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SOLARPLAZA

Future-proofing solar investments:

The rise of Power Purchase Agreements in Europe and their role in new markets

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Future-proofing solar investments

DWF and Solarplaza assess whether different approaches to structure, standardisation and risk associated with offtake arrangements can enhance the future of solar investments.

It is a great pleasure to introduce this report on off-take arrangements in Europe that has been co-developed by Solarplaza and DWF. During the “Making Solar Bankable” conference that took place in Amsterdam on February 7, 2020, a large number of industry experts from around the world came together to discuss the latest developments in the solar sector. The purpose of this conference was to learn from world-class keynote speakers and participate in interactive workshops that all relate to increasing the bankability of solar energy. Within the conference, DWF hosted a workshop on off-take arrangements in emerging markets.

Our workshop, along with the associated survey, was an undeniable opportunity to assess the opinions of a wide range of global experts and gain insight into

possible ways forward for off-take arrangements. The findings from our research are summarised in this report.

The workshop, led by DWF and Solarplaza and supported by speakers Martin Bart, CEO of ecoligo and Tinashe Makoni, senior counsel at SunFunder, focussed on legal, developer and financial perspectives across three roundtable discussions and involved over 80 participants. The discussions focussed on some key questions: What are the key characteristics and common pitfalls of different offtake structures? Can a standardised project structure and risk assessment approach lead to a higher level of funding? The survey had over 40 respondents, and a breakdown of their primary activity type can be found below (Graph 1).

Contact us to discuss your challenges

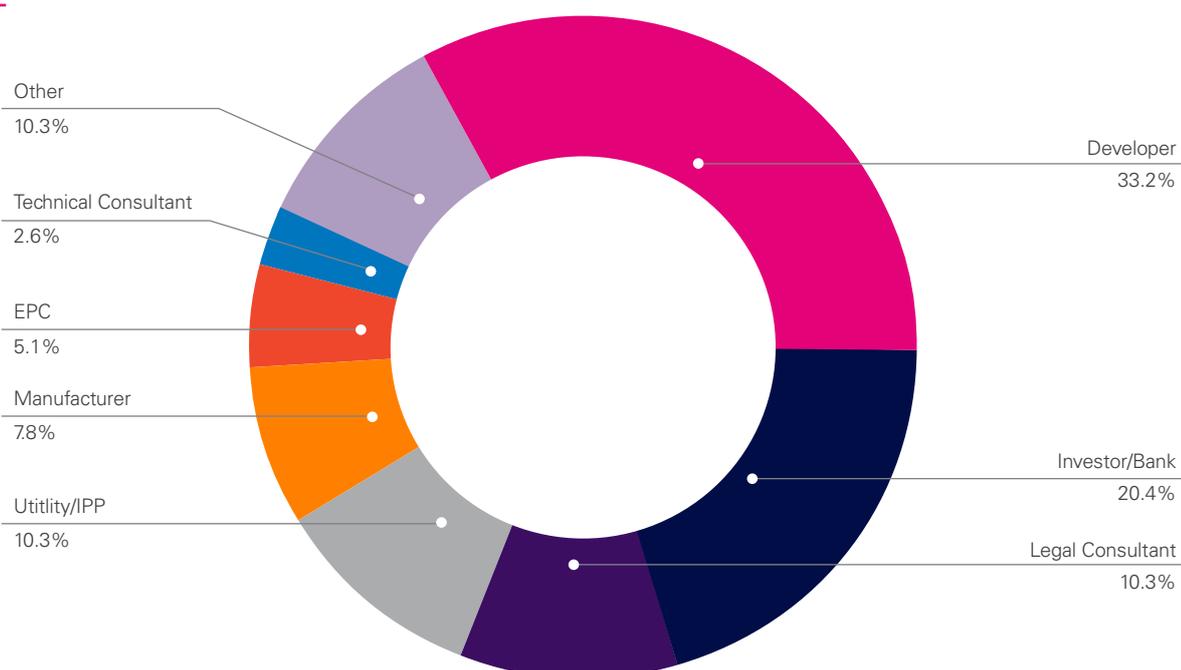


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Graph 1:
Respondents' Primary Activity Type





Structure

One of the instruments to facilitate the sale and purchase of electrical power is the Power Purchase Agreement (PPA). PPAs have recently been gaining in popularity in the development of the Renewable Energy Sources (RES) projects in the US, and increasingly, in some key European markets. PPAs are gaining traction in the photovoltaic market in particular.

Since there are different kinds of PPAs, which are usually adapted to the regulations of a given country, it is worth considering their structure, strengths and weaknesses. A PPA is a long-term electricity supply contract between a solar asset owner and a corporate power off-taker. Other than the length of contracts, each PPA specifies the point, dates and time of delivery, electricity volume and price, and penalties for non-compliance.

We distinguish between two main types of PPAs, the merchant and the corporate PPA. In a merchant PPA, the agreement is signed by a power producer and a turn out considerably higher than the fixed prices of corporate PPAs. However, as investors – and their financing banks – prefer to eliminate the risks associated with the variable wholesale electricity prices, corporate PPAs have gained momentum in most countries.

Corporate PPAs

Based on the European experience, one can refer to the EU's RES Directive (Directive (EU) 2018/2001 on the promotion of the use of energy from renewable sources), according to which a corporate PPA is an agreement whereby a natural or legal person agrees to purchase renewable electricity directly from an

electricity producer. Corporate PPAs can be structured in any way that reflects market or regulatory requirements, as well as the interests of the parties to the agreements. For this reason and considering the experience to date, corporate PPAs are generally broken down into two or even three subtypes. These are:

1. sleeved or physical PPAs;
2. synthetic or virtual PPAs or;
3. private wire PPAs.

1. A sleeved (physical) PPA (also referred to as “back to back” PPA) entails an agreement, in which the electricity output of a solar farm is delivered to the off-taker through an appointed local utility. Sleeved corporate PPAs are widely applied in the European market. The utility will enter into a PPA on mirrored commercial terms to buy the electricity from the producer and sell it to the off-taker. The name, sleeved PPA, refers to the role of utilities, that ‘sleeve’ the power from the asset owner to the corporate off-taker, for which service they receive a sleeving fee. In some markets, green certificates are also issued to the off-taker. The main drawbacks of these agreements are that they need a third party (utility) to be included in the contract, which brings a cost – the ‘sleeving fee’. However, the utility in return assumes some risks and market roles, which is beneficial for the asset owner as well as the final off-taker, as they can avoid associated burdens.

2. Synthetic (virtual) PPAs are more flexible, as the power producer and off-taker do not need to be connected to the same electricity infrastructure.

The parties agree on a fixed electricity price as well as the price for a green certificate (if applicable). The actual power generated by the producer is sold to a local electricity supplier at a wholesale price, then the difference between the agreed and wholesale prices is settled by the parties. When the wholesale price is higher than the fixed price of the PPA, it is the seller's responsibility to pay the difference to the off-taker, and the exact opposite happens when the wholesale electricity price is lower than the PPA price. The main advantage here is that, as a rule, a synthetic PPA may act as a financial hedge against volatile electricity prices. Synthetic corporate PPAs are prevalent in the US and UK markets.

3. A corporate PPA based on a direct line (private wire) is the most straightforward form of an on-site PPA where the generator and the customer use a private direct line connecting the generator's installation to the customer's business. No distribution or transmission network operators are involved in this model. Usually, an installation for the generation of electricity is located at, or nearby to, the consumer's assets and will usually only deliver electricity to this consumer which may be considered as one of the constraints in such agreements. On the other hand, the main advantage of this model is primarily savings on grid charges (which applies to both producer and off-taker since they are able to share those costs). Private Wire PPAs are used mostly in some developing countries, where the grid connection system can be unreliable or where the law does not allow the use of the state-owned grid connection system.

Future-proofing solar investments

PPAs: an international comparison

We have analysed examples from six countries, including the UK, Poland, Spain, Italy, France and Ireland and a significant increase in the popularity of PPAs was observed. As experience of countries from the European Union shows, the global trend of moving towards the renewable energy transition is not the only driver behind the increase of PPAs. We identified some common features which contribute to the development of these type of agreements across these countries.

In Poland, Italy and the UK, one common factor is the pursuit of a certain RES share in gross final energy consumption imposed on Member States by EU regulations, while PPAs are expected to contribute to achieve the goals set. Similarly, in Ireland, under the new Climate Action Plan 2019, the Irish Government has set a very ambitious target that 15% of Irish electricity demand (potentially up to 6TWh) will be met by renewable energy sources contracted under PPAs by 2030.

In addition, stable and predictable regulation also proves to be beneficial in this respect. As the example of France demonstrates, the current regulations are considered to be favourable to the development of such agreements and this may be confirmed by new regulations to be adopted in relation to the energy transition targets in France and the European Energy Transition 2030 project. The UK market is also quite attractive for PPAs precisely due to encouraging regulations. In Italy and Spain there is still scope for improvement in this regard. While Italian legislative bodies are currently working to implement appropriate regulations that would facilitate the conclusion of PPAs, the Spanish legislation must be subject to further development and updating. In Poland, further changes in the corporate PPA regulatory framework are needed in order to make it more attractive for energy-intensive off-takers.

In the majority of analysed countries, global businesses such as Microsoft, Facebook, Google and Amazon have shown an increasing interest in purchasing clean energy from power producers via corporate PPAs in order to meet their sustainability targets and reduce the costs of electricity bills in the long term. Critically, corporations can demonstrate their environmental commitments to customers and other stakeholders without having to pay the high upfront capital costs of project development.

From the developer side, corporate PPAs bring a number of economic benefits. For example, project developers can use tax credits to reduce the costs of their system. They can also decrease capital costs by having a guaranteed long-term off-taker. Beyond these economic benefits, long term corporate PPAs can strengthen the partnership and cooperation between solar developers and corporate off-takers. This, in turn, can bring about new market opportunities for the developer in market areas, where the corporation is already active.

PPAs in emerging markets

The reasons for the increasing popularity of corporate PPAs in emerging markets are very different from those in developed markets. In emerging markets such as Sub-Saharan Africa, there is limited access to energy. Even in areas where power connection is assured, the limited power production often leads to grid outages. In such areas, governments (most of the utilities are state-owned) cannot guarantee continuous power supply to businesses, and as a result, they rely heavily on self-produced power, which is mostly provided by diesel-fuelled generators.

A new option in these areas is the utilisation of corporate PPAs, which not only increases the reliability of power systems but also attracts private capital into the market. Bringing new capital to emerging markets is highly beneficial because the governments can reduce their spending on new power capacities and use their limited resources on the mitigation

of other environmental and social sustainability issues. From the developer side, corporate PPAs come with the potential of higher rates of return, but entering into new emerging markets can be challenging.

In general, emerging markets lack large off-takers, and therefore, the size of projects are smaller than in developed markets. This can reduce the attractiveness of emerging markets for investors. One of the reasons for that, as underlined by a founder company during our workshop, is that a "1MW deal takes as much time, effort and structuring as a 20 MW deal". The small size of the projects is also a huge challenge for C&I (Commercial and Industrial) companies. As one of the attendees of the workshop indicated, a common pitfall in structuring corporate off-take agreements in emerging markets is that, in general, they have "structures in their mind coming from large projects". C&I companies tend to establish SPVs (Special Purpose Vehicles) for large projects in mature markets. However, this act is financially unfavourable for smaller projects in the emerging markets, where we can see that "the structure is always facing the market reality of small single investments".

Participants in the workshop agreed that "as well as focusing on finance, structure needs to be country specific". Due to the fact that each country in emerging markets has its own regulation and requires different structuring. However, these countries have one thing in common in that financial issues affect them all. In this environment, C&I companies pay high energy tariffs while they do not have access to cheap finance and this causes a huge challenge to companies entering the market. Nevertheless, although using the usual structures for big projects is not possible, by structuring the corporate PPAs in a case-by-case basis in line with the actual country's regulations, it is possible to start fruitful solar businesses in areas where solar energy can contribute to closing the electricity access gap.

Future-proofing solar investments

Standardisation

The need to expedite certain processes and increase the efficiency of the solar value chain has grown as the sector has evolved, and this has increased the focus on standardising offtake arrangements. The current lack of standardised contracts generates a certain amount of uncertainty and reticence to pursue offtake arrangements, which effectively slows down business and increases costs. Equally, it should be appreciated that effective standardisation needs to allow for the different circumstances and contingencies related to the different needs each party will have when discussing a contract.

In Europe agreement standardisation is already taking place. An example of this is a corporate PPA model created by the European Federation of Energy Traders (EFET) in cooperation with RE-Source (a European platform for stakeholders representing the clean energy market). Although the template presents comprehensive solutions of a sample corporate PPA, parties can still continue to establish a contractual arrangement at their own discretion.

Benefits of standardisation

1. Increasing the power of finance

As one of our workshop participants stated, the reason for aligning the best practices of these contracts is that standardised offtake arrangements “can function as a powerful mechanism to increase the power of finance”. This is to say that a standardised contract provides banks and investors with more clarity on process of selling the power generated by solar plants. From the perspective of banks, more clarity is synonymous with more security and less risk. Seeing as the solar PV industry is still immature compared to other energy generation sectors, any mechanism that can help reduce this risk uncertainty is extremely beneficial, especially from a financiers’ perspective.

2. Decreasing legal transaction costs

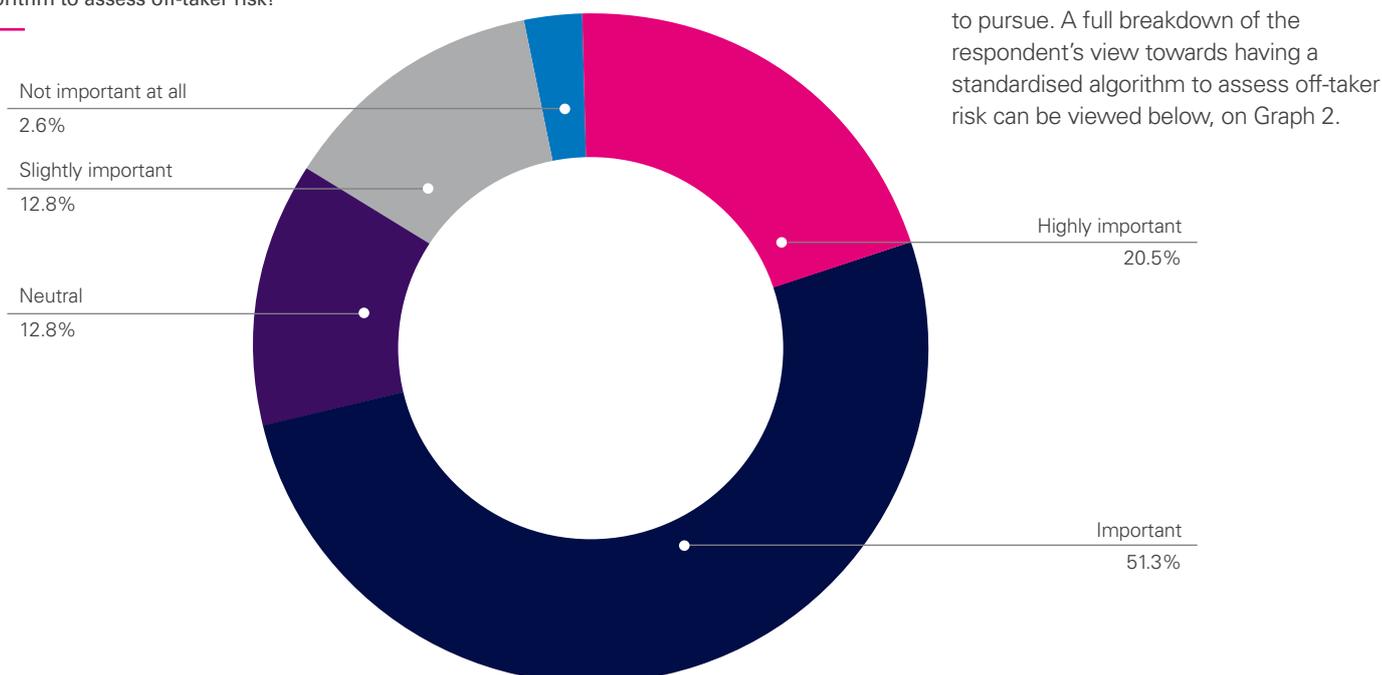
Another main benefit of standardisation is the decrease of legal transaction costs. Legal analysis of contracts that are aligned through standardisation create obvious efficiencies. Standardisation

also benefits regulators, as a workshop participant stated “the regulatory framework could adapt easily to standard documentation across the market”. Undoubtedly, lawyers play an important role in helping create standardised PPAs and help the parties involved expedite their decision making and lower legal costs.

3. Increased efficiency and certainty

Ultimately, the main benefit of standardising offtake arrangements lies in the increased efficiency and certainty that these contracts can provide. Currently, the length of time that it takes to negotiate a PPA contract is a common grievance of the industry. The parties involved spend a lot of time and resources drafting contracts, and incorporating external factors such as cultural differences increase the length of these negotiations. One of the respondents to our survey stated that standardised projects “would make solar development more efficient, freeing up resources for more big projects”. That is why the reduced legal and transactional costs, the reduced risks for banks and the increased efficiency of standardised off-taker arrangements makes this an attractive endeavour for the market to pursue. A full breakdown of the respondent’s view towards having a standardised algorithm to assess off-taker risk can be viewed below, on Graph 2.

Graph 2:
How important is it to have a standardised method/
algorithm to assess off-taker risk?





How can offtake arrangements be standardised?

Should contracts be standardised by country, region or industry-wide? This question is particularly valid when discussing emerging markets, because they tend to promote more uncertainty due to factors such as increased cultural barriers and unknown local legislature.

What off-take arrangements need is a framework of general terms and conditions that should be applicable to the whole industry or country of jurisdiction. Our research respondents agreed that these general terms and conditions should focus on the operational side of projects, answering questions such as 'who will take on what risk'. Bearing in mind the recent events relating to the COVID-19 pandemic, great importance should be attached in this case to the force majeure clause: unforeseeable circumstances that prevent someone from fulfilling a contract.

For emerging markets in particular, companies should always cooperate with local stakeholders and standardised contracts cannot negate this requirement. This is because there will be nuances in each country or region that a standardised contract is unable to cover. Furthermore, lawyers can add value when looking at the different laws of each respective country and facilitate the process of standardising terms and conditions with their expertise on the subject. As a workshop attendee indicated: "The lawyer's role in the process of accomplishing an offtake arrangement should not be underestimated".

Pitfalls of standardisation

Too much standardisation can be restrictive since it can reduce the flexibility of the contract for local or particular circumstances. According to one workshop participant, the "nightmare scenario would be having huge contracts for small projects". The extent of standardisation is critical in ensuring that offtake arrangements are simplified rather than complicated.

Research participants agreed that standardisation could create an advantage for big players and big developers in the market as it would reduce the scope for differentiation and intensify a focus on cost competitiveness. However, this would suggest that some developers may prefer not to standardise so that they can increase scope for differentiation.

Another issue raised by workshop participants was the appropriateness of standardisation where off-take arrangements are more complex (e.g. utilising pooled assets as a form of financing projects). A participant from a solar lease company with contractual experience in Africa, stated that not all stakeholders in Africa want PPAs. Many of them are looking at other alternatives such as leases. This could be due to a variety of reasons such as taxation, legal grounds and cultural motivations.

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Future-proofing solar investments

A holistic approach

Respondents to our survey listed increased efficiency (both in cost and time management), better risk awareness and scalability as the key benefits that standardisation can provide. Nearly 70% of the respondents answered 'agree' or 'strongly agree' to the statement: Standardisation of project documentation in emerging markets would be hugely beneficial to solar/renewable development (Graph 3). This reflects the ambition of the solar industry to continue scaling up global developments and finding mechanisms that increase efficiency and the bankability of solar projects.

However, as has been previously mentioned, the goal of standardised off-take arrangements comes with certain caveats. Stakeholders should still ask themselves why, what and what not to standardise in these contracts. There should still be some flexibility for parties to develop a contract that best suits their personal case in order not to become "simplicity at the expense of accuracy", as noted by a survey respondent.

Risk Assessment

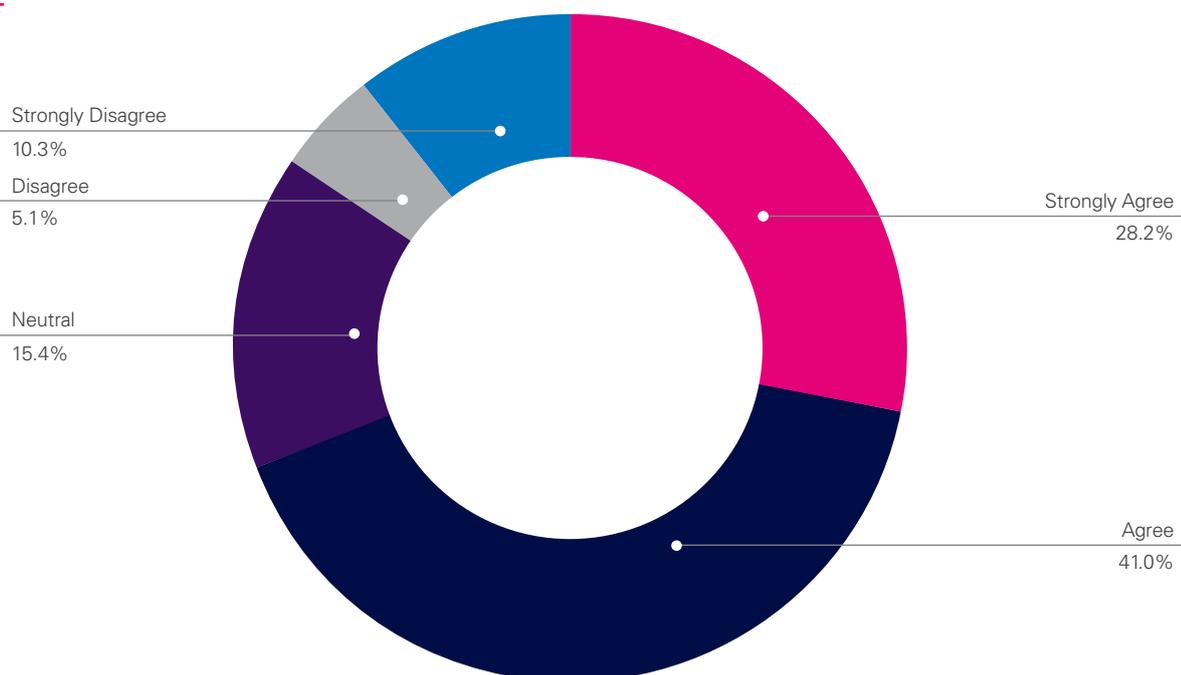
As a rule, the risks associated with the PPAs can be divided into those that are dependent on the parties to the contract and those that are beyond their control.

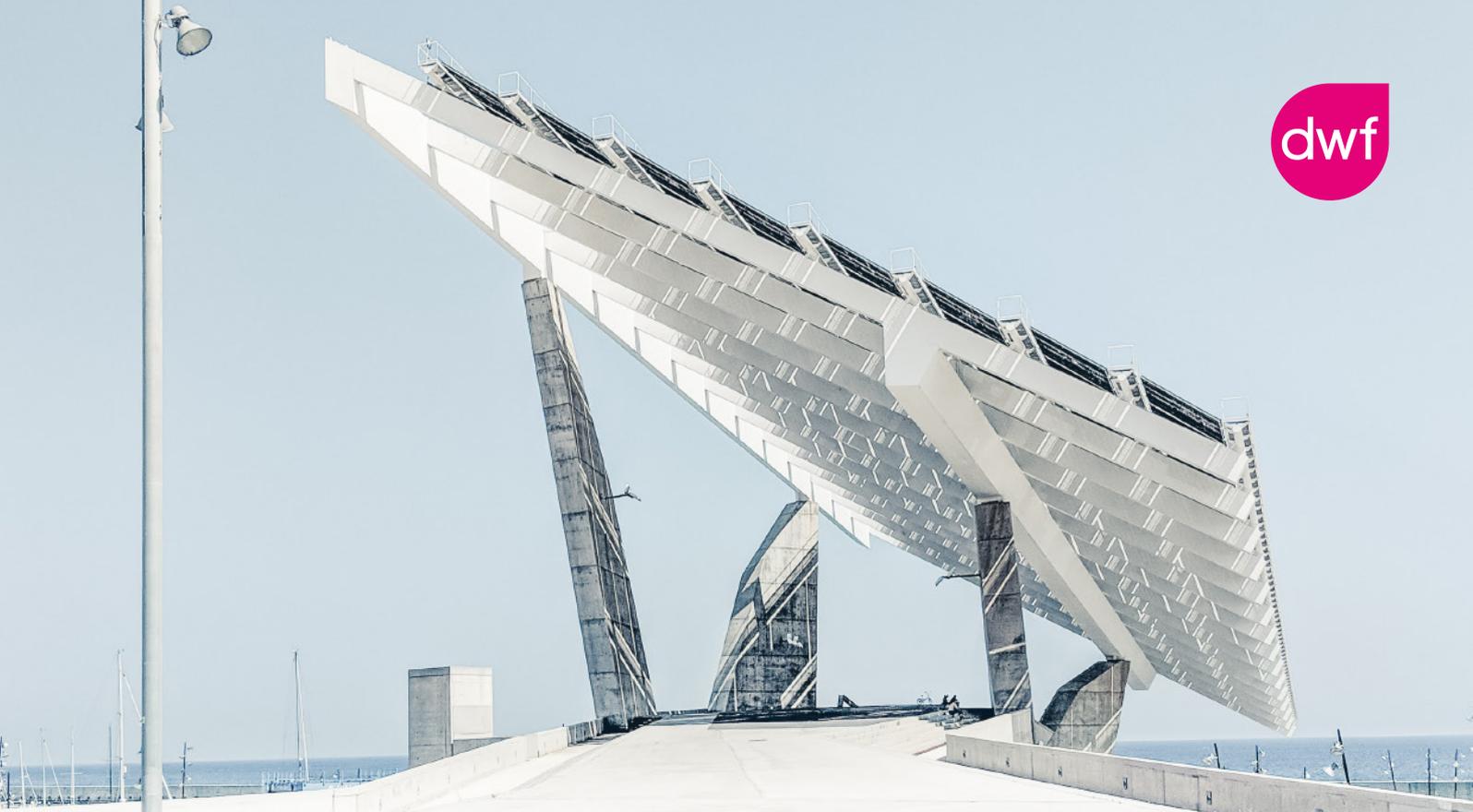
As regards to the first group of risks, the attention should be paid to the risks associated with the potential failure of one of the parties to fulfil their contractual obligations. Such an action may adversely affect the bankability of solar projects. Yet, the key challenge here is the proper contractual risk management. Undoubtedly, establishing stable legal securities for the parties, determination of the right price formula, introducing the relevant force majeure or COVID-19 clauses may address potential concerns of financing entities and mitigate this risk to the minimum.

Without prejudging whether or not the standardisation of the PPAs may also be an answer to this risk, it would certainly introduce an element of some stability and predictability in this regard.

On the other hand, there are still some factors beyond the control of solar producers and off-takers, usually dependent on the specific country concerned. These include the regulatory barriers and uncertain market conditions. Based on the experience of other countries, especially in Scandinavia, stable and predictable legislation is extremely important for the development of the PPA market. This gives both investors and financing entities a guarantee and a degree of security. Although this is not something that is under the control of the RES market participants, it is nevertheless important to monitor legislative solutions and market developments, as well as to be actively involved in a variety of industry-related activities within this scope.

Graph 3: Standardisation of project documentation in emerging markets would be hugely beneficial to solar/renewable development





Conclusion

The increasing efficiency of renewable energy and growing pressure to respond to climate change across the world is accelerating the green energy transition. This trend is driving a growing determination to solve the challenges in the solar market and streamline development of solar projects in emerging markets. As was evident by the level of interest throughout our research, off-take arrangements are core to the success of solar development and corporate PPAs present a big opportunity to deliver projects throughout developing markets. Standardisation of PPAs can deliver a step change in this progress.

The three forms of corporate PPA discussed in this report support the development of renewable energy in its purpose to serve the environmental goals of a wider economic transformation. The stability and predictability of cash flows coming from long-term contracts with private corporate off-takers clearly supports the development of wider financing solutions available for RES developers, and are a key long-term growth driver.

Naturally, all types of off-take structures discussed in this report have their advantages and disadvantages. However, despite some challenges, they can be structured in a way to overcome key risks and deliver predictability and

stability for all parties. As the examples of selected countries show, a friendly legal environment may be also important here. Nevertheless, leaving some flexibility to the parties when structuring a contract might also be a key factor in the development of the PPA market.

As was evident in our research, there is a strong desire for a degree of contract standardisation to accelerate market growth in emerging markets though greater efficiency, increased certainty and improved financing conditions. That said, standardisation needs to take into consideration economic conditions relating to country and jurisdiction, limiting the concentration risk around only large developers, factoring country specific laws as well as fundamental economic factors such as lack of large off-takers present in the market place.

The future success of corporate PPAs is pivotal to solar development and to the wider ambitions of lowering carbon emissions. Although the corporate PPA market still faces many challenges, it is an increasingly attractive form of off-take arrangement for solar energy producers and consumers in Europe. If the right degree of standardisation, and thus enhanced bankability, can be achieved, the long-term potential for growth in new markets looks very strong.

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1. PPAs in the United Kingdom



Despite being behind some of its international counterparts (e.g. the US), the use of PPAs in the United Kingdom looks set to increase. This is a welcome and natural consequence of political and social pressures that have been mounting, as the UK drives towards sustainability and combatting climate change.

The UK market is quite amenable to PPAs in general, due to good financial standing, favourable regulations, reducing deployment costs and the increasing prices of power. However, there is still scope for improvement in this regard, as its complex procurement frameworks and limited access to grid connections curb progress.

Large corporates are showing increased interest in PPAs in order to meet ambitious targets and commitments cost effectively. Corporate leaders such as Facebook and Google already have PPAs in place, but market trends now suggest that smaller UK businesses will follow suit. For smaller firms, there are issues with higher barriers to entry, and it is apparent that they would clearly benefit from trickled down advice, expertise, and a reduction in charges.

In 2019, Amazon signed the largest corporate wind PPA for a renewable wind farm in Scotland for its data centres, providing 50MW of capacity. This supported Amazon to make significant headway into its 100% renewable energy targets by 2030.

Although solar and wind are seemingly both equally attractive options for corporates, given permit issues surrounding onshore wind, solar PV looks more likely to be at the forefront in the short term. UK local authorities are looking to capitalise on renewable PPAs, given their rooftop capacity for solar PV. It is unsurprising that the authorities are attracted to the defined, sustainable power prices, and immunity from market volatility.

There are three main types of PPA used in the UK market: virtual PPAs, sleeved PPAs and direct wire PPAs. In a virtual PPA, a renewable project developer will enter into a PPA with a customer to finance the project, however when the project is complete they will sell the power to the grid, rather than to the customer. The terms of the PPA will ensure that the customer pays the developer a fixed price for the energy it sells to the grid, with any shortfall being paid by the customer. Conversely, where the energy sells to the grid for more than the fixed price, the customer will make money. Crucially, the customer will be able to claim the credit for the renewable energy it has brought to the grid and therefore contributes towards its renewable targets.

A sleeved PPA operates slightly differently, as the wholesaler bears the market price fluctuation risks instead of the customer. This is often more attractive for less sophisticated customers, such as smaller businesses. Like virtual PPAs, the customer still benefits from the renewable credits, but the wholesaler will be an intermediary (for a fee) and facilitate the energy supply to flow from supplier, to wholesaler and then to the customer. The wholesaler can also top up with their additional energy supply, to the extent required by the customer.

In a direct wire PPA, a developer and customer contract directly for a fixed price energy flow between the two. Consequently, they can avoid extraneous network charges and fees. However, this 'in house' option is the most complex legally and structurally, as there is no use of the network's distribution and delivery systems. The renewable credits are self-evident in this case as there is a direct relationship between the developer and customer.

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2. PPAs in France



PPA or long-term agreements (with or without Take or Pay obligation) are frequently used in France by business clients to purchase electricity produced by traditional energy plants (generally high volume of electricity with negotiated prices). Unlike in Anglo-Saxon countries, Corporate PPAs for the purchase of electricity from renewable energy producers have not been signed in France until recently. There are different reasons for this. Principally, the specific situation of the French electricity market where electricity production has been and is still based on nuclear energy, approximately 70% in continental France in 2019. In addition, during many years, most renewable energy producers obtained the benefit of the purchase of the electricity that they produced on wind or solar plants under the Feed-in-Tariff regime. This is not the case anymore and as the renewable energy sector receives less subsidies.

The first notable Corporate PPAs were signed in 2019 by EDF and Voltalia.

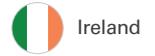
EDF signed a Corporate PPA with a major supermarket retailer Métro France in March 2019 for a term of 3 years for the sale of 25GWh, corresponding to the total volume

of electricity produced by a wind farm in the North of France. More interestingly, the renewable energy producer VOLTALIA signed in June 2019 one of the most important Corporate PPAs in Europe as the agreement signed is for 25 years and for a capacity of approximately 150MWh.

Corporate PPAs should develop and be entered into by more wind or solar energy producers in France for the same advantages as in other countries. The regulations in force are favorable to such development and this may be confirmed by new regulations to be adopted in relation to the energy transition targets in France and the European Energy Transition 2030 project. In addition, the French Economic Recovery Plan decided by the French Government and President after the COVID-19 crisis, and which is based on the modernisation of many sectors, should be taken as an encouragement for different businesses (data centers, airports, shopping centers operators), to enter into new types of contractual arrangements, such as Corporate PPAs with renewable energy producers to participate to the development of the renewable energy sectors and modernisation of the energy market in France.

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3. PPAs in Ireland



There has been a growing interest in corporate PPAs in Ireland over the past number of years particularly among RE100 companies and large US multinational companies in Ireland e.g. Microsoft, Facebook and Amazon who have all made a policy choice to reduce their global carbon footprints.

This has also coincided with recent government policy on renewable energy in Ireland. Under the Climate Action Plan 2019, the Irish Government has set a very ambitious target that 15% of Irish electricity demand (potentially up to 6TWh) will be met by renewable energy sources contracted under PPAs by 2030.

Belatedly compared to the rest of Europe, Ireland had its first competitive auction process for energy providers/developers in 2020. On Tuesday, 4 August 2020, EirGrid published the provisional results of the first auction under the Renewable Electricity Support Scheme ("RESS"). The provisional list of 'winners' (subject to final results being released on 10 September 2020 and notices of final awards scheduled for 25 September 2020) includes 63 solar farms (comprising 796MW of capacity), and 19 onshore wind farms (comprising 479MW of capacity). Each of these projects already hold planning permission and grid connection offers (as required to participate in the RESS auction). Therefore, the Irish renewables sector is set for considerable activity in construction levels. The successful projects must be exporting power by 31 December 2023 in order to comply with the RESS Terms and Conditions. The first RESS auction represents an important step towards Ireland's 2030 targets and is a historic milestone for the renewable energy sector as it moves from a centrally-determined tariff to support that is priced by competitive auctions.

The current REFIT support schemes are now closed to new entrants. Therefore,

renewable generators will increasingly need to explore alternative routes to market (potentially via a long-term offtake arrangement), particularly in order to secure third party funding. As the Corporate PPA market is in its infancy in Ireland in terms of take up, it will be interesting to see how this develops.

There have been a limited number of corporate power purchase agreements concluded in Ireland and each of these have been driven by large US multinationals in Ireland i.e. Microsoft, Facebook and Amazon wishing to reduce their global carbon footprint and minimize their exposure to wholesale prices.

PPAs are becoming increasingly attractive to both large consumers (particularly RE100 companies) and renewable energy generators. Energy consumers can fix the price of energy for a defined period and hedge the potential price volatility. For energy generators, it provides certainty for the generator to sell all or part of its electrical output at an agreed price under a long-term contract, improving the bankability of the project, as well as providing investors with predictability on the project's return on investment. In addition, there are benefits to general consumers, because the renewable project is built as a Corporate PPA project, it does not receive the support provided to other wind farms/solar farms through the PSO levy on consumers' electricity bill.

In October 2017, Microsoft concluded the first corporate power purchase agreement in Ireland when it entered into a 15-year power purchase agreement with General Electric to purchase 100 percent of the wind energy from its 37-megawatt Tullahennel wind farm in County Kerry, Ireland. This agreement also included the first deployment of battery integration into wind turbines to store energy in Europe. As part of the deal, Microsoft also signed an agreement with Dublin-based energy trading company ElectroRoute to provide energy trading services to Microsoft.

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In August 2020, social media giant Facebook agreed to purchase the electricity output of a 28.8-MW wind farm that Brookfield Renewable Energy Partners will build in Ireland. The Irish arm of Facebook's business, including its European headquarters in Dublin and its expanding data centre in Clonee, Co Meath, are already using renewables power. Back in 2016, it signed a 10-year PPA with Brookfield for 150 MW of wind power.

Amazon.com Inc has concluded three corporate power purchase agreements in Ireland, where it has contracted a total of 229MW of wind power generating capacity. The most recent deal (August 2020) provides that Amazon Web Services will purchase power from the 115-MW Ardderroo wind project in County Galway to operate its local data centres. Amazon has set itself a target to run its entire global operations on renewable energy by 2025.

4. PPAs in Poland



The corporate PPA market in Poland is largely driven by a sudden rise in energy prices for businesses during the last two years, in 2019 in particular. This incentivised many to look for alternative sources of electricity that could guarantee stable prices in the long term. Also, top brands such as Orange, Microsoft or IKEA are utilising renewable power to an ever growing extent, sometimes exclusively renewable, and are currently incentivising their Polish suppliers to do the same. Last, but not least, the whole country is gradually moving towards the renewable energy transition, with a goal of achieving 21-23% share of renewables in gross final energy consumption by 2030 and with grand plans for offshore wind in the Baltic sea. Quickly growing consumer interest in clean, environmentally-friendly products adds an additional incentive to green electricity contracting.

Corporate PPAs are particularly appealing for RES investors planning to build large-scale wind or solar projects without public aid (i.e. without participation in the auction system). Here, the banks require a reliable corporate counterparty, such as Volkswagen or Asahi Breweries – local examples, to guarantee financing. On the other hand, corporate PPAs are useful for industrial off-takers wishing to minimise their exposure to wholesale prices in the long-run and reduce a burdensome carbon footprint. Virtual corporate PPAs are the most popular due to regulatory reasons.

In 2019, Signify, an international producer of connected LED lighting systems, software and connected services, entered into a virtual corporate PPA with Green Investment Group (GIG). The agreement covers the whole output of the Kisielice Wind Farm of 42 megawatts.

Another example of a Polish corporate PPA (virtual) is the one concluded between RWE Renewables and Kompania Piwowarska (a subsidiary of Asahi Breweries Europe Group) relating to a wind farm project implemented by RWE in Nowy Staw. The agreement covers all energy demand from three breweries in Poland belonging to Kompania Piwowarska. Thanks to this PPA, RWE is able to realise its investment without public support.

Also Orange, an international telecommunication giant, recently entered into a PPA with WPD Polska. This is the first corporate PPA on the Polish market involving physical transfer of electricity between the supplier and off-taker. WPD Polska's wind farms will cover approx. 10% of Orange's demand for electricity for their Polish operations.

Standard PPAs in Poland, concluded between the generator and wholesale trading company are usually short-term (1 – 2 years). Corporate PPAs, on the other hand, are more complex and may involve a great deal of negotiations. However, there is no need to draw up a corporate PPA from scratch – standard documents prepared by EFET come in useful.

Further changes in the corporate PPA regulatory framework are needed for development of this sector, in order to make it more attractive for energy-intensive off-takers.

Top brands such as Orange, Microsoft or IKEA are utilising renewable power to an ever growing extent, sometimes exclusively renewable, and are currently incentivising their Polish suppliers to do the same.

5. PPAs in Spain



In recent years, the Spanish renewable energy market, with specific regard to the solar and wind energy market, has undergone unprecedented growth, and has been recently considered one of the ten countries in the world with the highest renewable energy capacity. As a result, the number of renewable energy projects to be financed has increased significantly and stakeholders have sought different ways of securing energy purchase. These include the conclusion of Power Purchase Agreements (PPAs).

There are different reasons why Spain is considered an attractive market for concluding PPAs, such as the constant availability of resources, the availability and cost of land, the confidence in the regulatory environment and compensation schemes, as well as the low plant construction costs. Additionally, according to Bloomberg NEF (BNEF) Price Survey for the first quarter of 2020, Sweden and Spain respectively have the cheapest average corporate PPAs prices in Europe for wind and solar electricity.

PPAs are becoming more and more attractive to both large consumers and renewable energy producers. Energy consumers can fix the price of energy in a certain period and hence hedge the volatility of the Spanish electrical system. On the other hand, for energy producers, the conclusion of a PPA means securing an income stream for the electricity generated by their renewable energy projects, improving the bankability of the project, as well as providing investors with predictability on the project's return.

As will be covered in the "legal framework" section below, Spanish regulations currently foresee certain requirements that physical PPAs (bilateral agreements concluded outside the wholesale electricity market with physical delivery of electricity) must comply with. These rules can only be met by agents that already hold the necessary legal and administrative authorisations to be considered market agents. Therefore, within the Spanish market, electricity retailers (which are one type of market agents) are particularly interested in concluding physical PPAs with other market agents.

At the beginning of this year, Heineken Spain and Iberdrola signed a long-term power purchase agreement for a new photovoltaic solar plant of Iberdrola located in Andalusia (Spain). This agreement will guarantee the supply of green electricity to the brewery's four factories in Spain and to its offices, and will allow Heineken Spain to become a 100% carbon-neutral brewery in 2023. The photovoltaic solar plant, which will have an installed capacity of 50 MW.

Another relevant example of a PPA concluded recently in Spain is the one signed on April 2020 between EDP Renovables España and Royal DSM, a multinational operating in the scientific sector specialised in nutrition, health and sustainable lifestyle. Such PPA will supply DSM with 59 MW of renewable energy for its operations within Europe. The portfolio includes a wind farm and two photovoltaic solar plants, all of them located in Spain. It is a particularly relevant agreement for DSM as it is a key agreement for the company to meet their goal of covering 75% of their global electricity demand with renewable resources by 2030.

Although agents in the electricity market advocate for the standardisation of PPAs, they are still complex contracts and each PPA shall be tailored to the specific needs of each project, broadly speaking, the main terms that a PPA should cover are:

- (i) the purchased energy quantity and its price determination (including, for instance, cap-and-floor prices to constraint final prices within a given range);
- (ii) financial guarantees and guarantees of origin;
- (iii) termination causes of the agreement and the delimitation of the parties' 'responsibility';
- (iv) effective date of the energy purchase or settlement of the PPA, as well as the consequences of a delay on said date;
- (v) the occurrence of force majeure events;
- (vi) dispute resolution mechanisms and
- (vii) the impact that any legislative changes may have on the agreement.

In accordance with current Spanish applicable legislation, electric power producers and electrical energy marketers are entitled to sign long-term bilateral agreements for the sale of energy ("PPAs").

Spanish Law 24/2013, of December 26th, of the Electrical Sector, recognises different forms of contracting that take place outside the Spanish organised electricity market (that is, outside the daily and intraday electricity markets), among which are PPAs. Additionally, Spanish law foresees that these agreements (including PPAs) will not be part of the offers system that applies to the wholesale electricity market. Additionally, Spanish Royal Decree 2019/1997, of December 26th, which organises and regulates the Spanish electrical energy production market, contains the basic rules for bilateral contracting of electrical energy with physical delivery outside the organized market (in other words, physical PPAs).

In conclusion, Spanish current and disperse legislation provides agents with a wide margin for the parties' autonomy to subscribe tailored PPAs (either physical or financial), specifying only certain requirements that physical PPAs must fulfil in order to be legally valid, although most regulation fall upon a contract tightly linked to physical PPAs: connection agreements with distribution grid operators. However, we consider that Spanish legislation is somewhat scarce and must be subject to further development and updating. In this regard, it should be noted that the EU and its member states share their legislative competence for energy law. This means that both the EU and the member states can adopt legally binding acts in this area, but member states can only exercise their competence to the extent that the EU has not exercised its competence. National energy law is thus significantly shaped by EU regulations and directives; however, certain areas of energy law (such as regulation of PPAs) are not yet harmonised nor fully developed.

6. PPAs in Italy



In recent years, the Italian renewable energy market, with specific regard to the solar energy market, showed an increasing interest in PPAs.

PPAs are particularly appealing for those operators purchasing many photovoltaic plants to realize large-scale projects – which is currently the trend in the Italian market – as such agreements help to make them more profitable.

Currently, most of the Italian PPAs are quite simply structured and usually consist of short-term (five years) agreements on the sale of electricity to a wholesaler.

In 2018, for instance, Wienerberger AG, an international supplier of building materials, entered into a five-years PPA with the renewable plant operator Engie Italia. By means of that agreement, Engie Italia would supply renewable electricity to four of Wienerberger AG's manufacturing sites.

Other examples of Italian PPAs are the five-years agreement executed between Octopus Investments and the Italian utility Ego for the purchase of electricity produced by solar plants located in Sardinia with a total capacity of 40 MW and the more recent agreement, executed on January 2020, between Acciaierie Venete and DXT Commodities for the supply of electricity produced by a new renewable photovoltaic plant which is currently under construction. The renewable energy will cover part of the energy consumption of Acciaierie Venete's steel plant.

Some players have started to negotiate long-term agreements such as the framework agreement executed in 2019 between European Energy and Axpo for the conclusion of a series of PPAs lasting more than 12 years. These PPAs are aimed at the purchase of electricity generated by photovoltaic plants – to be developed by European Energy – up to a total capacity of 300 MW.

On August 2020, to promote the growth of PPAs and to overcome the current lack of a legislative framework concerning such agreements, the Italian Ministry of Economic Development (Ministero dello Sviluppo Economico) and the national energy services provider (Gestore dei Servizi Energetici GSE S.p.A.) officially started the development of the Italian regulation of PPAs. This new regulation has been long-awaited by market players and is also considered fundamental for the achievement of the decarbonisation goals set by the national energy and climate plan (Piano Nazionale Integrato per l'Energia e Clima – PNIEC).

The Italian government's purpose is to achieve a 55% share of domestic energy consumption from renewable sources by 2030 and PPAs are expected to contribute to an increase, of at least 0.5 terawatt-hours per year, in renewable energy production.

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