segment. This framework sets a compulsory certification for installations with consumption equal or higher than 500 tep/year. The "Gestão de Consumo" (an energy management system) is an energy service developed in-house that aims to simplify energy management for Industry and Commerce/Services sectors. Two innovative packs are available covering a set of services that simplifies regulatory, administrative and operational requirements on energy management for customers. Companies may obtain online and in real time their electricity, gas and water consumption, perform historic analysis, consumption trends and benchmark analysis (https://gestaoconsumos.edp.pt/#login). This programme proposes 3 levels of services:

- **Light:** innovative, low cost service including electricity consumption (main electric meter);
- **Standard:** innovative service performing real time analysis of consumptions (electricity, gas, water and others), aiming at controlling, analysing, predicting and comparing partial inter-site consumptions within the company and carrying out national/international benchmarks;
- **Premium:** Similar to the standard service, but customized to the client's business, with detailed models of analysis and advanced forecast of consumption, tariff simulation and personalised alerts in real time.

During 2020 this service was contratted by 146 new customers in Portugal for a total amount of 181 k€.

An equivalent system is available in Brazil - SGE (Sistema de Gestão Energética – Energy Management (GE) System: control of the entire energy consumption (electricity, gas, water and others) aimed at reducing energy losses).

In Spain, a similar service is provided for the corporate and large customers segment – ACTIR platform. This service gives access to up-to-date information about customers contracts and was complemented in 2015 with "Óptima +". This service facilitates the energy management of the companies, through a system that allows the monitoring and supervision of consumption in real-time, receiving immediate consumption warnings for both active and reactive power.

Also in Spain, the Building service is a service focused on providing integral energy solutions for buildings in the tertiary sector, mainly Neighbourhood Communities. During 2018, a total of 569 bids were made, with 221 energy and services contracts between new contracts and renewals amounting to € 8.43 million. The portfolio managed by the area amounts to 413

installations. The installations, mainly centralised boiler rooms with a thermal power of 175 MW, consumed a total of approximately 199.1 GWh of natural gas during the year and provided heating and sanitary water services to more than 18,000 homes.

3.1.3.2 TRE (Portugal | B2B Segment)

EDP Comercial makes available an Operational Technician reponsible for the facilities (TRE - Técnico Responsável de Exploração), as well as for facilities well functioning and energy decision making. During 2020, 15 new customers used this service for a total amount of 16 k€.

3.1.4. Monitoring and evaluation of savings

The company acts as a consultant as part of an energy services contract.

3.1.5. Maintenance and Operation

The company acts as a consultant as part of an energy performance maintenance

3.1.5.1 Funciona (Portugal and Spain | B2C and B2B segments)

For the residential and business segments, EDP's B2C portfolio includes Funciona, a valle added service that provides technical assistance to the main kitchen appliances and urgent repairment services, contributing to the increase of the customers' safety , savings and comfort.

In 2019, in order to increase the penetration of value-added services in the energy portfolio, EDPC started to commercialize Funciona in a bundle of services named Packs Living EDP. These solution beyond the offer of technical assistance, brings also some other value-added services, such as 100% green energy, an health plan and advantages in exclusive partners, providing EDPC customers with a higher quality of life and more sustainable consumption habits.

Despite the challenges imposed by the COVID-19 context on the commercial performance of the sales channels, more than 220.000 sales of Packs Living were achieved in 2020, thus been possible to reach the annual portfolio objective. The new electrician and technology services that we included in the offer in 2020, also contributed the good results.

By the end of 2020, around 448.341 B2C customers were part of total Funciona portfolio, including Funciona Stand Alone and Packs Living customers. Additionally, around 12.082 B2B Funciona customers were part of the service by the end of 2020.

In Spain, EDP offers two modalities for small businesses, which include the revision and maintenance of air conditioning equipment and appliances (Funciona Luz and Funciona Clima).

It is expected that, by 2020, there will be about 1 million customers in the Iberian market using this service.

3.1.5.2 Integra (Spain |B2B segment)

Energy service developed to provide facilities maintenance and technical assistance to customers, available in two levels of services:

- **base**, that includes planned maintenance and access to online systems for real time control of electricity consumption;
- **premium**, that includes planned maintenance, technical assistance, access to electric generator if necessary and the online system for real time electric consumption control.

For EDP Comercial customers, this service can be paid in monthly instalments. In 2020, this maintenance service was provided to 88 customers..

3.1.5.3 RECS (Portugal | B2B Segment)

EDP offers an integrated solution for building certification under the Regulation on Energy Performance of Buildings (RECS - Regulamento de Desempenho Energético dos Edifícios).

In a first phase, an energy audit is conducted to identify improvement opportunities. The management of the HVAC systems is done in order to guarantee an efficient operation of the systems and to issue the energy certificate.

During 2020, this service was contratted by 228 new customers, with a total amount of 221k€.

3.1.6. Property/Facility Management

The company acts as a consultant, increasing the knowledge of end customers as owners/managers of facilities.

3.1.6.1 Facilities refurbishment (Portugal and Brazil | B2B Segment)

EDP conducts construction and refurbishment projects of electric or natural gas installations to adjust to customers' business needs.

3.1.7. Energy and/or Equipment Supply

The company provides power (green) under specific schemes and/or installs equipment and/or replaces obsolete equipment with more efficient devices.

3.1.7.1 PPEC (Portugal | B2C and B2B Segments)

EDP participates in the Plan for Promoting Efficiency in Electricity Consumption (PPEC) since 2007, promoted by the Portuguese Energy Services Regulatory Authority (ERSE - www.erse.pt). Launched every two years, PPEC is a voluntary project based on a national tender in which all electricity related entities may participate, encouraging the implementation of measures for the adoption of more efficient habits and equipment by the different

segments - residential, commercial and services, industry and agriculture. The programme considers either tangible measures (e.g. variable speed drivers, high efficiency motors, CFL and LED bulbs, etc.) or intangible ones (e.g., awareness of good practice in energy use, education projects in schools, etc.). EDP is participating actively in PPEC through EDP Comercial, E-REDES and SU Eletricidade.

In 2020 there was no tender for this biennial program. Nevertheless, a number of tangible measures implemented in the past are still generating energy savings and avoiding CO2 emissions. By the end of 2020, the total cumulative savings of the measures carried out by EDP reached aroud 5 TWh of electricity consumption and avoided 1.8 MtCO2 emissions.

3.1.7.2 Heat pumps and water heating systems (Portugal and Spain | B2C and B2B segment)

In B2C segment, EDPC sells heat pumps, Intelligent Water Heaters, and Gas Instant Boilers which are the most efficient in the market. Part of this services were leveraged in PPEC initiatives as showed in Table 1. In 2020 EDPC sold and installed over 2.000 efficient water heating solutions. In EDPC website, detail information and a simulator are provided, where customers can assess the best solution for their specific needs and the potential generated savings.

The EDP Comercial, water heating integrated systems for companies focus on boilers, heat pumps and thermal solar systems.

All B2B solutions are composed by the following steps: design the system; replacement of the equipment's; optimization of the system use; and periodic maintenance.

3.1.7.3 Compressed air system (Portugal and Brazil | B2B Segment)

The optimization of compressed air systems includes integrated solutions in the several process phases: production, storage, treatment, distribution and use.

3.1.7.4 HVAC System (Portugal and Spain | B2C and B2B segments; Brazil | B2B segment)

Integrated solution for HVAC systems optimization, from the design to the system installation and maintenance.

In 2018, EDPC launched HVAC Systems for the B2C segment. In 2020 EDPC sold and installed over 670 systems in 478 clients. Funciona Service at the same time created an Add On to address the maintenance needs for the HVAC B2C systems.

HVAC systems may have a high impact on energy costs of companies, typically between 30 and 40% of the electrical consumption of commerce and services buildings. All B2B HVAC integrated solutions are composed by the following steps: design the system; replacement of the equipment's; optimization of the system use; and, periodic maintenance. These optimization systems allow savings until 30% of the energy consumption and ensure comfort and safety for building users.

3.1.7.5 High Efficient Motors ans Variable speed Drivers (Portugal, Espain and Brazil | B2B Segment)

About 77% of the industry's electricity consumption is used in electric motors. The motors are used in a wide range of applications, such as pumps, compressors and fans. The high percentage of electric power they consume makes them one of the main potentials for saving electricity. High-performance engines are thus an important technology in reducing power consumption. EDP Comercial installs more efficient motors, replacing obsolete ones.

3.1.7.6 Green Electricity (Portugal and Spain| B2C and B2B Segment)

EDP Group invests in the decarbonisation of electricity generation, through organic growth focused on renewable energies and electrification of consumption, promoting energy efficiency, smart grids, distributed production from renewable sources and electric mobility .

Electricity production has an impact on the environment according to the primary energy source used. The use of renewable energies has less environmental impacts when compared to the use of non-renewable energies.

By December 2020, EDP had 226.040 B2C electricity customers with an electricity offer 100% from renewable sources, and 1258 B2B customers, representing a total annual consumption of 425,2 GWh and 366 GWh respectively.

Regarding the B2C market, since 2019 EDP's green electricity customers increased 2,4 times, representing in 2020 around 5,7% of EDP's total residential clients. The boost in the green electricity portfolio was mainly due to the success of Packs Living EDP, a new value added services launched by the end of 2019, that offered to the clients the Funciona maintenance service bundled with a green electricity tariff.

In 2021, EDP plans to provide for free the green electricity attribute all the new electricity customers, which will mean that by 2025 52,3% of the total B2C customers are expected to have a green electricity tariff.

In Spain, more than 1 million customers were supplied with "green" electricity: all domestic customers in the liberalized B2C market and some of the B2B customers. Following the sale of the b2c business in Spain, green electricity will only be supplied to b2b customers in the future.

3.1.7.7 Home Appliances (Portugal, Spain and Brazil | B2C Segment)

As part of a broad energy efficiency strategy, EDPC addresses the equipments that are the most responsible for the home electric consumption. In 2018 EDPC started selling home appliances such as fridges, washing machines, dryers and dishwashers.

The main driver was the efficiency, all the equipments were carefully curated as highly efficient. EDPC allowed its costumers to pay for these equipments in 24 months with no interest, this empowered the clients to switch from old unifficient equipments to new and efficient ones. Since 2018 EDP Comercial sold more than 15000 home appliances.

3.1.7.8 Casa Elétrica EDP (Electric Home) (Portugal | B2C Segment)

The scale of butane and propane consumption is still a problem in Portugal. The pollutant potencial and the high cost to costumers are the main reasons to invest in other solutions least expensives and more sustainables. Given this scenario EDPC created a bundled product of electric cooking appliances and water heating equipments that can replace the butane or propane old equipments. All the electric installation adaption is bundled in the service.

This switch enables savings in energy consumption and a much smaller carbon footprint. Just like in the home appliances EDPC allow its costumers to pay these service on a monthly basis, up to 48 months with no interest.

This service was piloted in 2020 and the roll-out will be held in 2021 (https://www.edp.pt/particulares/servicos/casa-eletrica/).

3.1.7.9 EDP Solar Energy (Portugal, Spain and Brazil | B2C and B2B segments)

This service is detailed in chapter 3.2

3.1.7.10 Voltage Level Increase (Portugal, Spain and Brazil | B2B Segment)

The voltage level increase involves the installation of a voltage transformation station and its connection to the existing electric facility. EDP offers this service, so customers have access to appropriate electricity supply, in accordance to their energy needs. During 2020, this service was contratted by 5 new customers in Portugal with a total investment of 1.9M€.

3.1.7.11 Efficient Lighting (Portugal, Spain and Brazil | B2C and B2B Segment)

Efficient lighting solutions for small and medium-sized enterprises, allowing them to reduce costs and, at the same time, ensuring the maintenance of lighting comfort levels. Costumers may opt for the following two solutions: replacing light bulbs with more efficient ones and replacing the entire lighting system.

In December 2018, the PPEC initiative “Replace your light bulbs with LEDs” for the B2C segment was launched with an ATL campaign. In only one month over 100.000 lamps were sold.

During 2020, this service was provided to 7 new B2B customers with a total investment of 173 k€.

3.1.8. Provision of Service

The company guarantees the supply of an energy service that will generate lower cost to the customer.

3.1.8.1 Re:dy (Portugal and Spain | B2C segment)

This domestic electricity consumption monitoring and active management service was first launched in Portugal in 2013. Two years later, it was made available in the Spanish market. It allows customers to monitor, control and manage household consumption in real-time,

namely remotely turn on and off appliances, schedule tasks, automate the working and control the consumptions of electric appliances from anywhere, via an internet portal and smartphone (iOS and Android) – https://www.edp.pt/particulares/servicos/redy-en/.

The operation of edp re:dy is made possible by a set of hardware - re:dy Box, re:dy Plug, re:dy Meter, re:dy Switch and re:dy plug A/C - an application in the EDP servers where the service is configured, and a set of mobile applications for remote access.

Some of the energy efficiency features available are:

- Scenario programing according with the users needs habits and away periods.
- Individual equipment control and energy consumption analysis.
- Alert that helps the client to eliminate waste of energy.
- Advice on the best tariff and optimized contracted power.
- Reception of monthly personalized consumption analysis reports.
- Air conditioning remote IR control

The redy offer was reviewed, the interfaces of the mobile application and energy report reformulated and several communication initiatives were launched.The edp re: dy, in addition to being sold by itself, is offered to customers in bundle with solar energy, batteries and electric mobility solutions to control the energy production or consumption associated with the electric car. By the end of 2020, 16,926 re:dy devices were delievered to EDP customers.

3.1.8.2 Set of energy services for B2B segment

Power factor correction*	Thermal-Heat recovery	Variable speed drivers	Solar Hot water production	Public Lighting (LED)
Portugal, Spain and Brazil	Portugal	Portugal, Spain and Brazil	B2B segment in Brazil	B2B Portugal and Brazil

* inclusion of a new approach which consisted in the rental of the Battery to EDP Comercial that managed the consumption of the installation and guarantees the exemption of the reactive payment during the contract period.

3.1.9. Integrated Energy Services

The company acts as a consultant in areas related to energy supply and the installation of more efficient equipment and/or the rehabilitation/refurbishment of buildings, including the integration of all the above energy services categories.

3.1.9.1 Save to Compete (Portugal and Spain| B2C and B2B segment)

In 2017, following the needs of business decision makers and the new Marketing trends, EDP focused on the re-launch of *save to compete* program, now with an innovative self-service platform, in which each consumer can easily access to the company energy efficiency

opportunities. They can simulate and create their own proposal and even upload it already signed.

This is a new paradigm shift for the energy efficiency services sales in SMEs market. This program already saved 27 million euros to the companies and avoid 100 thousand tons of CO2 emissions.

In 2018, Save to Compete program launched two new products, Operational Technician responsible for the facilities (TRE - Técnico Responsável de Exploração) and Maintenance of Transformer Stations (MPT – Manutenção de Postos de Transformação).

The platform won the "Prémio 5 Estrelas" (Five Stars Award), regarding the category Energy Efficiency B2B in 2018 (https://premio.cinco-estrelas.pt/vencedor/edp-2019/edp-save2compete/).

3.1.9.2 Cuota Ahorro (Spain | B2B segment) and E:ficient (Brazil | B2B segment)

In line with the Save to Compete concept, through Cuota Ahorro in Spain and E:ficient in Brazil EDP makes a complete facilities' assesment, implements the energy efficiency projects and invests on customers' facilities. A part of the generated savigs is used to pay EDP's invesments.

3.1.9.3 Energy Efficiency Programme – PEE (Brazil | B2C and B2B segment)

Since May 2016, distributors have to allocate 0.4% of their net operational revenue to energy efficiency programs, on a yearly basis. Prior to that, the mandatory allocation percentage was 0.5%, according to the national regulatory entity requirements (ANEEL - National Agency for Electrical Energy). In 2020, the Company invested R$22.15 million in energy efficiency initiatives with Distribution customers, which led to energy savings of 5.05 GWh/year in São Paulo and 1.27 GWh/year in Espírito Santo, resulting in approximately 362 tCO2 of avoided emissions.

3.1.10. Other Energy Services

The company acts as a consultant in areas related to energy supply and the installation of more efficient equipment and/or rehabilitation/refurbishment of buildings not covered by the above categories.

3.2 Distributed Generation

3.2.1 Portugal

In 2020, EDP Comercial launched a new solar energy ATL campaign with the aim to increase the access to electricity production by self-consumption. Customers who subscribe to EDP's solar energy are also entitled to an exclusive energy tariff, that provides 10% discount on the electricity consumed from the grid at night, and to EDP's re:dy service, which allows

customers to monitor the production of their solar system, know how much they are saving and manage their home energy consumption.

2020 was also marked by the overcoming of the commercial objective, with approximately 15.000 installations (14.697). In addition to the current range of polycrystalline panels, “quality” range, EDPC launched a range of monocrystalline solar panels, “premium” range, a recent and more efficient technology.

EDP Solar Energy Solutions enable companies to produce and consume their own electricity and reduce bills. Solar Energy is captured by a set of photovoltaic panels that transform it into energy power. When there is extreme production, it is sold to the grid.

EDP Comercial makes available to its B2B customers in Portugal different payment methods. In 2020, EDP C installed 353 solar plants, with a total amount of 40.9 M€.

3.2.2 Spain

In 2020, the crisis caused by COVID19 has had a significant impact on all sectors, including PV. Despite the pandemic, in 2020, according to UNEF, "596 MW of photovoltaic power were installed for self-consumption in Spain, an increase of 30% over last year. Domestic self-consumption has experienced unprecedented growth, reaching 19% of installed PV MWs. More and more families are opting for this cheaper and cleaner technology thanks to the elimination of administrative barriers, local incentives for installations and the savings achieved with the confinement measures". The Spanish market thus begins a path of development of residential self-consumption that other countries such as Germany, France, Italy or the United Kingdom began more than 5 years ago.

EDP Solar exemplifies the EDP Group's commitment to sustainability. In 2020, self-generated solar energy was brought to more than 1,000 homes and small businesses. With these installations alone, the EDP group has contributed to saving 1.8 GWh of thermal generation per year, equivalent to 0.4 tons of CO2 each year.

EDP Solar has worked hard to offer its customers, both residential and commercial, a value proposition focused on service quality, with individualized commercial and technical support throughout the process of purchasing, licensing, installation and operation of the photovoltaic plant. Similarly, and with the aim of bringing the benefits of solar energy closer to the public, EDP has reached important agreements with leading companies in the retail sector to facilitate access to information and the acquisition of highly efficient energy solutions for the home by individual customers.

Similarly, in 2020 EDP has collaborated with the multinational Orange in the implementation of solar self-consumption solutions in telephone stations distributed throughout the country, which has enabled the company that owns these communications antennas to save significantly on electricity costs and improve its quality of service by ensuring the operation of its communications network and avoiding risks in the event of possible power outages. This

is undoubtedly an important step towards emission neutrality and compliance with the decarbonization objectives set by Orange.

EDP SOLAR's commitment to sustainability and supporting the energy transition has gone hand in hand with our commitment to facilitate access to energy for the most disadvantaged through the figure of "Solar Neighborhoods". In 2020, in collaboration with ECODES and the Zaragoza City Council, we announced the creation of the first Solar Neighborhood in Spain, which will be operational in 2021. The "Solar Neighborhoods" are photovoltaic installations in a given space, both public and private, aimed at collective self-consumption using the network and in which neighbors and businesses located within a radius of 500 meters can participate. The photovoltaic installation will have a peak power of 100 kW, and will serve 200 participants (0.5 kWp per participant). Of these 200 participants, 10% will be households in vulnerable neighborhoods, which will participate with the same energy quota, but without paying any economic fee.

Also, in EDP in 2020 we have made an effort so that anyone who has a roof or available space can contribute their "grain of sand" to promote a more sustainable energy consumption in their environment. Therefore, during 2020 we have launched new products dedicated to those who want to make their business more sustainable (for example, franchise chains) or take advantage of the roofs and decks of their neighborhood communities and all types of buildings to generate clean energy. In many of these cases, EDP is also facilitating access to these formulas through a program of deferred payments or leasing modalities financed entirely with its own capital.

Innovation has undoubtedly been and continues to be one of the hallmarks of EDP SOLAR and a key element in ensuring customer empowerment when managing self-consumption facilities. EDP has a "Smart home" monitoring platform, with its own technology (RE:DY), which allows all its customers to control their energy from any location and see the surpluses generated, which will be compensated in their electricity bill.

In addition, with the aim of disseminating knowledge among the public about the advantages of photovoltaic energy, EDP has created the first community of solar energy ambassadors in Spain (www.edpsolarfriends.com). Through this program to promote solar energy, any person, whether or not they are an EDP customer, can sign up to promote this type of energy in their family, friends, etc. Their recommendation activity is rewarded with points that are redeemable within a wide range of references including sustainable products and the possibility of making contributions to various NGOs such as the Red Cross, Caritas or UNICEF among others.

The "Barrio Solar" concept

"Barrio Solar" is a social innovation project that includes a technical part such as the photovoltaic installations of collective self-consumption and a social part such as the model of citizen participation and the promotion of social cohesion of the neighborhood using energy as a dynamizer.

The photovoltaic installations are carried out in a space ceded by a private or public entity and are intended for collective self-consumption through the network and in which neighbors and businesses that are located within the proximity criteria established by Royal Decree 244/2019, among which is to be located at a distance of less than 500 meters from the generation facility, can participate.

To participate in the project, a service model is proposed in which participants pay a monthly fee instead of having to make an investment for the photovoltaic installation and without the need to change electricity marketer.

The modality of participation with a service model, instead of ownership, as well as the use of publicly owned roofs, constitutes one of the main innovations, since it allows the participation of households and businesses that are renting, and that if it were not for this service model, it would be unlikely that they would invest in a self-consumption installation. Additionally, in the event that participants have contracted other products with EDP, other self-consumption product models may be offered so that participants can opt for the one they consider to be of greatest interest.

The photovoltaic installations have a total peak power of 100 kW (50 + 50), and capacity to serve 200 participants (0.5 kWp per participant). Among these, 200 participants (10% will be households in vulnerable neighborhoods), which will participate with the same share of the energy generated, but without paying any economic fee. This is another of the pillars of the project's social innovation.

Both the model of participation by service and the incorporation of vulnerable participants free of charge are two aspects that together make Barrio Solar a pioneering and totally innovative initiative.

Another of the pillars of Barrio Solar's innovation is the participation and creation of a community to generate environmental awareness and energy culture in the neighborhood. To this end, associated with the installation, the "Barrio Solar Office" will be created to promote awareness-raising, training and advisory activities aimed at neighbors on aspects related to solar energy, energy culture and environmental awareness.

3.2.3 Brasil

Focused on meeting the growing demand for energy consumption in Brazil, EDP have been engaged in the search for new end customers in the non-regulated market, through large investments in distributed solar generation. With plants focused on selling energy quotas to small companies, the strategy provides cheaper and cleaner energy. The solar energy front has two business models:

Large Customers: For customers searching for predictability and guarantee that the source of the energy purchased is renewable, EDP offer the solution of self-production in large solar parks. In this segment, we have focused on long-term contracts, where we develop the plant for the customer and lease the plant for a pre-established period, with energy cost predictability over time. We are responsible for managing the plant, supplying the lack of

energy when the plant's volume is exceeded, selling the surplus on the market when the plant's production is greater than demand.

Retail: We offer the Location self-consumption solution, which aims to produce solar energy on the customer's own buildings, on roofs and in garages. In this case, the energy is generated and consumed at the same time. We also offer a remote self-consumption solution, for customers who do not have the physical space for selfproduction. In this case, we generate energy in areas within our concession area, which is injected into the grid and compensates for their Location consumption.

Despite the difficulties imposed by the pandemic, in 2020 we made important achievements in the B2B segment. The largest delivery was the construction of a photovoltaic plant in Porteirinha (MG) to serve the Banco do Brasil branches in the state. The plant has an installed capacity of 6.54 MWp and should avoid the emission of approximately 14,900 tCO2 in 25 years of operation. We also built plants to supply Johnson & Johnson, in São José dos Campos (SP), Brametal, in Linhares (ES), NGK, in Mogi das Cruzes (SP) and Tim and Claro, both in Taubaté (SP). Altogether, the plants have an installed capacity of 18.39 MWp, with the capacity to avoid, on average, the emission of approximately 1,460 tCO2 per year.

3.3 ELECTRIC MOBILITY

EDP committed, in a pioneering way, to promote electric mobility over the next few years. The objectives now outlined are in line with the conviction that combating climate change and decarbonizing the economy will involve greater penetration of renewables and the electrification of consumption, particularly in the transport, heating and cooling sectors.

Along with the strategic objectives of achieving more than 100% renewable installed capacity in 2030 and reducing its specific emissions of CO2 by 90% in 2030 vs. 2015 levels, we are actively contributing to accelerating the transition to sustainable mobility. EDP is now committed to achieving a 100% electric fleet (light-duty vehicles) by 2030, which will require a strong investment in the renewal of its car fleet. This transition, already started, will now be accelerated and will allow a 70% reduction of the CO2 emissions of the overall fleet, consisting of close to 4000 service vehicles.

3.3.1 EDP Comercial (PT)

EDP is committed to keep on developing new commercial offers and solutions that promote the electrification of transport, including electric vehicle charging infrastructures. For residential customers this solution includes:

- Supply of green electricity with premium tariffs, home tariff with 20% discount at night and EDP CEME tariff with 20% discount for public charging
- Supply and installation of renewed solutions for electric vehicles (EV) charging station for B2C and B2B:
    - For B2C clients, EDP Comercial offers 4 distinct solutions:

        - Premium Charger EDP - up to 22kW of charging power, with online charger management through EDP EV.Charge app.
        - Standard Charger EDP – up to 7,4kW of charging power, with dynamic smart charging which manages peak energy consumption between costumers home and the car.
        - Light Charger EDP – up to 22kW of charging power, a simple plug & charge solution with possibility to configure the charging power which best suits the home electric installation.
        - Plug-In EDP – up to 3,7kW of charging power, a safe outlet, suitable for Plug-In hybrid vehicles, electric motorcycles or 100% electric vehicles that travel few kilometers each day;
    - For B2B clients, the offer available on the Save to Compete platform has been updated with charging solutions suited to the real needs of business customers, both for proven access spaces and public access spaces, more specifically in 5 different products, with different levels of customization and also available as a service.
- A new integrated digital consumer experience through EDP EV.Charge app and portal, including all electric mobility use cases (home, work and public charging).
- A renewed website with relevant information to help customers overcome the initial barriers of this new paradigm of sustainable transportation and with a simulator to help costumers choose the best solution for their electric veichule accordingly with their mobility profile and their home electric installation. https://www.edp.pt/particulares/servicos/electric-mobility.

Moreover, for business customers, EDP makes available a simulator for the comparison of the total cost of ownership of 3 types of vehicles – 100% electric, plug-in hybrids and combustion models. This analysis allows customers to have a real perspective on their total fleet costs.

To advance on I&D and create the best possible offers we are also partnering with global organizations, municipalities and entities from other sectors, with innovative and potentially scalable pilots.

- We understand that EDP plays a central role in creating and streamlining mobility solutions, which is a central priority in EDP's strategic agenda, for three main reasons:
    i. Our customers now have electrical mobility needs and look to EDP as the natural partner to solve those same needs;
    ii. We believe that, in the long term, mobility will be a very important business growth vector;
    iii. We understand that it is a social responsibility for EDP to dynamize and bet on electric mobility, for the environmental benefits that it entails.
- In this sense, EDP is materializing a set of initiatives aiming at accelerating the development of new projects in this area:

i. EDP is actively involved in the deployment of public charging infrastructure in Portugal and Spain. In Portugal, until de end of 2020, EDP contacted over 700,382 charging points that will integrate MOBI.E network, located in the different cities of the country and recently inaugurated the 1st ultrafast charger (160kW). In Spain we already have 80 charging stations installed and have participated, together with the main charging infrastructure managers, in the European project CIRVE, which promotes the development of a network of forty fast recharging points along the main Spanish corridors.

ii. We are working in smart charging solutions that allows customers that live in condominiuns and shared garages to balance the available power between all the electric vehicles that want to charge at a given time.

iii. We strongly believe in the potential of this market, both in the B2C segment and in the B2B segment, for example in support of fleet electrification with integrated fleet solutions, charging infrastructure and power supply.

iv. Internally, we also want to be at the forefront of electrification, and so we have an internal commitment to different initiatives in this area, including:

- Commitment to have a 100% electric fleet by 2030;
- Development of new offers and commercial solutions that promote the energy transition;
- Accession to the EV100 initiative.

v. For EDP this is a global opportunity, so our ambition goes through both the markets where we already meet and new markets.

EDP is also actively engaged in several partnerships and initiatives to promote electric mobility:

- Strategic partnership with the Association of Users of Electric Vehicles (UVE) in the promotion of electric mobility in Portugal;
- Adhesion to ChargeUp Europe, an alliance that represents electric vehicle charging infrastructure companies. EDP was the first Portuguese company to join this group that aims to facilitate the creation of modern and quality charging infrastructures across the member-states, serving the needs of electric vehicle users, at European level;
- Active contribution to the development of the Corporate EV Adoption Guide of the World Business Council for Sustainable Development (WBCSD);
- EDP continued to promote “Portugal Mobi Summit”, the largest urban mobility event in Portugal for the third consecutive year, in partnership with the Global Media Group;
- Participation as speakers at national and international events, such as Eurelectric, Planetiers, Portugal Smartt Cities Summit, Portugal Digital Summit.
- Participating as a founding member of the Transport Decarbonization Alliance (TDA), which aims to bring together entities from the 3Cs (Countries, Cities / regions and Companies) as major drivers of sustainable, low carbon mobility, with a view to

accelerating the global transformation of the transport, towards a net-zero emissions mobility system before 2050 and therefore contribute to the Paris objectives.
- Within the World Business Council for Sustainable Development (WBCSD), on a multisector program addressing business solutions and guidelines to the Transforming Urban Mobility.

Moreover, ninety per cent of the growth of global fleet of passenger vehicles is set to take place in developing and transitional economies. Ensuring people and freight are mobile as efficiently and safely is an essential component of the energy transition.

And whilst advancing the access to sustainable energy agenda, SEforALL is also developing the nexus of energy and transport in the urban environment to support the design and development of a line of work that provides value and impact, that helps deliver multiple SDG benefits including human health, productivity, and economic development in fast-growing cities in developing countries.

- The centerpiece of the vehicle efficiency accelerator is a partnership of the International Energy Agency (IEA), United Nations Environment Program (UNEP), International Transport Forum of the OECD (ITF), International Council on Clean Transportation (ICCT), Institute for Transportation Studies at UC Davis, and the FIA Foundation, aiming at reducing emissions and doubling vehicle efficiency by 2050.
- Also, following inputs from key partners including Sustainable Mobility for All (World Bank); FIA Foundation; Islamic Development Bank; SLOCAT and BMZ, SEforALL will target the fast-urbanizing cities of Africa and Asia and the challenges and opportunities for providing energy efficient mass transport for those who are most exposed to polluted modes of transportation.

3.3.2 EDP Brasil

EDP Brasil aims to be a reference for electric vehicle charging in public spaces, especially along highways with fast charging, with higher power. We invest in and operate chargers installed at strategic points that have a large number of vehicles and allow connection with other chargers in a loop or corridor format. This expands the travel range of an electric vehicle user.

Throughout 2020, we expanded our operations with the implementation of new charging locations and the launch of the EDP EV.Charge Br app, which allows our customers to sign up and use EDP Brasil's public electroposts, improving their experience. We also strengthened the Operation & Maintenance work of the electroposts, focusing on maintaining a high availability rate of chargers and excellent support to users.

EDP Brasil currently has 20 public chargers: six fast-charging stations in ones being installed in the Rio-São Paulo corridor along Presidente Dutra Highway EDP (430-kilometre corridor linking Rio de Janeiro to São Paulo), in a partnership with BMW and Ipiranga, and the remaining in seven important cities that internally connect the state of Espírito Santo. We also have chargers in Guarulhos (SP) (in the city and at the Airport) and at the Santander Theater in São Paulo (SP).

For the next years, there is a great expansion plan for EDP Brasil's network of public charging poles, either in cities or highways. One of the main projects, in partnership with the automakers Audi, Porsche and Volkswagen, was named Plug&GO and aims to constitute the largest electric corridor with ultra-fast chargers in Latin America, with 30 locations connecting the city of São Paulo with the countryside and also with neighboring states. This project is part of ANEEL's Research & Development (R&D) program, and the first station has already been inaugurated in Caraguatatuba-SP, at Shopping Serramar. Each station will have 2 chargers, one for ultra-fast charging and the other for semi-fast charging, with total capacity to recharge up to 3 vehicles simultaneously.

Regarding private fleet electrification:

- Light Fleet: In the case of light fleets, we work with customized solutions for the supply of chargers and energy solutions in sale or rental arrangements, as well as working together with partners who sell electric vehicles, as in the case of JAC Motors. To further enhance our operations in this segment, in October we announced a partnership with the car rental company Unidas to enable the rental of electric vehicles by corporate clients and individuals. In the first phase of the initiative, Unidas made 100 vehicles available for rental and we acted as suppliers of a set of products and services, including customized electric chargers, installation and maintenance of this equipment, solar energy to serve the fleet, and a charging management platform.
- Heavy fleet: For heavy fleet, our business model provides for the creation of investment conditions in electric buses and trucks, via Special Purpose Companies (SPEs), commercial partnerships or consortiums with companies in the transportation sector. These formats enable us to invest and offer a number of solutions, including batteries, recharging infrastructure, and "as-a-service" projects. To better develop these offerings, in October, we launched the first electric bus for highway use in Brazil, in partnership with VIX Logística, WEG and CERTI. This project was also made possible through the Research & Development (R&D) strategic call, promoted by ANEEL in 2019.

Apart from the highlights in urban mobility and vehicle fleets, in November EDP Brasil and Embraer signed a partnership for the electric airplane research through EDP Smart, announcing a financial contribution for the acquisition of the energy storage and recharging technology solution of the demonstrator airplane using 100% electric propulsion technology, which uses an EMB-203 Ipanema as a test platform. The prototype that is already under development has its first flight scheduled for 2021.

The investment is part of the cooperation agreement that both companies signed to develop their knowledge on energy storage and battery recharging technologies for aviation – one of the project's main challenges. The partnership will allow investigating the applicability of high-voltage batteries for the electric propulsion system of a small aircraft, as well as evaluating their main operating characteristics, such as weight, efficiency and power quality, control and thermal management, charging cycling, discharging, and operational safety.

For the tests, a small single-engine airplane is being used as a demonstrator platform for primary evaluation of electrification technologies. The ground tests have been taking place at

Embraer's unit in Botucatu, São Paulo, in preparation for the first flight that will take place at Embraer's unit in Gavião Peixoto (SP).

3.3.3 E-REDES

In recent years, electric mobility has demonstrated a growing tendency both in Portugal and worldwide and will likely be maintained in the forthcoming years. To sustain this growth and promote electric mobility, legislative changes have been made in Portugal and in the EU.

Electric mobility represents, in a strategic point of view, a reinforcement on the role of the Distribution System Operator (DSO) and on the distribution grid itself. It is a new segment of demand in direct contrast with energy efficiency measures and autoconsumption.

In 2020, Portugal had around 20.000 new electric vehicle registrations, representing almost 15%. Company fleets assure close to 50% of the new registrations, causing a direct influence on market tendencies, having the chance to be pioneers on the sustainable development front.

EDP Group has the goal to reach 2030 with a 100% renewable fleet of light vehicles. Aligned with this goals, E-REDES has reached 13% of electrification on its light fleet and will likely reach 27% by 2022.

This fleet, naturally, comes with the necessity of charging points for electric vehicles. E-REDES has two coordinated initiatives to assure a strong and reliable network of electric charging points on its office buildings:

- Installment of 240 AC charging points by 2020, and 342 by the end of 2021;
- A well thought network of 50 kW fast chargers in 24 strategic locations.

Electric mobility also comes with a set of challenges for the DSO, such as the increase on peak demand, specially at low voltage level. Along with these difficulties comes new solutions, being smart charging the greatest asset on a more intelligent management of the grid. Smart Charging solutions have the possibility to increase the flexibility potential of the EV, through optimized charging profiles.

E-REDES has an ongoing smart charging pilot on its office buildings of São Sebastião in Setúbal. This building has a total of 20 charging points, controlled by an online smart charging platform from GreenFlux, a dynamic load balancing is implemented locally between the building consumption and the electric vehicle charging. This project will allow for the demonstration of smart charging benefits in terms of a smarter investment and future grid stability.

3.3.4 EDP Spain

In a context of activity standstill where the automotive sector has been one of the most affected, with a drop in passenger car sales of approximately 35% compared to 2019, electric vehicle registrations have practically doubled. In addition, the respective European and Spanish authorities have pointed to electric mobility and renewables as key vectors not only for sustainable development, as they have been doing for years, but also as generators of activity to get out of the crisis caused by COVID-19.

Thus, 2020 has been a year in which EDP has reinforced its commitment to electric mobility in Spain. Despite the sale of the B2C customer portfolio to Total, EDP will continue to market electric mobility and solar self-consumption solutions to B2C customers, making clear its intention to be a benchmark player in the "new downstream", something that also reinforces the commitment to sustainable development objectives.

To crystallize this ambition, during 2020 a broad strategic reflection has taken place internally on the place EDP wants to occupy in electric mobility, what products it can offer to occupy this place and what resources it needs to be able to do so adequately. All this has resulted in a business plan for the next 5 years (2021-2025) that will be approved at the end of 2020.

This business plan aims to provide electric mobility solutions to both private customers, whether in their homes or on public roads, and business customers.

In relation to private customers, EDP has recently (on December 1) launched MiVē. MiVē is a product completely configurable by the customer, through a calculator, and in which all the needs of an electric vehicle user are covered in a single fixed monthly fee: charging at home, including the charger, its installation and energy; charging outside the home, at the public charging points of MOVE ON, EDP's public charging app; and other additional services, which cover unforeseen events that a vehicle user may have on the road, the loan of a replacement car or the transfer of the vehicle to the vacation spot.

In the business segment, EDP is finalizing the implementation of a configurator on the Save to Compete platform that will make it easier for managers to prepare proposals to their customers, and which will be operational by the end of 2020 or early 2021. As a novelty, EDP offers, to those customers who so wish, the possibility of having their recharging points managed through MOVE ON. In this way, the business customer decides the conditions of access to its recharging points (users, prices, etc.), EDP carries out the corresponding management and subsequently returns the income generated to the business customer. The company thus obtains a potential new revenue stream.

And all this without stopping the activity in 2020. Throughout the year, EDP has increased the number of sales and customers in all segments, with special emphasis on public charging through MOVE ON. The year 2020 will end with more than 2,000 registered users and approximately 170 MWh charged, equivalent to about 850,000 km and about 127 tons of CO2 saved.

These recharges have taken place at the more than 280 public recharging points that EDP currently has accessible through the app, approximately double the number at the end of 2019. Part of these new recharging points have been put into operation thanks to the partnerships reached by EDP throughout the year. These alliances allow EDP to maintain its dominant position as a public charging operator in northern Spain but, above all, to expand EDP's public charging network throughout the country.

In addition, EDP continues with its commitment to interoperability. This means that through the MOVE ON app, customers can charge not only at more than 200 EDP charging points, but also at those of other operators. Thus, thanks to this service, MOVE ON customers currently

have at their disposal more than 800 recharging points in 400 locations. In this way, EDP makes it easier for electric vehicle users to access the largest possible number of charging points through a single app.

In short, EDP reaffirms its commitment to always offer its customers, both individuals and businesses, the best solutions for the transition to electric mobility, an unstoppable transition for sustainable development.

3.4 SMART GRID PARADIGM

The traditional electrical system architecture is characterized by a unidirectional flow of energy from few centralized production sites to many users, which it is not suitable for a massive integration of distributed small/medium power renewable generation plants.

With the commitment to achieve 100% of renewable installed capacity by 2030 and the goal of reduce CO2 specific emissions by 90% in 2030 (vs. 2015), EDP is facing the challenge of balancing energy production and consumption in real time. Consequently, EDP is preparing to advance into a new power model, where electrical grids are expected to radically change their behavior, becoming “smarter”.

These new smart grids will have to cope with the integration of unpredictable and intermittent renewable sources, as well as the increasing penetration of electric vehicles and storage.

In the following sections we include some details of initiatives that EDP set-up.

3.4.1 InovCity/Inovgrid (Portugal)

InovGrid is an innovative project aiming at the implementation of a new set of technologies fostering the transition for a new operation paradigm of distribution networks. This approach will contribute for the improvement of service quality, losses reduction and the integration of new resources into distribution network. Besides, it is a key enabler for an increase in energy efficiency by customers, which is the most important value driver.

The first pilot was carried out in Évora between 2009 and 2012, with the installation of about 30,000 smart meters, enabling a more active behaviour of customers towards a reduction of energy consumption. In this project it was achieved a reduction of consumption of 3.9% in customers with smart meters when compared with a control group.

After having installed about 450.000 smart meters in 2016, 600.000 in 2017, 680.000 in 2018 and 690.000 in 2019, E-REDES installed more 685.000 smart meters in 2020 in several Portuguese municipalities. By the end of 2020, a total of almost 3.208.000 customers have smart meters installed.

For most of these customers, billing is based on actual consumption and they have access to detailed information that allows greater control over their consumption’s habits. In addition, it enhanced the capacity for implementation of energy efficiency services by market agents, with potential impact on their energy bills and in developing of new business models.

With the publication of the Smart Grids Services Regulation, network operators are now better able to develop the Smart Grids infrastructure in order to provide services to customers and market agents, with emphasis on the following: daily load curve; consumption alerts; daily readings; etc. At the end of 2020, more than one million customers had these services available.

E-REDES has an important contribution to make in the modernization and automation of the electric grid, essential factors for the energy transition. To stimulate this innovation effort and the implementation of new technologies, E-REDES launched the Inovgrid20-30 project. The Inovgrid20.30 is based on three cornerstones:

- Technology Roadmap for Energy Transition: Coordinate innovation and technological development efforts to support the energy transition;

- Smart Grids Accelerator: Accelerate the implementation of the roadmap through pilots with stakeholder involvement;

- Digital Energy Center: Integrate supervision and control of the distribution network into a single digital platform.

The implementation of other innovative systems in 2020, such as 4.426 DTC (distribution transformer controller), the conclusion of remote metering in 100% of secondary substations and in 100% remote of 75% public lighting circuits, contribute respectively for the improvement of network supervision, the reducing of technical and commercial losses and the improvement of service provided to municipalities, giving them more information and performance tools for improving energy efficiency.

Between 2018 and 2020, E-REDES led the InteGrid project, financed by the EU and promoted a demonstration of smart grid, storage and system integration technologies with increasing share of renewables.

InteGrid vision was implemented, by bridging the gap between citizens and technology/ solution providers, expanding DSOs' role as active market facilitator and distribution system optimizer, building customer centric energy services, bringing customer to the core of the energy transition as the most important stakeholder and by last, but not least demonstrating flexibility as a key element when dealing with a high context of unpredictable connected resources from generation to customers' behaviour.

InteGrid ambitious challenge was tackled demonstrating how can the DSO be a business enabler under an high technical performance facing high challenge context. A core concept arises on the core of InteGrid concept: The Grid-Market Hub, a distribution grid market enabler concept, enabling innovative use cases and disruptive business models and interconnecting distribution grid stakeholders.

By last, InteGrid large scale, multi-country demonstration objective was achieved by running the twelve uses cases in Portugal, Sweden and Slovenia. In one hand, the demonstration of InteGrid use cases in real operational environment through the operation of the developed tools and concepts allowed to understand the potential of innovative business models for distribution grid stakeholders fostering the DSO role of market enabler, through a market enabling platform called grid-market hub. On the other hand, the technical developments

performed in InteGrid demonstrated that flexibility-based grid operation is a key towards energy transition, where distribution grid is then able to host more and more renewables and a higher degree of society electrification ensuring the same reliability, security, quality-of-service and cost-effectiveness!

A parallel and fundamental work was achieved in terms of cost-benefit analysis (CBA), scalability and replicability of InteGrid solution, as well as policy and regulation analysis where barriers were identified. The CBA work covered a mix of use cases across three demo countries, yielding predominantly positive results, with an important main finding related to the economic viability of smart grid solutions generally depending on various local or market-specific factors. In terms of replicability, InteGrid solutions were concluded as generally replicable, but more than strict conclusions, InteGrid SRA methodology defined how to a deeper SRA can be conducted based on each EU country specific framework.

InteGrid work on energy policy and regulation aimed to align EU directives and egislation with InteGrid developments and national regulation. The work covered the role of the DSO as market enabler and answered three main questions on the top of it: i) What regulation must be adapted so that DSO can use flexibility in distribution grid management?; ii) What must be re-designed to enable an effective provision of services from aggregators?; iii) What proper incentives are missing so that customer active participation can be leveraged?

3.4.2 *InovGrid (Spain)*

InovGrid is the innovative project that makes the electricity grid more intelligent. As relevant events and developments in the Inovgrid area in 2020, we can highlight the start of remote management of supply registrations, significantly reducing response times and without the need for a field visit.

In the same line of remote operations, the My Consumption website has enabled customers to consult instantaneous meter values, as well as the possibility of resetting the ICP in the event of tripping due to exceeding the contracted power in the supply.

LINK: Web Mis Consumos: https://misconsumos.eredesdistribucion.es/#/

In the area of mobility, the "SmartMeters" app has been put into production for the management and programming of smartmeters locally, allowing the digitalization of the information and thus guaranteeing the reliability of the data and its subsequent processing in the different systems.

Likewise, a personalized SMS warning system has been implemented to notify customers when there is going to be a supply interruption at their home or business. Previously it was available on the web, but now a free subscription is available for personal notification.

The Flash BT project for sensorization of the low-voltage network has been continued, which makes it possible to meet the challenges of electrification of the economy in an efficient manner.

With regard to the Mars Network project, the proof of concept has been completed, concluding that the application of graph and time series databases together with relational databases enables LV management in quasi-real time.

And in terms of data analytics, improvements have been achieved on the one hand in the forecasting and detection of faults in our distribution network, and on the other hand in the reduction of energy losses in the network and the fight against electricity fraud.

As an outstanding project, 'Flash BT' allows monitoring of the low voltage (LV) network, with a fast, accurate and real-time view of the network.

"Flash LV" consists of a system that allows to monitor this network quickly, accurately and in real time. With this system, the departments that manage low voltage can, among other things, anticipate possible failures, improve maintenance or enter new events in the central distribution office.

To develop 'Flash BT' it has been necessary to deploy new equipment in the network (sensors or advanced line supervisors), which are installed in the low-voltage switchboards of the medium to low-voltage transformer substations, while using data from the smart meters already deployed.

This project provides intelligence to the low-voltage network and opens up new possibilities for detailed planning. It makes it possible to detect faults and irregularities in real time by connecting the deployed equipment to the SCADA system. Thus, it is possible to detect possible overloads on the lines; over and under voltages; non-technical losses, both bridges made in the meters and anomalies or fraud due to direct connections; in addition to providing real-time support for fault resolution and improvements in the company's maintenance strategy.

With 'Flash BT', E-REDES is even more prepared for the transformation of the energy sector, mainly for the integration of self-consumption and electric vehicles. The company has proven that it is a system that allows the development of new grid management functionalities towards a horizon of flexibility and efficiency (integration of IoT sensors or sending of consignments to local markets, for example).

So far, the project has been implemented in more than 400 indoor transformation centers, representing more than 120,000 meters. Following the success of this project, the company has decided to continue the deployment of equipment and software development to expand the number of installations in service. The objective is to reach 25% of the indoor transformer stations in 5 years, which means having 1,000 sensorized stations (375,000 meters). The Inovgrid, Construction and Operation and Telecontrol teams, as well as EDP Spain's Innovation department, are participating in the development of the project.

With the purchase of Viesgo's distribution business, other projects with a clear impact on customers can be highlighted, such as the DYNELEC project, already in operation, which increases the integration of renewable energies in electricity grids thanks to the monitoring of weather conditions, providing consumers with a better quality of supply.

The management of 1,100 km of 132 kV network by means of 50 weather stations and more than 180 sensors for actual measurement of conductor temperature has drastically reduced the restrictions significantly. The dynamic operation technology for overhead power lines solves the problem of absorption of generated energy by allowing greater integration of

renewable energy and less need to create additional infrastructure, improving the environmental footprint of the activity.

Other grid digitization and automation projects include:

- Advanced predictive maintenance strategies that enable longer asset lifetimes, reducing maintenance costs and delaying the need for replacement. We currently have more than 11,250 assets integrated in predictive maintenance.
- MV Automation Plan, which contributes to improving the quality of supply received by our customers, improving response times to incidents and as a key efficiency lever. By the end of 2020, we had 1,169 automated points.
- Integration of the Low Voltage signals provided by the electronic meters with the network operation system, allowing us to have real-time information on the status of the LV network and providing operators with the capacity to consult the status of any electronic meter in the network.
- Pilot projects for new technologies that will contribute to further improve grid management: electric storage management, EV charging infrastructure, advanced communications for IoT, etc.

Finally, to improve the quality of supply, especially in rural areas, the energy storage pilot in the municipality of San Vicente del Monte (Valdáliga, Cantabria) stands out, whose main technical characteristics are 250 kVA of power and 232 kWh of energy. It is a lithium battery storage system and a converter where the system monitors the quality of the energy supplied by the grid so that, in the event of a breakdown or power failure, it sends an automatic warning to the control center, which starts the corresponding operation to remedy the incident. At the same time, the system automatically starts supplying these customers from the lithium batteries, thus guaranteeing continuity of supply until the grid is restored.

3.5 Energy Storage and Flexibility

This is one of the main strategic areas of innovation EDP is focused on. The following projects were or are being developed by EDP:

Energy Storage for residential sector (PT, ES)

Technical storage pilot solution testing with commercial batteries in residential settings to identify performance deviations against those reported by manufacturers and implement control strategies for batteries linked to photovoltaic panels.

Redox

Development of a 30 kW battery with Spanish technology, for commercial and industrial use, and testing in real an environment on the Asturias low voltage power grid.

V2G – Vehicle to Grid

Development of a demonstrator to test the V2G solution, acquire technological knowledge and assess the challenges and opportunities offered by V2G technologies. The V2G charger

is installed at EDP's headquarters and different use cases will be performed. The potential to use electric vehicles as a stationary vehicle to support renewable penetration and grid stability are key drivers.

Storage of MV Power in Évora

A pioneer project in Portugal, consisting of an electric power storage system, with the functions of a backup for the University of Évora and network management support, notably through its features of grid voltage control and loss reduction, contributing to improve its energy efficiency. An effort was made, through tests and implementation of added functionalities, to ease the adaptation of this project into other case studies of grid management support. An example is its integration on the H2020 SENSIBLE project.

Akkurate – Analytics in energy storage systemas (PT)

Development of a platform that allows the visualization of the operation data, as well as an analysis of the performance and main factors to reduce the capacity and longevity of the system.

Yotta Energy *(PT)*

Test and evaluation of a decentralized storage technology that makes installing decentralized storage systems much simpler.

Plug-n-play storage systems (PT)

Evaluation and testing of plug-and-play energy storage solutions, allowing to reduce the acquisition costs of these systems.

Flexible management of systems with thermal storage (PT)

Testing the use of decentralized thermal systems in order to optimize their use and increase their efficiency.

Storage in renewable plants (ES)

New methods for the design, planning and operation of storage systems based on Li-Ion batteries in renewable plants, considering degradation models.

Smart4RES

Development of methods and tools to optimize renewable production integrated into the market and when accompanied by energy storage systems

2nd life batteries (PT)

The project aims at evaluating the potential to re-use batteries from electric vehicles for stationary applications. Among the several project objectives, it is critical to analyse and validate its technical performance in different stationary use cases, its economical viability and understand the supply value chain. The project is using used car modules from Nissan Leaf and it is being tested at EDP's laboratories in Labelec.

Distributed Generation with Storage (BR)

A project carried out jointly with the Federal University of Santa Catarina (UFSC), Brazil, for the use of distributed urban generation with decentralized photovoltaic solar systems and short-term storage. The initiative also evaluates auxiliary services for grid stability and impacts, as well as enabling new business models through distributed solar generation.

3.6 OTHER INNOVATION PROJECTS

DOMINOES

H2020 Project aims to develop new demand response, aggregation, grid management and p2p trading services by designing, developing and validating a scalable local energy market solution in order to achieve energy efficiency to all stakeholders that participates in the local energy system. During the year of 2020 most effort was produced to prepared the three demos a DSO environment in Évora (Portugal), a VPP site distributed across bank branches in Portugal and a microgrid site in Lappeenranta (Finland).

EUniversal

H2020 Project, coordinated by E-REDES, starded in February 2020, aims at enable the transformation of the energy system into a new multi-energy and multi-consumer concept guaranteeing a sustainable, secure and stable manner of electricity supply by bringing forward an universal, adaptable and modular and open and interoperable approach through a Universal Market Enabling Interface (UMEI) to interlink active system management with electricity markets and the provision of flexibility services, taking also into consideration the activation needs and the coordination requirements with both commercial parties and TSOs, promoting energy efficiency at local levels amoung all stakeholders of the energy systems.

Sharing Cities

H2020 project with four main objectives: to achieve scale in the European smart cities market, adopt a digital first approach, accelerate the market to understand, develop and trial business, investment and governance models and share and collaborate for society. Several iniciatives that promotes energy efficiency have been tested together with the Lisbon Municipality, Lisboa E-nova and other Portuguese Partners like: Electrical Byke engagement to all citizens that lives in Lisbon or visits Lisbon, Promotion of electrical mobility with acquisition of PCVEs in Campo Grande, Building Retrofiting in same old and historical Lisbon buildings and Parent and Children engagement and promotion of energy efficiency at their homes using gamification technology in order to show wich Family was the most efficiency (discovering that children could play an import role towards energy efficiency at their home), amoung other iniciatives.

InteGrid

H2020 leaded by E-REDES, ended in October 2020, demonstrated how DSOs may enable all stakeholders to actively participate in the energy market and distribution grid management

and develop and implement new business models, making use of new data management and consumer involvement approaches. HEMs, PVs, storage and intelligent washing machines were installed in Valverde, Alcochete and Caldas da Rainha in order to promote local energy efficiency from consumers and to test energy system flexibility.

InterConnect

H2020 Project envisages to contribute for the democratization of efficient energy management, through a flexible and interoperable ecosystem where demand side flexibility can be soundly integrated with effective benefits to end-users. In order to pursue this objective, 7 large scale pilots in different countries (Greece, France, Portugal, Netherlands, Germany, Belgium and Italy will be engaged. The solutions developed will allow the digitalisation of homes, buildings and electric grids based on an Internet of Things (IoT) architecture by including digital technologies (Artificial Intelligence, Blockchain, Cloud and Big Data) based on open standards, such as SAREF, it will guarantee the interoperability between equipment, systems and privacy/cybersecurity of user data promoting Citizen empowerment in a Flexible, Efficient energy ecosystem.