White Paper

VOLT

INDEX

Business Plan

An initiative of:

Glue Digital & Sustainable Industries (G-Volt)

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1. Executive summary

G-Volt is a DAO Maker, a project that focuses on the creation of DAOs (Decentralized Autonomous Organization) that function as demand aggregators and allow small and medium-sized companies to access PPAs.

G-Volt groups purchases by large and medium-sized buyers from electro-intensive industries, in such a way that they increase both their negotiating capacity and the infrastructures to which they can have access, enabling PPAs for small grouped buyers and improving their positioning in daily energy auctions.

- They automate the entire flow of purchase and negotiation of energy contracts, creating an autonomous and decentralized system that allows a more efficient management of negotiation and purchase of energy.
- They improve purchasing by improving the ratios between contracted and consumed power, as well as the optimization of sections.
- Allowing the purchase and sale of energy surpluses to other DAOs, generating a new price layer.

2. Product

2.1 Introducing G-VOLT

G-Volt works in a complex way, but it seeks to be simple for the user by automating a large number of functions.

The process begins when the corporate power buyer signs up. This buyer will also have to enter the telemetry codes associated with their smart meters, which will allow the current consumption of the company to be measured. At the same time, the user identifies the contract (s) they have with energy marketers, so that these are reflected in their profile.

At that time the client can create their own DAO within our ecosystem, based on consumption and estimates of future demand we can give medium buyers access to grouped PPAs, generating a market of PPAs, where we unite consumers, generators of installations of renewable energies and financers, which generate the necessary liquidity in the system to be able to finance operations.

2.2 Syndicated purchase through DAOs

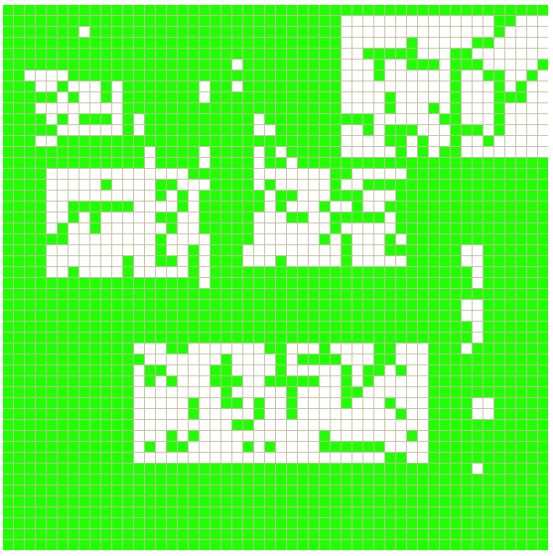
Every time a user creates a DAO, it generates what we call a demand profile that will become effective when the CDAO (DAO Cluster) enters the market. A demand profile is defined by:

- A consumed power.
- A series of consumptions by sections.
- A frequency of consumption.
- A consumption commitment, in which the user agrees to consume electricity in a period.
- A geographical positioning.
- A Target price per MWh.

From these KPIs, this DAO will try to group itself automatically with other DAOs, to generate 'Clusters of DAOs (CDAOs) that group demand, trying to generate a joint demand profile that is well constructed, so that on the one hand they generate a Better structured demand and above all a purchasing profile that may be interesting for electricity companies to want to invest in a PPA.

Clusters DAO(CDAO)

The CDAOs are ephemeral organizations serving only to buy and distribute electric power, each functions as a grid and in themselves as an automatic and decentralized organization.



This grid has power slots associated with sections and hourly consumptions, which fill up, the CDAOs have what we call a *MinCap*, a minimum capitalization to go on the market, in case of not getting enough, it is resized generating a distribution more efficient.

The market will generate ***x*** CDAOs, and DAOs will join the CDAOs with which they have the highest affinity.
A CDAO also has a *MaxCap*, when it reaches its maximum capitalization, it is constituted as a closed CDAO, blocks the positions of the DAOs within it, also blocks payment obligations and goes out to themarket PPA, generating a time in which this CDAO remains open to receive offers.

2.3 Marketplace of PPAs

Once you are CDAOs are created the electric company comes into play. You are analyzing the CDAO data:

- A consumed power.
- A series of consumptions by sections.
- A frequency of consumption.
- A consumption commitment, in which the user agrees to consume electricity.
- A geographic positioning

Presents an outline of the supply proposal in the form of a PPA project, this proposal must comply with the minimum anatomy within our smart contract for PPAs.

In this proposal, there will basically be a price proposal where several electricity companies can compete for a CDAO, giving different prices, the one that is closest to the target price will become the winner of this CDAO.

Once the PPA is formed, it goes to the financing part. The electricity company will have to put in its proposal if it needs financing for the operation and, if so, what amount of investment is necessary.

2.4 Financing of PPAs

Once the PPA is formed, it goes to the financing part.

Each PPA will have an execution period with associated costs, from which benefits will be assumed. With the created PPA, it enters the financing market.

G-Bonds: As we launch PPAs, G-Volt will launch bonds to cover these investments. These bonds will be launched in initial bond offerings each time a project requires financing. Each PPA has an associated bonus. These bonds can be bought and sold on a secondary market and have a maturity date from which they begin to generate interest and principal to their bearers, which come from the contributions of electricity consumers, these tokens are depleted when they return interest and principal to its holders.

Anatomy of a G-Bond

A G-Bond is an ERC-20 token that is associated with the portfolio of the investor who owns it. Each G-Bond consists of:

1. ***Name***: gives name to the group of G-Bonds to which it belongs.
2. ***Creation***timestamp: That marks the time when this bonus is created.
3. ***First IBO Timestamp***: This time marks the time when this bond goes to market.
4. ***Initial price***: Indicates the price (in euros or US dollars) at which it went on sale.
5. ***Fixed interest***: Here the interest rate at which the bond is issued is marked.

6. ***Interest payment period***: The term in which this bond generates interest is shown here. This calendar works like an oracle that tells the PPA's smart contract when it has to distribute interest to this G-Bond.
7. ***Associated PPA***: Here you mark the PPA to which this bonus is associated.
8. ***Owner***: The portfolio to which this bond belongs is marked here.

G-Synthetic:

The second option to finance projects is the creation of synthetic bonds. A synthetic bond takes all the PPAs and generates with them a compound bond, similar to the previous ones but that expresses the interests of all the PPAs in which this formula is required.

The interesting thing about synthetics is that they can be sold as a unit asset, which solves the problem of liquidity in the market, any owner of a G-Bond can exchange it for G-Synthetic at any time, adding this G-Bond to the pool and being able to go to a unit market.

A G-Synthetic gives a daily interest that expresses the total of the PPAs system'sjust for owning the bond, and that is quoted at a free price in different markets, also being an ERC-20 Token.

2.5 Anatomy of an automatic PPA

The European Federation of Energy(MarketersEFET) has contractual models for PPAs. Thus, we can distinguish, among others, the following parts within a PPA[1]:

- The first part refers to the individual terms, that is, the parties that are going to sign the contract:
    1. ***Seller***: Generator of electricity from renewable sources.
    2. ***Buyer***: CDAO, formula that will be used to group energy demand through a Cluster, as indicated above.
    3. ***Contract signing date***.

- An important aspect is the type of commercial agreement, where it must appear reflected if we are dealing with a **physical PPA** or a **financial PPA**, as well as what is the **period of electricity supply**. Especially relevant is the **COD** (Commercial Operation Date), the date that marks the start of the project, since it is when electricity begins to be supplied until the end of the agreed period.
- Regarding electricity, themust be reflected **agreed amount of energy to be supplied**: all the production of the infrastructure, part of it or a variable amount depending on the period in question.

[1] EFET (2020): "Individual Power Purchase Agreement for Corporates and Utilities", *European Federation of Energy Traders*: https://efet.org/Files/EFET%20Power%20Purchase%20Agreement%20(full%20version)%20-%20in%20cooperation%20with%20RE-Source.pdf

- **Price of electricity in € / MWh** specified in the contract and indicating the period in question, as well as the PPA modality (physical or financial).
- Various certificates that prove that you have the necessary permits to carry out the activity and be able to comply with the contract.
- General provisions and Infrastructure: this includes the delivery periods for electricity and certificates, data related to the type of infrastructure, capacity, site address, network operator, point of delivery if applicable, compensation, dispute resolution, miscellaneous , signature, ...
- **Financing**: amount, term, interest, installments, structure, conditions, clauses, ...

2.6 Adjustments over time

There are 4 scenarios that can alter the proper functioning of a PPA from the demand side:

- **A DAO is removed because it disappears**: in this case we look for another DAO from the Pool of DAOs that can be added to the PPA, even if it is virtualized.

- **A DAO reduces its consumption**: In that case we enter more DAOs in the CDAO, even if it is virtualizing the PPA.

- **A DAO increases its consumption**: In that case we can turn to another CDAO that needs to virtualize power, or buy the necessary energy in the free market, in what we call MetaDAOs. If this scenario can be anticipated in advance, we can create an ammend in the PPA's smart contract, which, generating a

probable future demand, ensures liquidity to the producer so that it can increase its renewable production, generating additional funding.

- Moreappear DAOs that do not fit in the PPA, in that case we generate a new CDAO, which will generate a new PPA independent of the previous one.

In turn, other scenarios may occur from part of the supply:

- The productivity of the plant is lower than expected. In this case, the producer must assume in a reasonable time the improvement of productivity, assuming the improvements as well as subtracting from his income the total power that has to be purchased in the free market.
- The productivity of the plant is higher than expected. In this case, the excess energy is sold to a trading company, or new slots are opened for new DAOs.
- The plant requires more maintenance over time. In this case, additional funding can be requested from the liquidity provider, also automatically.

2.7 Measurement of consumption and precision

One of the most important parts of the project has to do with the correct measurement of consumption.

G-Volt has integrated a consumption analysis and consumption prediction suite. From the data of the smart meters G-Volt stores the consumption data of the DAOs that are registered in the platform,

being able to make predictions about its future consumption before even being integrated into a PPA, based on these predictions about these KPIs: Consumed

- power
- Consumptions by sections
- Frequency of consumption In

addition to this, the user who creates the DAO has to show compliance with these predictions, to control what he should buy, the user can overwrite this prediction and establish more consumption if he believes that his consumption will be higher.

3. The exchange house and the issuance of tokens

To reduce friction in operations, we create a token, in parity with the euro (€), which DAOs buy using euros. These euros are stored and we only issue as many tokens as euros we have. These tokens are generated in 3 ways:

- Whenever an investor buys them from the exchange house.
- Whenever a DAO wants to pay a monthly consumption.
- Whenever a DAO is registered and has to pay the upfront fee.

The tokens in circulation are created with this procedure and are destroyed when they are exchanged for euros, either by generators or by investors. To generate security we generate a triple guarantee of solvency.

3.1 Reserves in the blockchain

The network should contain the current balance and the history of the account stored in the structure of the blockchain. Customers can access the data whenever they want.

3.2 Bank certificate

Data of the certified bank account (original document with the seal and stamp of the bank that includes the credit deposited in the escrow) linked to the assets of the blockchain. In this way, the bank can help guarantee solvency, and any user can compare the bank's data with that of the blockchain.

3.3 TLS Audit A TLS

audit will be used to provide cryptographic proof of the currency in escrow whenever requested by the customer. It consists of a set of autonomous auditing techniques that track and record business activity.[2]

This service allows a client to provide evidence to an external auditor about certain web traffic that occurred between him and a server. The evidence is irrefutable as long as the auditor trusts the server's public key.

The sequence of steps can be summarized as follows: the auditor retains some of the secret data of the auditee (acting as a client), so that the auditee cannot manufacture traffic from the server (since at the time of making his request, he does not have the server Mac write secret). Once

[2] Xia, Bingqing & Ji, Dongyao & Yao, Gang. (2017). Enhanced TLS Handshake Authentication with Blockchain and Smart Contract (Short Paper). 56-66. 10.1007/978-3-319-64200-0_4.

the auditee has committed to the encrypted content of the server's response to their request, the auditor can provide the auditee with the secret data necessary to build the server's mac write secret. The auditee can then safely complete the decryption and authentication steps of the TLS protocol, as they currently have the full master secret. In this way, the auditee maintains the full TLS security model, although it was prevented from creating a fake version of the post-handshake traffic from the server, something you can always do if you have the full master secret beforehand.

4. PaymentsPayment

4.1system

When our software generates a DAO and begins to measure consumption, it is asked for an upfront payment, which it has to buy in tokens to go on the market, this payment injects liquidity into the smart contract and generates reserves, acting as a guarantee and filling not only our smart contract but also the reservation system integrated within the CDAO. At the end of each monthly payment, the power generator creates an invoice, this invoice is turned against the CDAO, which in turn divides it among all the members of the CDAO, they must have enough G-Tokens in their wallets to be able to power the smart contract. These G-Tokens pass to the energy producer and, where appropriate, to the financer as monthly interest, who exchange them for euros in the clearing house.

4.2 Compensation and Karma system

On a daily basis, consumption peaks and unexpected consumption occur, this has a very negative impact on all the members of the system, making it less predictable. From the premise that all the members of the system dislike surprises, we created a system in which the CDAO itself has capital reserves, calculated in periods of 30 days based on previous deviations, which are used to cushion and distribute this volatility in the invoice.

In turn, each DAO generates karma every month, positive, if it is always compliant with the power it asks for and the power it consumes, and negative, if this does not happen. Every 30 days the DAOs with the worst Karma recalculate the price to pay, to adjust it to the consumer, which would normalize their Karma. In addition, each CDAO has acceptable Karma limits, not accepting DAOs that do not have a minimum score.

The reserves also tend to 0, in case they are not necessary, the smart contract will use the surplus to reduce the invoice of all the members of the DAO, rewarding those with the best Karma, so that they reduce their invoice even more. In this way, we reduce volatility throughout the system.

4.3 Exchange and clearing house

At the end of each billing cycle, the tokens go from the CDAOs portfolio to the portfolio of the producer and investors, at this time anyone with tokens in their portfolio can go to the exchange house to exchange these tokens for euros. Our exchange house always guarantees that you have sufficient liquidity.

4.4 Karma

Karma is the force generated by the actions of a person sustained in Hinduism and Buddhism to perpetuate reincarnation and in its ethical consequences to determine the nature of the person's next existence. People who are open to trusting others generally need proof that the odds are in their favor when they choose to trust a stranger.

In our Karma system it is a visual point tracking that monitors the activity of our clients.

We introduce a set of markers for each client that vary according to the fulfillment of their contract: if there is any conflict with their commercial obligations, the karma decreases; otherwise, if the negotiation is successful at all levels, the client earns Karma points. With this method we want to create a reliability metric that allows us to quantify the behavior of our customers.

As you can see, this system provides people with information about the past performance of employees. Each CDAO will have limits around the KARMA of the DAOS that it admits, so that these can have different qualities, and that we can group companies according to their degree of compliance, generating a more stable system.

4.5 Disputes

At any time a DAO can raise a dispute, in case the invoices that it issues or receives are understood as unfair, since smart contracts are deterministic and not revocable, we need a dispute system that allows them to be resolved fairly.

Within the volatility reserve there is an available amount of tokens for arbitration, when someone activates a dispute an amount is blocked, at that time a court of peers is automatically appointed, always odd, and between 1 and 7 DAOS, these people, who are also users, receive an amount to be done by judges in the system, these judges, who are peers verify the evidence they have and cast a vote in favor of one or the other, in turn establish a resolution to the contract, the resolution with more votes wins.

To choose these judges, we look for DAOs that are remote from the operation and that have sufficient positive karma and seniority, and from that set of DAOsrandomly wechoose the members of the jury. Although it is understood as a first line of action, surely more just and quicker than the legal one does not mean that disputes can be prosecuted later, arbitration consists of a first prejudicial measure.

We also accommodate insurers, which can insure, within our smart contracts, certain operations.

5. Smart Contracts

G-Volt works with integrated smart contracts, each of these contracts will contain the PPA bases, with at least the following fields

1. ***Interconnection authorization*** that details certain conditions that must be met for the Producer to continue the interconnected operation beyond of the initial trial period of the Project.
2. ***Billing*** period means the period of time on the first and last day of each consecutive month.
3. ***"Capacity rate"*** means the amount expressed in euros per kilowatt per month (€ / KW / m) that the DAO will pay to the Producer.
4. ***Commercial Date*** means the first day on which capacities and energy are delivered to the DAO.
5. ***Effective*** date is the date on which the smart contract is uploaded to the blockchain, it is expressed by a timestamp.
6. ***"Energy Rate"*** means the amount expressed in euros per megawatt hour (€ / MWh) that the DAO will pay the Producer for the measured energy.
7. ***Interconnection facilities*** means all electrical connections Facilities that must be installed or modified for the purpose of Interconnecting and delivering energy from the Project to the DAO, including, but not limited to, all measurement equipment, transmission and distribution lines and equipment , communications and telemetry equipment, protection devices and security equipment.
8. ***System peaks*** means the half hour interval during which the DAO consumes electricity.

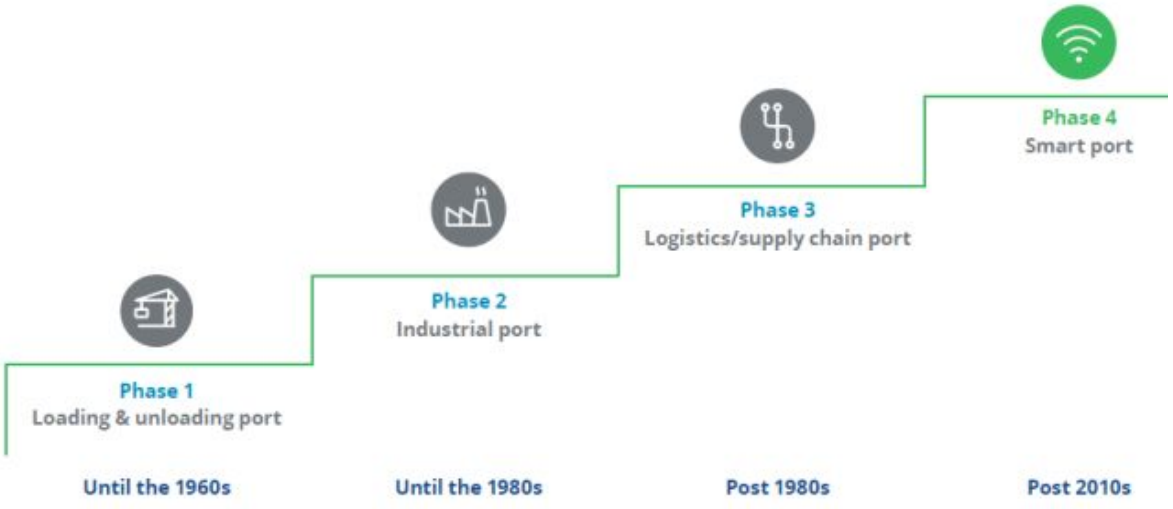
9. ***Operational Representative (s)*** means a person (or persons) designated by the DAO and the producer to effect changes to the smart contract.
10. ***Delivery Point (s)*** means the point (s) of interconnection between the Project and the DAO electrical system.
11. ***Nominal output*** means the design capacity of the project being projected.
12. ***Three-year rolling average monthly load factor, system-wide three-year*** weighted average.
13. ***Trial Period*** means the period of time between the Effective Date and the Business Date on which the project testing is performed.
14. ***Twelve-month weighted average monthly load factor of*** capacity and power deliveries to DAO.

6. MarketMarket

6.1research

Today it is difficult to imagine a world without digital media, they have brought with them a high degree of disruption in practically any industry. The energy sector is no exception. Digital transformation is also revolutionizing the way consumers access electricity.

Below, you can see an infographic detailing the different phases that have affected the competitiveness of port infrastructures throughout history, and we are currently at the time of Smart Ports:



Digital applications can play a central role in a large number of industrial operations, from logistics management to improving cargo activities. Although there have been changes in the sector, the implementation of technological applications is a gradual process.

Within the energy sector, in recent years the energy, have gained special relevance **PPAs**(**Power Purchase Agreements**), contractual agreements between buyers and sellers of long-term renewable. The PPAs agree on the amount of energy at a certain price that will be generated through a renewable source for a period of between 10 and 20 years, being designed for the long term.

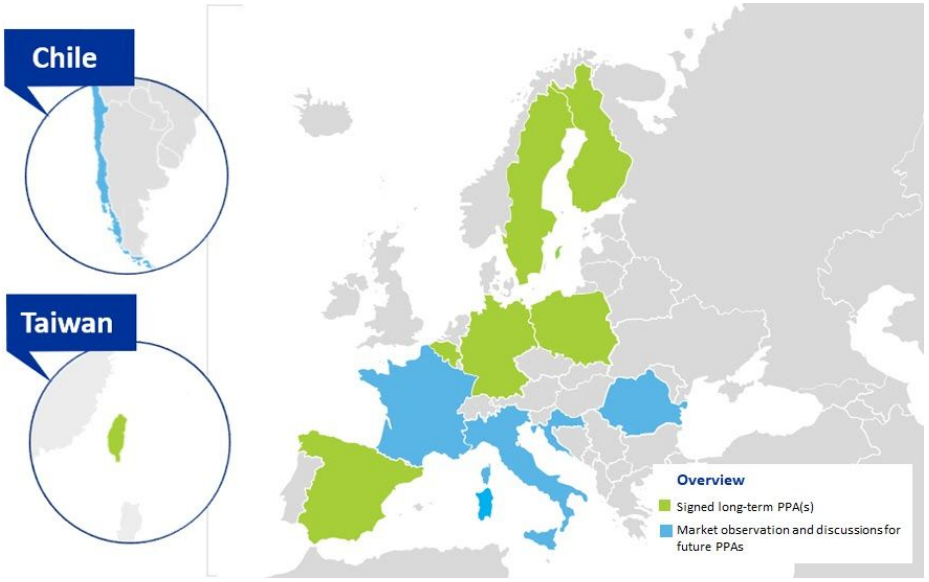
Due to the complexity of the infrastructure, developing a PPA most of the time requires financial backing. Usually, PPAs have a third party that provides financing (bank, fund, ...) via Project Finance / Structured Finance structures. Precisely, a PPA provides the financing entities of the operation with a certain level of confidence, by collecting the payment commitment by the buyer of a fixed price per MWh during the term of the contract for the electricity generated by the renewable asset. Likewise, entities must

also be aware if the credit profile of the utility that develops the project is adequate, taking into account that the project is long-term. In other words, the project's flow generation must be strong enough to be 'bankable'.

In financial jargon, the date on which the renewable installation begins to produce energy is known as Commercial Operation Date (COD), indicating the start of the purchase process by the offtaker.

PPAs act as a guarantee that the project will provide a return on invested capital upon completion, reducing cash flow uncertainty. For buyers it may be interesting to use this formula by reducing volatility in a sector with high volatility in energy prices, with the PPA it is agreed to sell a certain amount of MWh of renewable energy to a buyer for a price set in the contract.

Under these lines, we can see an infographic with the countries that have already developed or plan to develop PPAs, Spain being among the select club that has currently developed these projects to promote energy efficiency:

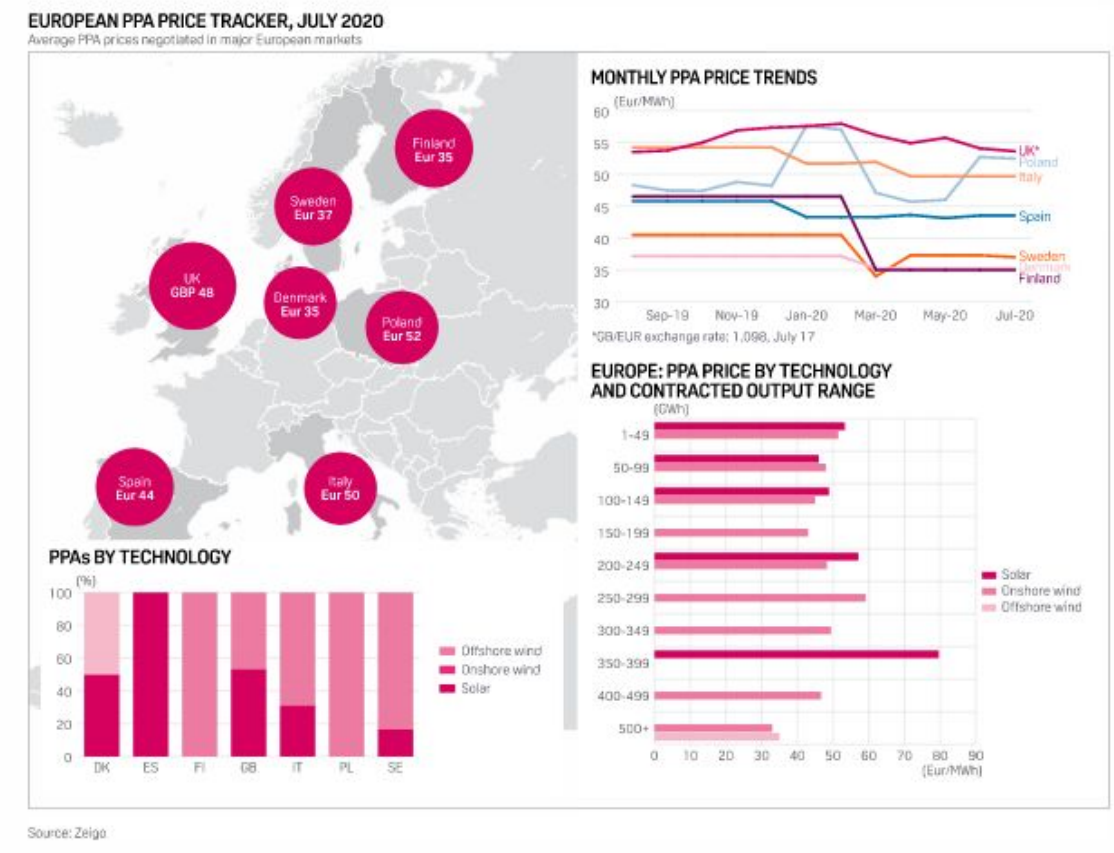


Among the benefits of joining the PPA, we can mention the significant reduction of risks, the promotion of renewable energy sources from which the company itself can benefit by following a green strategy, the certainty of flows that allows better management of the finances of the promoters of the project.

Companies with high energy consumption such as Google, Apple, Nike, Sabic, ... have already embraced PPAs to reduce their carbon footprint by betting on clean energies at the same time that they improve their operational efficiency by reducing energy costs. Mention that electro-intensive industries should also consider establishing PPAs to improve their competitiveness.

According to S&P, based on data from Zeigo, the prices of PPAs in Europe managed to stabilize in the second quarter of 2020, despite the reduction in the establishment of new contracts due to the situation marked by Covid-19. However, Spain is one of the world's leading markets in the establishment of PPAs. Thus, the average price of PPAs has gone from € 39 / MWh in January this year to € 44 / MWh in July 2020, a sign of the excellent reception in the market of these energy efficiency formulas. In

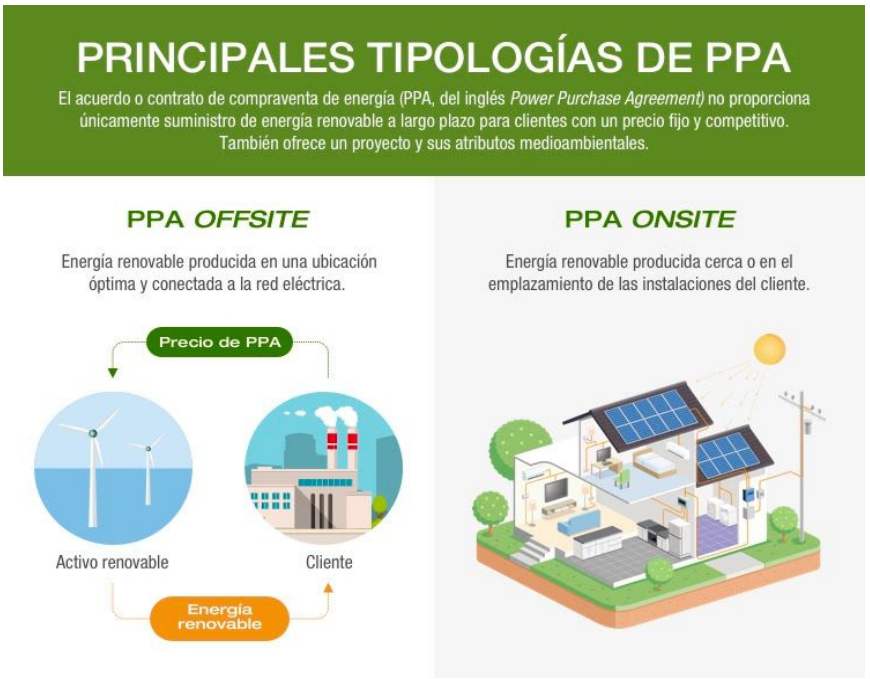
fact, our country is at the equator among the average prices achieved for PPAs in other neighboring countries: above the Scandinavian countries (Denmark € 35 / MWh, Finland € 35 / MWh, Sweden € 37 / MWh) , but also, below countries such as the United Kingdom with € 48 / MWh, Italy € 50 / MWh and Poland € 52 / MWh.



We can distinguish two types of PPA according to the energy injection point:

- **On-site PPA**: from a renewable installation (photovoltaic solar) mounted ad hoc in the client's complex and connected to its internal network. When the on-site PPA ends, the energy generated becomes free, the facility becomes the property of the customer.

- **Off-site PPA**: associated with a renewable installation (wind, solar photovoltaic) connected to the transmission grid of the electrical system to distribute energy to the point of consumption.



Also, depending on the energy delivery point, the PPAs can be:

- **Physical PPA**: the developer sells the renewable energy to an end customer through a marketer. At the end of the month, the client receives an invoice for 100% of their consumption, whether it comes from the renewable park under PPA, SPOT energy or closed energy in the forward market. Very common structure in Europe.

- **Financial, synthetic or virtual PPA**: The client closes the energy price directly with a renewable developer (PPA price) and contracts the electricity supply with the marketer of their choice. At the end of the month, the client will receive two invoices: one from the marketer resulting from his physical energy consumption and another from the developer with adjustments for differences

between the SPOT price and the agreed PPA. This form is more typical of the US and has a mechanism similar to that of a financial derivative.

- **PPA sleeved**: It may be the case that in a particular market the renewable developer does not have a marketer license and the client wants a physical PPA. In that case, it makes sense to reach an agreement with a local marketer so that it can transfer the PPA conditions to the end customer.

Lastly, the PPAs can also differ according to the form of energy delivery:

- **PPA "as generated"**: The customer consumes the gross generation that leaves the plant. In terms of price, it is the most competitive option. However, it is also the one that presents the most risks.

- **PPA "baseload"**: The most common option among customers, the developer is in charge of converting the gross generation of the renewable installation into a base load.

- **PPA "as consumed"**: The developer converts the gross generation into a curve aligned with the customer's consumption. It is common among non-expert consumers.

Recently, PPAs have been signed in Spain as the agreement between Telefónica and Acciona for 100 GWh renewable for 10 years in the work centers of the Spanish operator. 50 MW of solar energy have also been agreed between Statkraft and Sonnedix, as well as the alliance between Iberdrola and Vodafone for a 49 MW wind PPA. Regarding virtual PPAs, we can highlight the wind farm signed in May for 100 GWh between WPD and Ball Corporation. All this is clear proof that there is potential in our country for PPAs with the aim of increasing the efficiency of companies and betting on renewables.