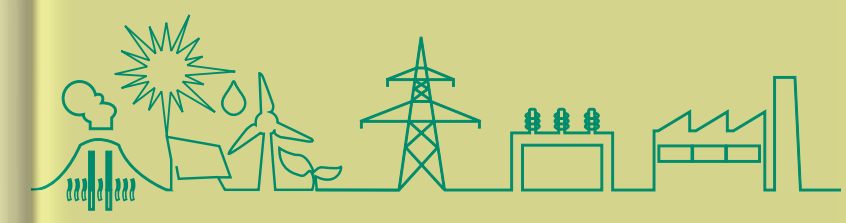
Rödl & Partner

# MAKE CORPORATE PPA SUCCESSFULL

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The transition in renewable energies is a continuous process. The latest IPCC report has made it very clear that, presumably, we can avoid the most severe consequences for our planet only if we stay below the 1.5 degree Celsius target of global warming. To achieve this, however, the $CO_2$ emissions will have to be significantly reduced yet before 2030. Consequently, even if renewable energies continue to develop positively worldwide, the current installation of renewable capacities will not be sufficient to make the necessary contribution here.

In Germany, the Renewable Energy Law has changed and, now, provides for auctions. Also globally, the trend clearly shows a departure from feed-in tariff-based systems. The importance of auction-based systems and alternative selling models as alternative solutions is increasing. The fact that the levelized cost of electricity being the reason or the result of this development is continuously decreasing is no longer important.

Power Purchase Agreements (PPAs) have begun to come into play: PPAs are bilateral power agreements between power producing and power consuming companies. Is this a new instrument or just “old wine in a new bottle”? Let us discuss this below.

On the one hand, long-term agreements should guarantee the purchasing company clean electricity at a fixed price agreed beforehand. On the other hand, the producer can be sure that the electricity produced will be purchased. In the future, the attractiveness of PPAs will also rise due to the fact that power plants continue to fall out of the scope of the EEG [German Renewable Energy Law] and companies more and more often base their planning on sustainability strategies and purchase electricity from renewable energy sources. Moreover, in the long term, PPAs can also be an interesting option in terms of supplying electricity to „Power-to-X“ plants, e.g. for the production of hydrogen or carbon-neutral synthetic fuels.

The PPA market is still in its infancy and, so far, only few countries have introduced this model. Investments in this area have been made in particular in Europe and in the Scandinavian countries as well as in Poland, Great Britain and Spain. According to the EU, obstacles should be eliminated by way of the recast directive on the promotion of the use of energy from renewable sources from 2021, thus ensuring standardisation and a reduction in administrative hurdles. As is already an established tradition, we will address and discuss one of the latest and pioneering issues also this year. This e-book gives you an overview of selected countries and includes articles written by our colleagues.

Have a nice read!

Martin Wambach

Anton Berger



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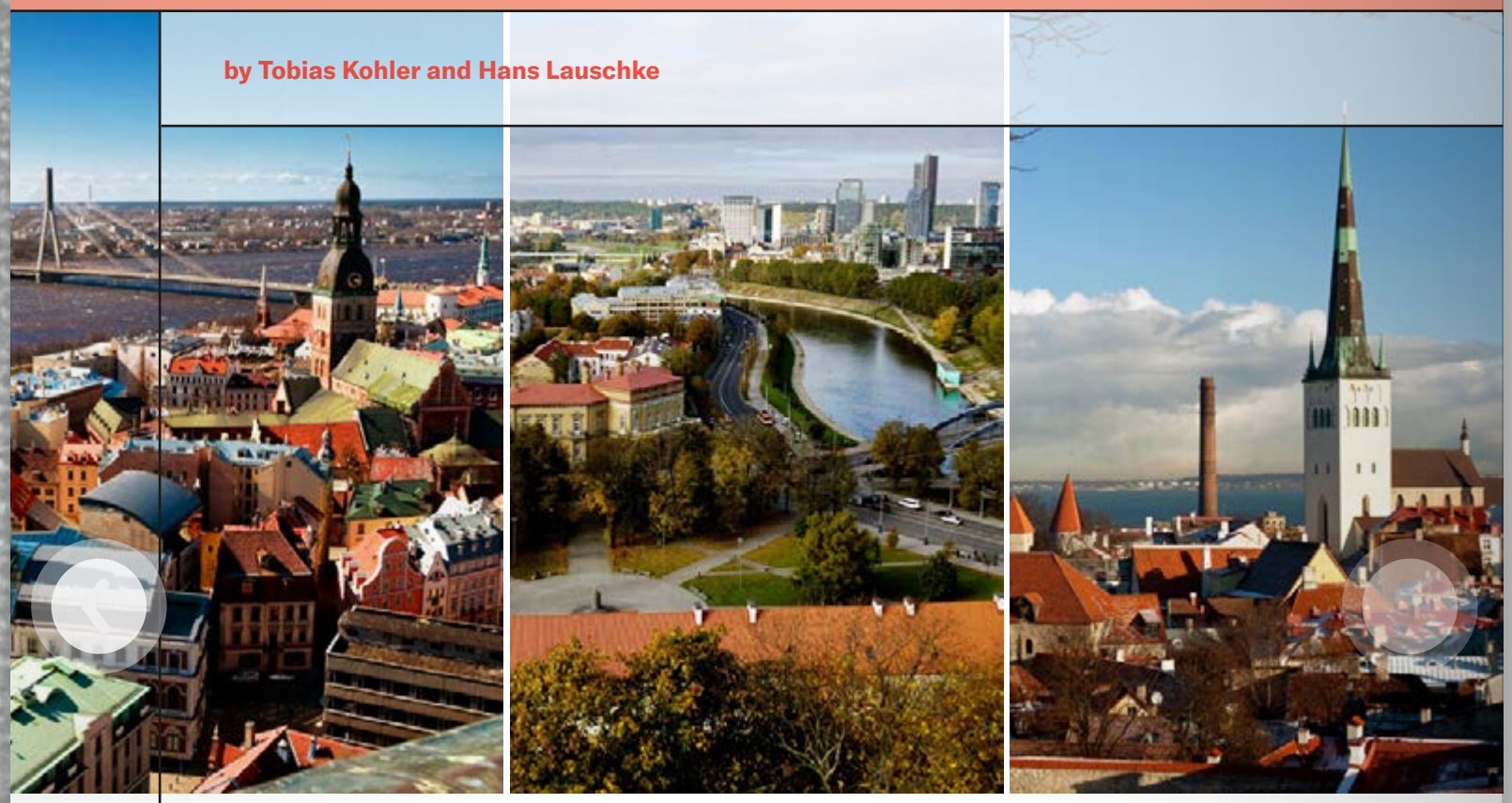
# II MAKE CORPORATE PPA SUCCESSFULL

# 01 BALTIC STATES

by Tobias Kohler and Hans Lauschke



## State of affairs regarding the installation of new renewable capacities

In addition to the reduction of $CO_2$ emissions, which Western European countries expect to achieve through the use of renewable energies, there is another aspect on which energy policy makers in Estonia, Latvia and Lithuania put particular focus. In view of the current cold political relations between Russia and the EU and given the applied sanctions and counter-sanctions there is considerable concern that Russia will use its gas supplies as a political weapon against the Baltic states – just as it did against Ukraine already in 2009.

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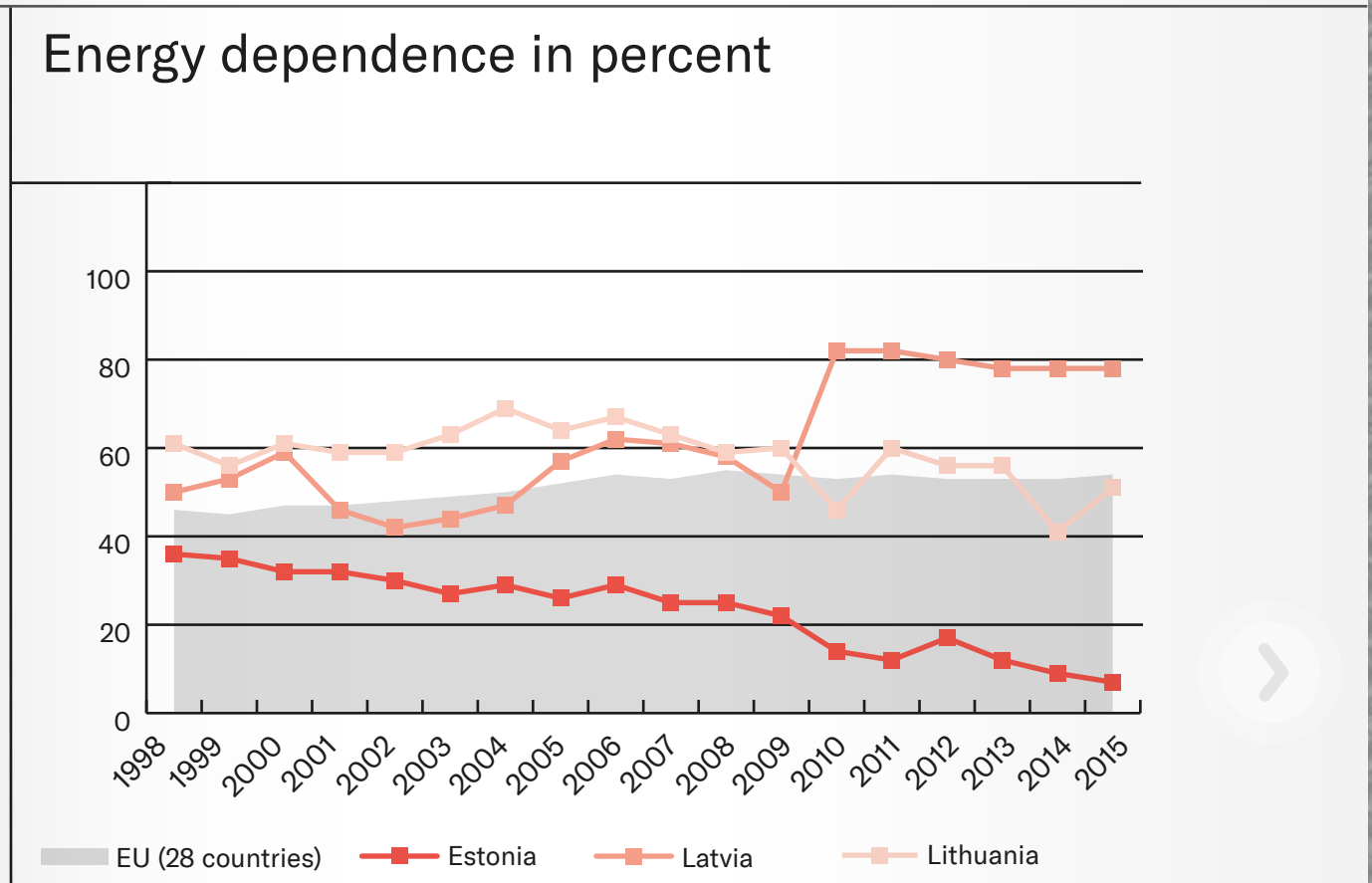


Apart from the broadening of the internal EU energy market, it is intended to remedy the problem by a stronger integration of renewable energies, amongst other things.

The installation of new renewable capacities is principally incentivised in the Baltic states, i.e. in this context, there is no need to separately sell produced electricity if incentives are granted. Thus, once a power plant is installed or if it is still in the construction phase, it receives funds for the entire amount of produced energy, provided that the respective requirements are fulfilled. Thus, the sale of electricity decoupled from this scheme is an interesting option only in respect of power plants installed outside the incentive system – but currently, such power plants are not very common in any of the three countries (except for self-consumption). Operators of renewable power plants usually sell all of their electricity as part of the feed-in tariff system; thus, the sale is normally not an issue for them. This could change in the medium term because in all three Baltic states the incentive systems are being scrutinised in a bid to bring renewables closer to the free market – but because the discussion is still very fresh looking into the crystal ball is like a game of chance.

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In Estonia, electricity from renewable sources is mainly supported based on premium tariffs. There, renewable energy support is financed via a surcharge which is borne by all consumers in proportion to their use of grid services and their electricity consumption. The transmission system operator Elering is the entity in charge of the system and is obliged to offtake from the producer the entire amount of produced electricity.

Funding itself is granted for a period of 12 years from the power plant commissioning. The commissioning date of a power plant is the date on which it reaches 80% of its nominal capacity for the first time. Moreover, funds granted as part of the European Regional Development Fund and state funds intended for encouraging infrastructure and technology investment are used as instruments to improve energy production from renewable resources. Under these programmes, investment aid for the construction of CHP plants, renewable power plants, biomass etc. is granted and the necessary infrastructure for the operation of renewable power plants is provided. In addition, renewable energy is supported by various investment grants.

Legislation regarding renewable energy support schemes has been under major revision in Estonia for the past several years. At present, efforts are also being made to abolish the current premium tariff and to introduce an auction-based system to promote the development of renewable energies. Moreover, it is intended to encourage renewable energy trading with EU countries that would probably fail to reach their 2020 renewable energy targets.

In Latvia, a complex incentive system based on a feed-in tariff and with elements of a quota system and auctions is used to support the production of electricity from renewable energy sources. The existing incentive system has been on hold since 2012 and will not be applied until 2020. All contracts concluded before 2012, however, are continued and complied with and power producers receive a fixed feed-in tariff calculated by the Latvian Public Utilities Commission. Currently, 408 power plants have concluded binding power purchase agreements entitling them to receive a feed-in tariff; this means that the entire amount of subsidised electricity must be offtaken – no alternative sales option is necessary. Incentives are granted for a period of 10 years. Currently, the support mechanisms for production of energy from renewable energy sources are being scrutinised and will be revised. More stringent supervision of subsidised electricity producers, stricter controls and a limited timeframe for the implementation of renewable energy projects will be introduced. At the same time, a new tax for subsidised electricity producers was introduced in January 2014. The tax should be paid by companies receiving financial support for the generation of electricity from renewable energy sources or from combined heat and power plants. Moreover, electricity from renewable energy sources is not given priority [over conventional electricity] in Latvia.

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The issue of renewable energies in Latvia is one of the most debated issues for the upcoming parliamentary elections in October 2018. Therefore, given the present political climate, making forecasts about the further development of renewable energies in Latvia is difficult – certain is only the fact that substantial reforms will be introduced.

The current incentive system in Lithuania is also based on a long-term fixed approach where funding is granted for a period of 12 years from issuing the power generation permit. Also under this system, power producers are given a power offtake guarantee – no alternative sales option is necessary where incentives are granted. So far, the Lithuanian subsidy instruments have been characterised by competition between the individual types of energy production technology and capping of incentives under a quota regime. The quotas were allocated at technology-specific state auctions. But those incentives were exhausted already about 3 years ago and no new auctions have been held since then. However, after a long period of stagnation and only some movement in the area of the existing projects or projects under construction, renewable energies (RE) in Lithuania receive new political support, now: On 16 May 2018, the Ministry of Energy published the draft of a new incentive model for renewable energies. The proposed amendment to the Renewable Energy Law (RE Law) provides for an entirely new system of support for the production of electricity from renewable energy sources. The aim is to increase the production of electricity from RE sources up to at least 3 terawatt hours (TWh) by 2020 (by comparison: today, slightly more than 2 TWh of electricity are generated in renewable power plants). Moreover, it is planned to increase the market integration of renewable electricity producers.

By contrast, the new incentive model will be technology-neutral, i.e. the contract will finally be awarded to the project offering the lowest price, irrespectively of the type of energy production technology. As previously, the intention is to offer operators of RE plants the possibility to receive a calculable return on their investment by granting them extensive funds. But the fixed feed-in tariff would be replaced with a market premium which would be added to the market price – as previously, this incentive should be paid for the maximum period of 12 years (the 12-year cap) (should the cost of the power plant be amortised earlier, the incentives would be capped earlier as well).

The present incentive systems in the Baltic states, thus, are based on a long-term and fixed funding approach. In particular this long-term funding perspective might be attractive to investors in renewable energy plants. In combination with the purchase of renewable electricity by the state at fixed feed-in tariffs as the most important funding instrument, these countries offer investors huge investment security and a safe return on their power plants.

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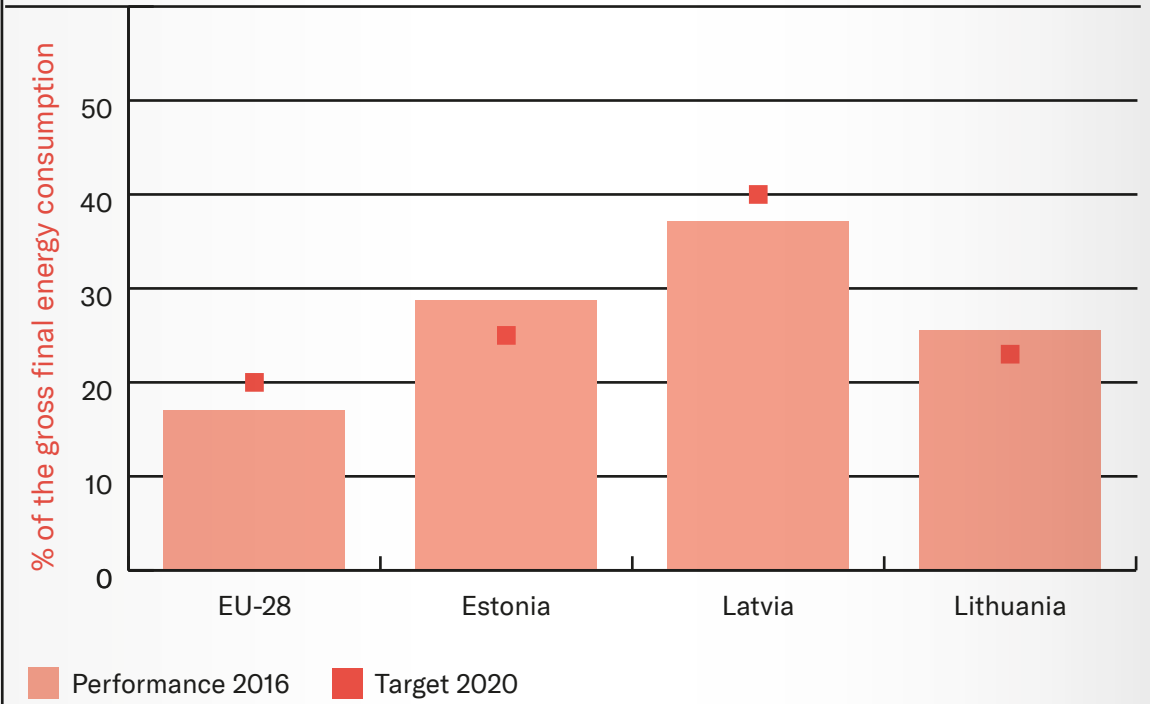
Overall, the trend in the Baltic states is positive in every aspect. The share of renewable energies in the total energy consumption in the EU member states shows that all three countries occupy top positions in this area – Estonia and Lithuania have even already exceeded their targets set for 2020. The statistics are based on the share of renewable energies in the 2016 total energy consumption, with the share of renewable energies being measured with reference to the 2020 targets set individually for each country. The final energy consumption does not only reflect the electricity consumption but also the transport and heating sector.

## Share of renewable energies in the EU member states, 2016



# 01 BALTIC STATES

**The role of PPAs in the Baltic states / options of selling renewable electricity / legal hurdles**

No official data on PPAs are available in any of the three countries. The major reason for this is that PPAs have had limited importance and have not been very popular in Estonia, Latvia and Lithuania so far.

Some PPA pilot projects have been initiated mainly in Estonia. The Estonian state energy supplier Eesti Energia announced its intention to go into solar business in September 2018. Recently, the company has installed a 200 kW solar facility on the roof-top of its head office and will sell electricity to a local agricultural company based on a PPA concluded for a term of 25 years. This is one of the largest projects of this kind. Projects of similar size can be found only sporadically: So, for example, OÜ Saames installed a solar power plant in the vicinity of the production facility of a gardening company; Viru Keemia Grupp, the second-largest energy producer in Estonia, supported the con-struction of a cryptocurrency mining farm on one of their land plots so as to ensure the around-the-clock supply of large amounts of electricity – but also such projects are rather of a pioneering nature and limited in scope.

As indicated above, PPAs that provide for the use of a direct line (on-site PPAs) are generally permitted in Estonia. Due to their locally limited length of 6 km, however, they may be an attractive and implementable option mainly to very large energy-intensive companies. A consumer or an energy supplier is entitled to lay and use a direct line only if the direct line is located on the same plot of land on which the power plant is situated, on an adjacent plot of land or in immediate vicinity (the distance between the power plant and the consumer may not exceed 6 kilome-tres). In other cases, a direct line may only be built if at least one of the following conditions is fulfilled:

- the network operator refused to connect the power plant of the consumer, producer or seller to the grid;
- the network operator in whose area of supply the direct line is to be built, agrees in writing to the line be-ing laid and used.

In Lithuania and Latvia, it is easier to install a direct connection, at least in theory. The Latvian Electricity Market Law contains provisions on the direct connection of a consumer to a power producer‘s facility. Therefore, it is theo-retically possible to sell electrical energy circumventing the public network operator (direct connection). Basically, a power producer is also entitled to lay a direct connection line in the licensed area of the public network operator. This is subject to a permit by the Latvian Public Utilities Commission.

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As already mentioned, Estonian law does not provide for rules on off-site PPAs – the legal situation is very uncer-tain. Admittedly, a few of them do exist but there is no official data on this. But what is certain is that grid charges would have to be paid in the case of a PPA that provides for the use of the public network. This is also the case in Latvia. Grid charges are determined by the Latvian Public Utilities Commission and apply regardless of the distance between the producer and the consumer. As with Estonia, off-site PPAs are rather an exception and there are no binding regulations because Latvian law does not regulate this issue. The situation is different in Lithuania. The country has developed a special legal framework for PPAs. But regardless of whether structured as an off-site or an on-site PPA, grid charges are levied. The Lithuanian legal framework serves less to promote PPAs than to provide clarifications so as to establish legal security which had been missing before due to regulatory gaps.

Major legal hurdles hindering the conclusion of long-term power purchase agreements are currently not existent and not to be expected in Lithuania, Latvia or Estonia.

## Political and legal framework conditions for the implementation of renewable energy projects

In Estonia as well as in Latvia and Lithuania it is possible to implement also largescale renewable power plants (PV, onshore wind, offshore wind) which can be used for PPAs. So, for example, in Northeast Estonia, numerous onshore wind farms exist which, at least theoretically, could directly supply electricity to consumers but usually produce electricity under the existing incentive system. Also in Latvia, no major legal barriers to constructing renewable power plants especially for PPA purposes can be observed. Prospectively, wind turbines are an option on the coastline of Western Latvia. Latvia‘s solar potential, however, is minor due to low solar radiation throughout the year. The same can be said for Lithuania, where in particular onshore wind power would be a good option.

The duration of permit procedures depends on the individual case and strongly varies throughout Estonia. Procedures can last between 30 days and one year, depending on the local administration and the objections raised by the Estonian Environmental Inspectorate. Also in Latvia, the duration of the permit procedure strongly depends on the location and the complexity of the project and can last up to one year. It usually takes one month before a producer is entered into the register of power producers. In Lithuania, the time frame for obtaining the respective permit is basically 30 calendar days following the submission of all requested documents. Overall, the procedure is not very complex in all three countries but in particular the compliance with formal requirements is often underestimated.

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## Outlook

Currently, all three countries are comprehensively revising their strategies and legal frameworks for renewable energy and this, naturally, affects the attractiveness of PPAs.

The legal framework for renewable energy projects in Latvia could be the legal framework that could change most drastically in the years ahead. The currently existing but suspended state purchase system is regarded as outdated and inefficient; therefore, all key political forces have expressed their willingness to reform it. But only the outcome of the upcoming parliamentary elections in October 2018 will probably reveal the direction which the development of the system will actually take. Therefore, it is possible that already at the beginning of the next year operators of (new) renewable power plants will have to think about how to sell their produced electricity and this, again, could draw their attention to PPAs.

Some more precise information is offered by a bill drawn up by the Ministry of Energy of the Republic of Lithuania according to which the Lithuanian RE funding system will be governed by a market premium model in the future. However, it is unclear so far, whether or to what extent power plant operators could be forced to sell their electricity separately or parallel to funding in the future. The market premium itself is to be determined on a competitive basis by way of auctions. These auctions will be held for certain energy volumes to be produced, independently of the type of renewable energy. An entirely new feature of this concept is that subject to certain conditions also projects launched in other EU member states will be allowed to participate in these auctions based on bilateral agreements to be signed with such countries for this purpose.

Crucial for the calculation of incentives are the following factors:

- Reference price
  - is basically calculated according to the procedure of the National Commission for Energy Control and Prices in due consideration of the price at the Nord Pool power exchange;
  - is independent from the type of technology;
  - applies throughout the funding period (until the costs of the power plant are completely amortised but no longer than for 12 years);
- Market price
  - is (currently) calculated based on the average hourly electricity price for the region of Lithuania at the Nord Pool power exchange;

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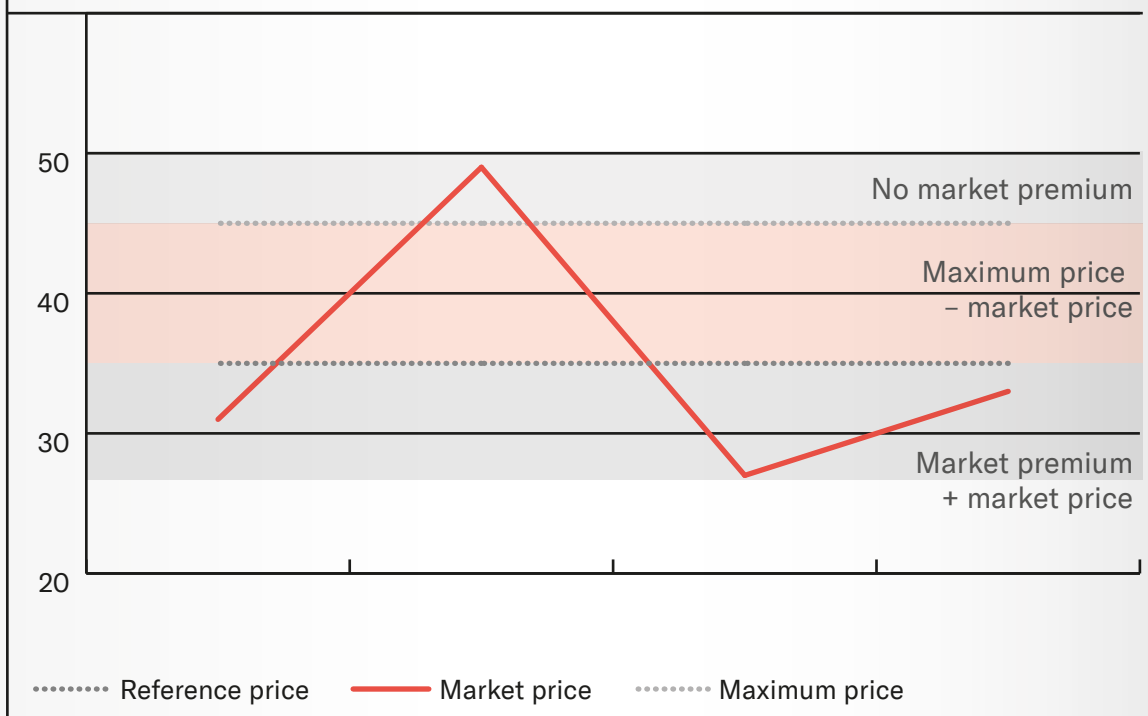
› Maximum price
- is basically calculated according to the procedure of the National Commission for Energy Control and Prices;
- bids for a market premium may not exceed this fixed amount.

## New market premium model in Lithuania




Calculation method

› If market price > reference price = maximum price - market price is paid;
› If market price < reference price = total market premium is paid;
› If market price > maximum price = no market premium is paid;
› If market price = 0 = no market premium is paid.

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## Conclusion

In presenting the legislative bill, the Lithuanian Ministry of Energy has acknowledged that the development of renewable energies, which has been stagnating in the past years, needs a new stimulus – in particular in view of the country's aspiration to regain energy independence. However, the planning of the new funding model is currently still in infancy: The amendment of the RE Law, if adopted by the Lithuanian Parliament, will probably become effective as of 1 May 2019.

Even if it is not yet foreseeable, where exactly the path will lead renewable energies in the Baltic states, the bills and discussions in the individual countries promise the longawaited new tailwind for the renewable energy sector and this might open up new opportunities both for construction companies and for producers. Another factor that will influence renewable energy in the Baltic states and the development of PPAs is the construction of the Astravyets nuclear power plant in Belarus, near the Lithuanian border. Once put into operation, the nuclear power plant in Astravyets could at least temporarily supply cheap electricity to the Baltic states, which would allow them to concentrate more on the promotion of the development of renewable energy sources. On the other hand, cheap electricity supplies from Belarus harbour the risk that the development of renewable energy sources will be slowed down. However, the prerequisite for such scenarios is generally a political willingness to effect such electricity supplies – and this is currently clearly denied.

In combination with the new support for renewable energies also PPAs could play an increasingly important role – depending on how the new legal framework will be structured in Estonia, Latvia and Lithuania. However, the currently applicable feed-in tariffs, the surcharges payable under renewable energy law which are relatively low compared to other EU member states, and low rates of other taxes hinder the generation of savings from PPAs and render PPAs relatively unattractive in all three countries. Instead, renewable electricity is more and more often sold via the Nord Pool power exchange – which is Europe's largest electricity market measured by traded volumes (512 TWh in 2017) and by market share.

Notwithstanding the planned transformation of the Baltic energy-related legal framework, the present feed-in tariff-based remuneration systems offer investors an alternative source of a return on investment: In the Baltic states, in addition to constructing new power plants, investors have the possibility to purchase on the secondary market power plants (regardless of whether such power plants are already completed, still under construction, or in the planning phase) that have already been allocated a feed-in tariff under the present funding models. In such a case, a purchaser enjoys the so far applied feed-in and offtake guarantees and, thus, in combination with the guaranteed feed-in tariff over the remaining period determined in the permit earns a calculable return.

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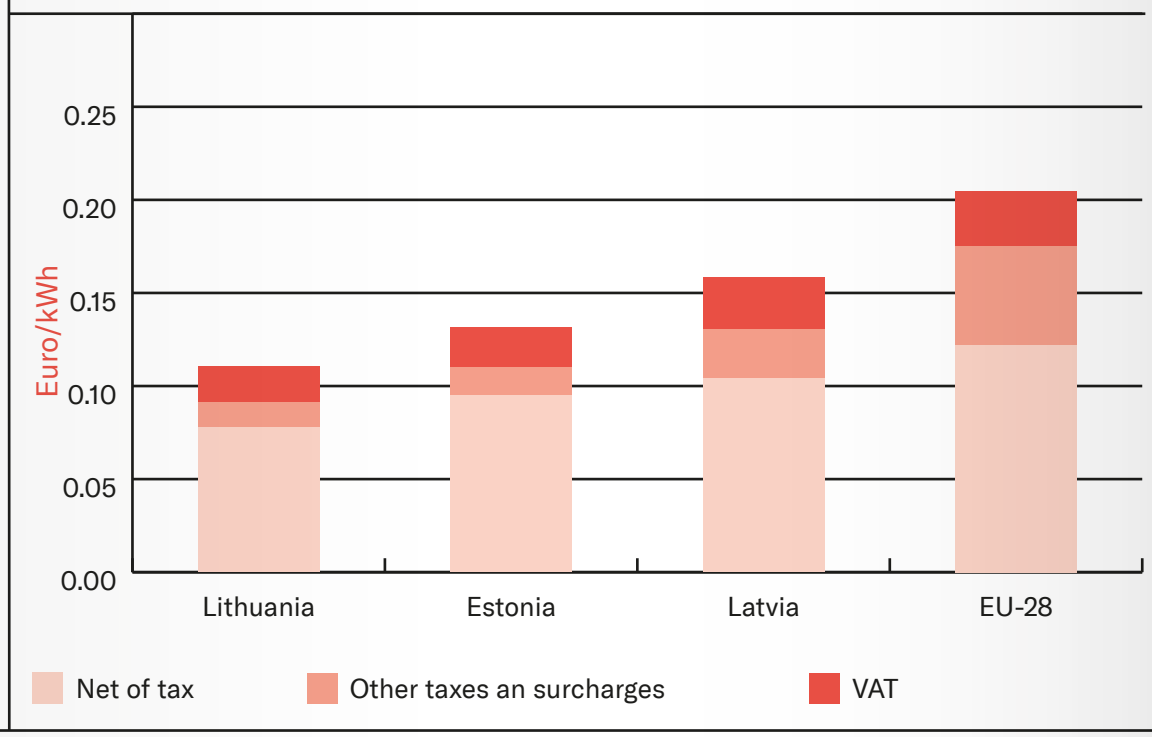
## Energy prices for consumers, 2nd half of 2017

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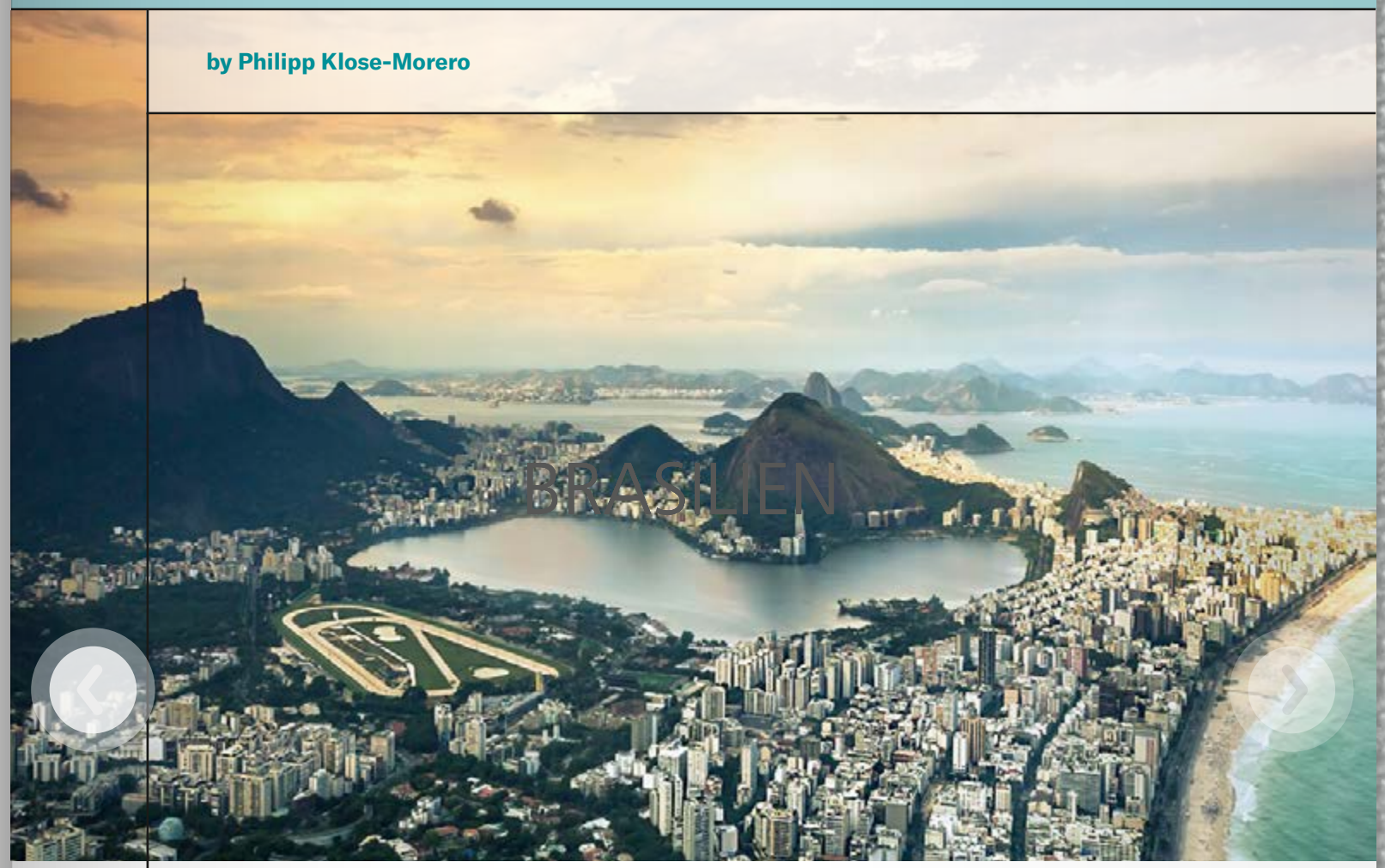
# 02 BRAZIL

by Philipp Klose-Morero




## Status of renewable energy capacity

### Overview of Brazilian Energy Market

Brazil has a large electricity sector which except for a very small percentage of the territory (around 3%) is totally interconnected by the National Interconnected System (SIN), reaching all country regions (south, southeast, midwest, northeast and northern region).

The interconnection allows the exchange of energy between regions through the country. Therefore, regions with poor energy generation can be benefited by being supplied by big generator plants in other region of the country.

This coordinated operation enables an overall reduction in the energy cost. It happens because cheaper energy (e.g. from hydroelectric) can be easily transported instead of using other sources more expensive (e.g. thermoelectric). It is true as well, that once the country faces a hydroelectric crisis, the cost of buying energy generated from more expensive sources is shared among all the agents.

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## Current and prospective share of each source of energy

- Currently in Brazil, the total installed capacity as of 2018, is around 160GW.
- The majority of the power generated comes from big hydroelectric plants generator (96GW or 60%) – due to the big impact on the environment with big constructions in natural areas, there are some agents that do not consider these sources as renewable energy, whereas there are others that do consider. Specifically for this e-book in Brazil section, we are not considering it as renewable energy.
- Renewable energy has increased its representativeness over the years in the market presenting a total capacity installed of 35 GW in 2018 and is currently responsible for 22% of the total installed capacity in Brazil.
- Although power generated from thermoelectric plants has been considered costly and expensive for the system, it is still significant for Brazilian market (27GW or 17%)
- According to the Decennial Plan for Electricity Energy Expansion 2017, provided every two years by the Energy Research Company (EPE), a government agency linked to Brazilian Ministry of Energy, the renewable energy in Brazil will have its participation in the Brazilian energy matrix raised in the upcoming years by 11 p.p. of a forecast total of 192GW.

## Market Share

Brazil has a very pulverized agents market share regarding the installed capacity. There are no power supplier with more than 7% of representativeness in the market. This fact represents that the market has low barriers to entry and that there is no monopoly. This is favorable for new entries and the magnitude of each agent is presented below in graph below.

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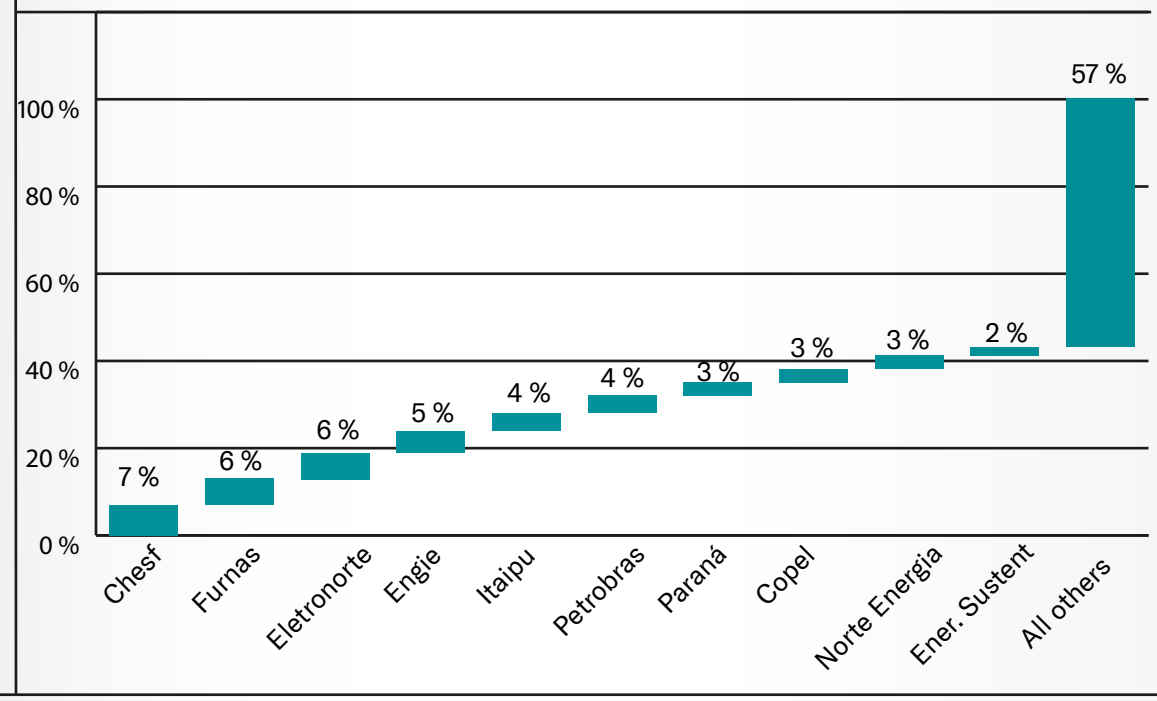
## Installed Capacity Market Share by Agent – 2017




*Source: ANEEL 2017*

### Regulation markets in Brazil

The current model for the energy sector in Brazil, named the New Regulatory Framework (NRF), was conceived in 2003 by means of Federal Laws 10.847/2004 and 10.848/2004.The main goal is to reconcile state planning with market driven competition, aiming to create a friendly environment for private capital in a sector that was, until the end of the 1900's, totally controlled by the state.

Looking into a macro perspective, there are two different environments that an energy consumer can be placed in when purchasing energy in Brazil. On one hand a consumer can be a captive consumer (regulated market), purchasing power from the system (prices established by government - ANEEL) in a regulated trade environment. This is the case of the majority of consumers in the country.

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On the other hand if the consumer fits some requirements, it can choose to be a free consumer (free trading market), purchasing energy directly from a generator plant and/or a regulated trader agency by a Power Purchase Agreement (PPA). This would be the case for companies with high power's demand and that are interested in negotiate price and conditions as well as to choose its energy provider (e.g. acquire power exclusively from a renewable energy generator).

## The Role of PPAs in Brazil and the regulatory framework of PPAs

### Captive (regulated) market

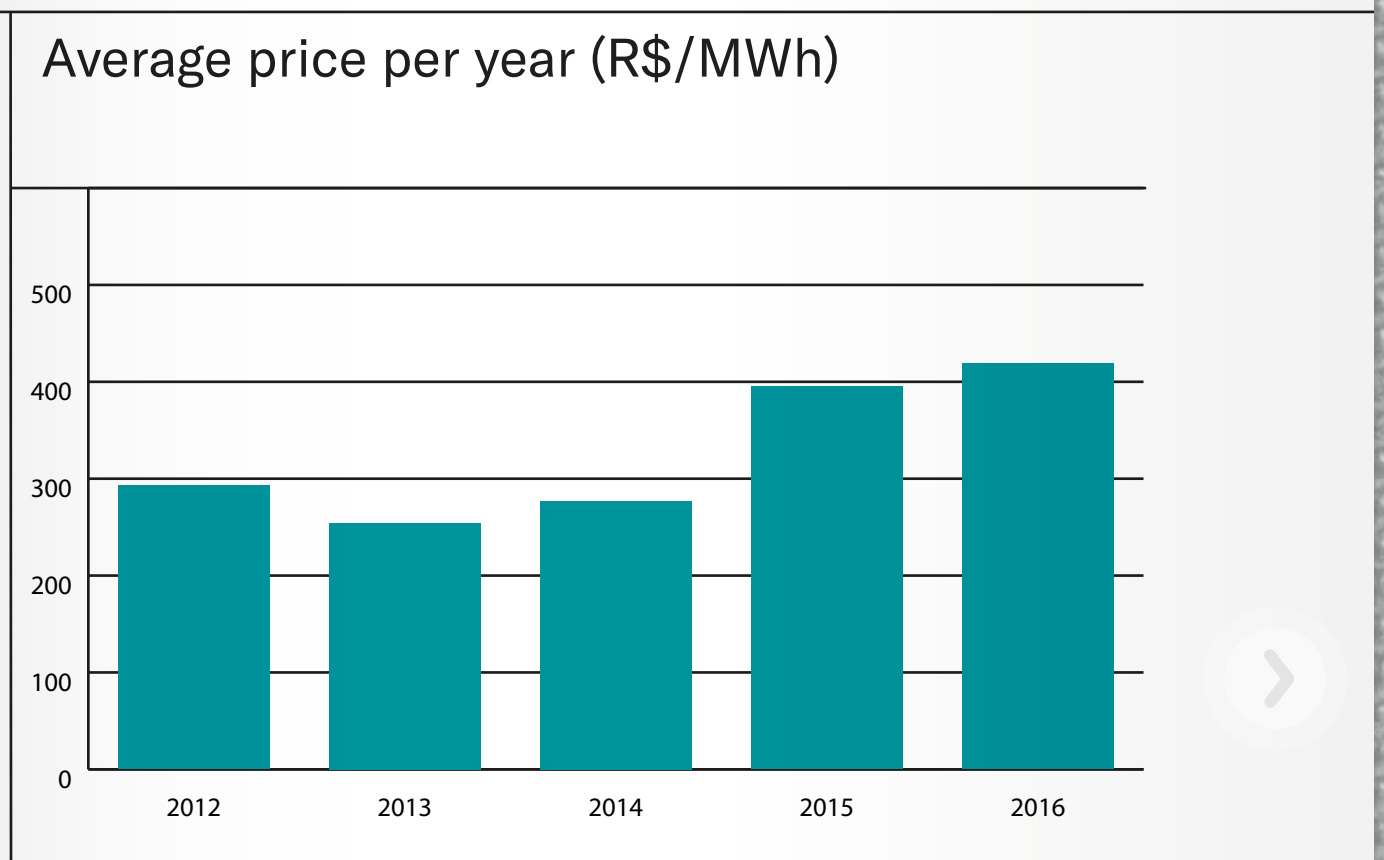
Once the consumer is placed as a captive, it has a passive action in the market, which means that It has to pay the tariffs imposed by the regulators (i.e. ANEEL) with no chance of price negotiation or payment conditions. In this case the consumer is merely part of the system and has to pay the amount stipulated.

The tariffs are stipulated annually by the regulators and can vary each year according to hydrological conditions in the country. The government auctions are not only related to the minor price, but with the government expansion plan, therefore the portfolio of energy purchased by the distributor is composed by a mix of Hydro, thermos, wind, among others.

As the country is highly dependent of hydroelectric power generation, any hydric crises results in higher price for all the agents and impacting in the tariffs to be paid by the captive consumers.

At the graph below we presented the fluctuation of energy prices in the last years, from 2012 to 2016 in Brazil.

# 02 BRAZIL




## Free Energy Market – How does it work in Brazil?

The free market in Brazil is an interesting alternative for consumers and for generator plants. This trade environment encourage competition and reduce the cost of electricity. It allows the consumers to acquire energy directly from the generator or from an authorized trader. In this case, the agents are able to freely negotiate prices, conditions, time-horizon and volume. All off the conditions are set through a Power Purchase Agreement.

The most popular way of set an agreement in Brazil is the indirect PPA. See at the figure below how does it works.

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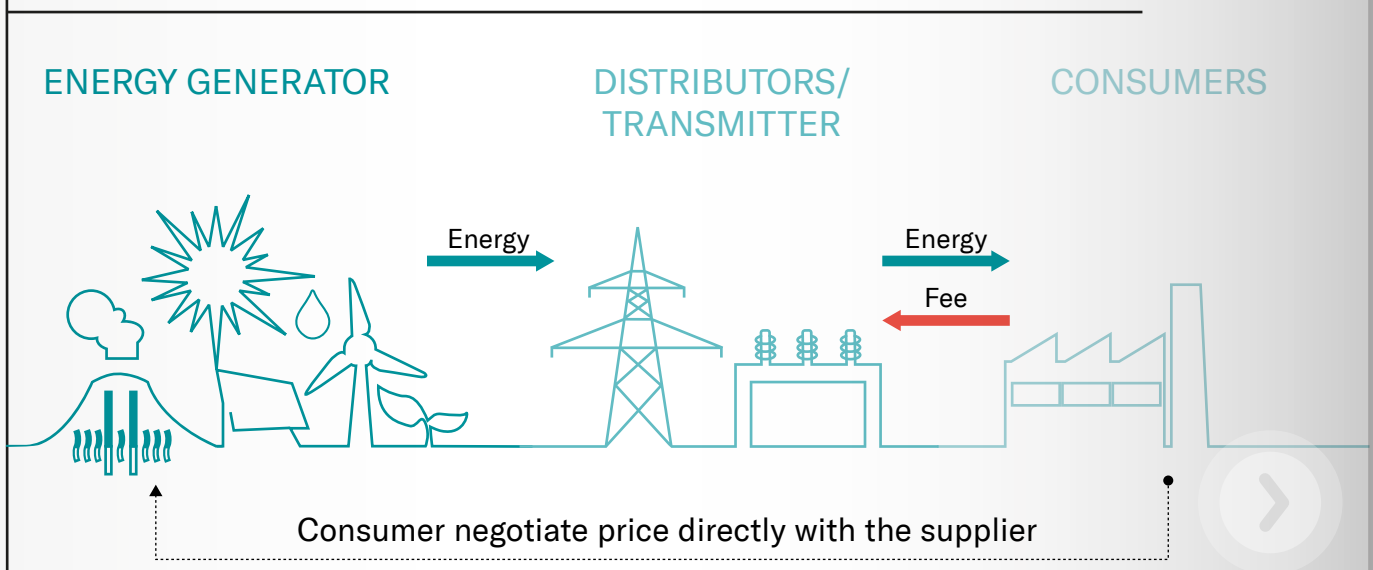
## PPA




In the current legislation – basis 2018 - there are two different categories of companies that can join the free market and consequently perform an indirect PPA: i) special consumers and ii) free consumers.

Special Consumers are those that have a consumption in a range of 0.5MW to 3MW and the energy must necessary be acquired from renewable sources (e.g. wind).

Free consumers are those that the consumption (i.e. volume acquired) is higher than 3MW. In this case the consumer can freely chooses the energy provider that it will acquire energy. The advantage to acquire energy from a renewable source, in a financial perspective, is that the government incentives it granted significant discounts on TUSD (Distributor fees) and TUST (Transmitter fees), sometimes achieving up to 100%.

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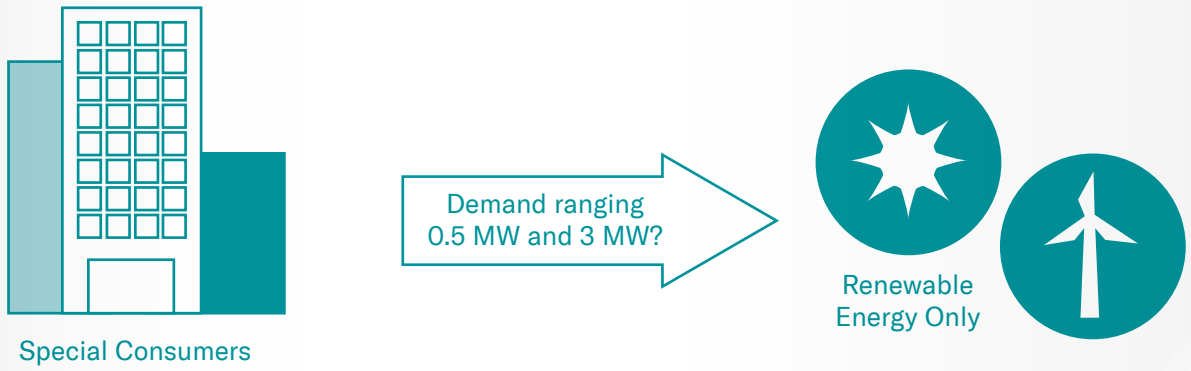
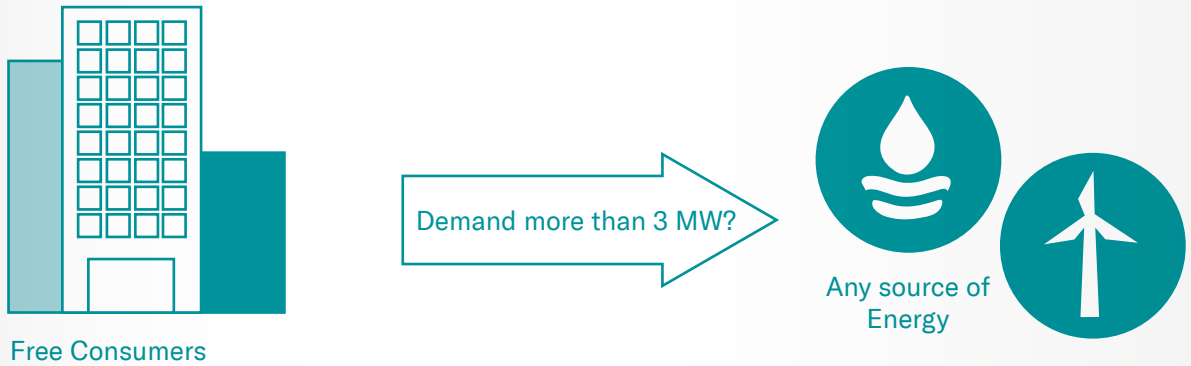
See at figure below the difference between both type of consumers:

Minimum voltage: 3 MW




Minimum voltage: 3 MW (started after 1995)
oder 69 Kv (before 1995)




## Examples of real PPA in Brazil

In June 2018 Banco do Brasil (one of the biggest Brazilian bank) has announced the signing of a PPA with EDP with a total amount of BRL 86 million for a stipulated supply of 400 GWh. According to the press note that have been released, the agreement will mature in five years and the bank estimates to save approximately BRL 50 million in the period.

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As a further example, CPFL Brasil, one of the biggest players in the energy market announced in Dec-2016 the set up a of a PPA with an Hotel Chain named Pontes Hotéis & Resorts in Pernambuco/Brazil. As the three hotels of the chain altogether reach less than 3 MW they are included as a special consumer and necessarily must purchase from renewable energy sources (i.e. special consumer). According to the official announcement, the consumers forecast save approximately 25 % with energy expenses.

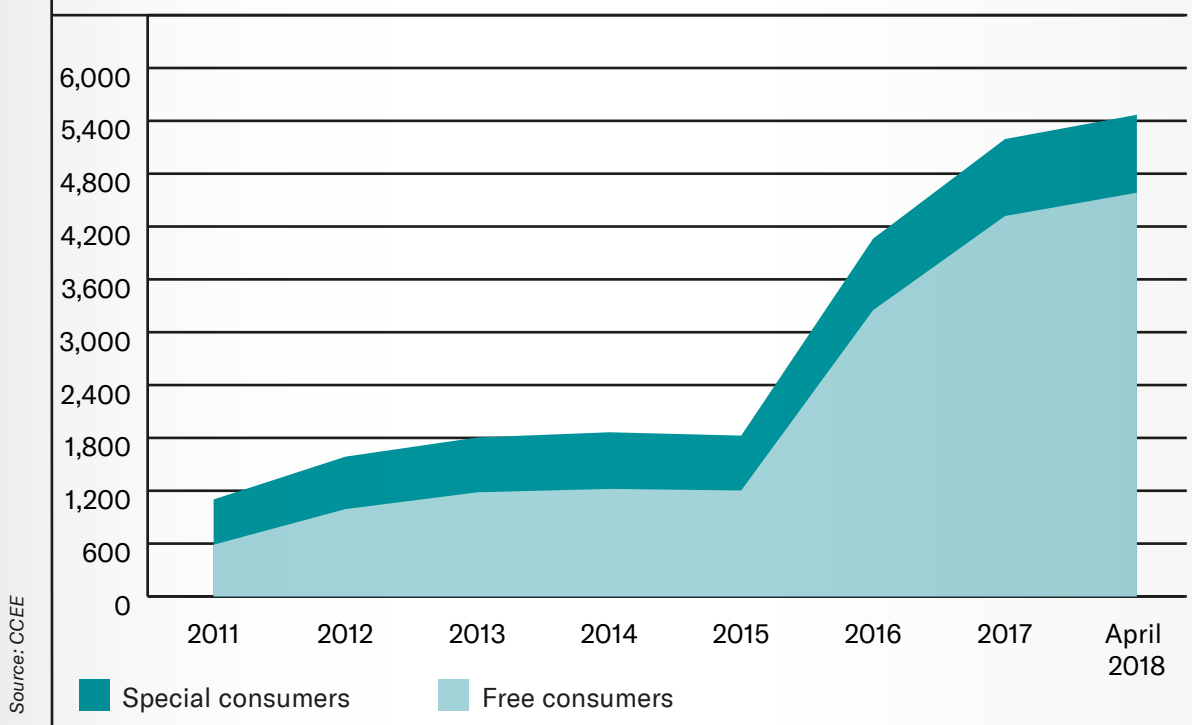
### The amount of energy that gets capitalized via PPA per year

The environment where the majority of the consumers are included in Brazil is still the captive market. This difference of user among the free market and the captive market appears primarily for the following reasons:

- Restricted market: In order to be able to participate of the free market, the companies shall fulfil some special requirements (some level of minimum consumption, voltage level and must be registered at CCEE).
- Market's misinformation: Even considering that the Free Market was implemented in the country in 1995, the information has been spread slowly through the years. Due to government incentives and the growth of companies in the sector, the number of adopters has been increased in the last years, as presented in the chart below.

# 02 BRAZIL

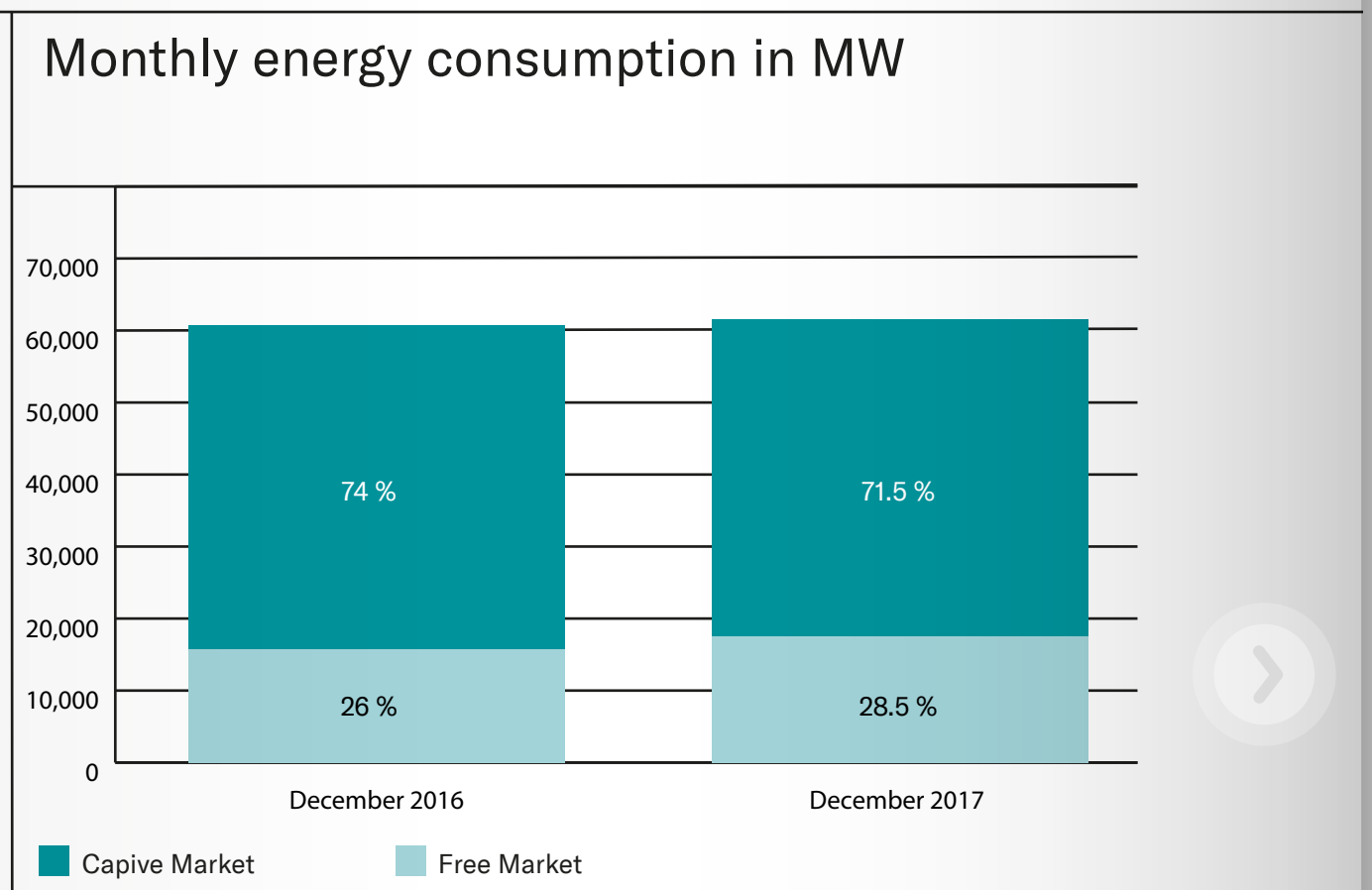
## Free market consumers development




*Source: CCEE*

The representativeness of the free consumer in regarding energy consumption has also increased (not only in adopters numbers). According to CCEE the representativeness raised from 26% to 28.5% for 2016 and 2017, respectively. See at the table below details over the demand increase in the free market.

# 02 BRAZIL




Planning is essential when joining to the free market. If a free consumer wants to return to the condition of a Regulated Consumer, it must notify the distribution company of its concession area five (5) years in advance, a deadline that can be reduced at the discretion of the distribution company.

**Legal and regulatory framework of PPAs. On-grid PPA charges and mini-grid charges.**

The Transmission System Usage Rate (TUST) is the main charge for using the electricity transmission system. TUST is calculated by ANEEL and based on the costs incurred by the transmission companies, plus sector charges.

The Distribution System Usage Rate (TUSD) is the main charge for using the electricity distribution system. TUSD is also calculated by ANELL and is based on the costs incurred by the distribution and transmission companies plus sector charges.

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Either the consumer and the generator company have to pay these charges when entering in a PPA and according to abraceel the total cost of this charges is usually around 20% of the energy cost.

**Earnings and costs: Overview of the course of the electricity price in the respective country. How does it accrue? Overview of the electricity generation costs, costs for components as well as indications/benchmarks for the costs per year of the operation and maintenance of renewable energy facilities (PV/Wind).**

## PV costs in Brazil

According to EPE the final average cost of all selected PV projects in the last auction occurred in April-2018 reached a price of BRL 118 (USD35.2)/ MWh, which is 62.2% lower than the maximum pre-fixed price in the underlying auction, BRL 312 (USD 93.4) / MWh.

This is a considerable decrease when compared to the last auction in 2017, when the average price reached BRL 145.78 (USD 43.6) / MWh. According to EPE's president, this level of price may keep constant in the future or even decrease, following the global perspective.

According to Brazilian Solar Association (Absolar), the sharp decrease in the price was due to i) Lower price in PV components; ii) Appreciation of BRL front of USD (when comparing April-2018 to last auction in Dec-2017) and; iii) Increase in industry's competitors.

## Wind costs in Brazil

One outcome that can be observed is the decrease in the energy's price traded in the auctions. According to a recently report "Participation of wind generators in Brazilian auctions" made by EPE in 2018, the market witnessed a significant decrease in the wind energy price from BRL 242 / MWh (already adjusted for inflation rate) traded in an auction in 2009 to BRL 68 / MWh in another in 2018.

According to EPE, the construction costs for wind plants has decreased considerably as well. As an example, the investment budget of projects registered at EPE decreased from a cost ranging from approx. BRL 16,000/kw – approx. BRL 4,000/kw in 2010 to approx. BRL 8,600 KW – BRL approx. BRL 3,100. This statistic states the maturity of the market, achieving a much lower range of investment in the plant. The average cost in 2010 was approx. BRL 8,000 KW, when in 2018 was approx. BRL 6,000 KW.

The most representative cost when constructing an wind energy generator in Brazil is the equipment's, which represents approx. 70% of the total.

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**Does the possibility to receive any kind of state subsidy (FIT, green certificates, tax credit, ...) for renewable power that gets marketed afterwards via PPA exist?**

Owners of RE projects can benefit from several incentives granted mainly in form of tax reliefs or exemption from the payment of several charges. Following a short overview of such benefits:

› ProGD - National incentive program for distributed generation, with a special focus on PV (not excluding other renewable energy sources). The ProGD program covers a spectrum of measures including tax incentives and creates lines of credit. With this program the government predicts an investment of BRL 100 million (US$26 million) until 2030 in this segment. The nation's Ministry of Energy and Mines forecasts 23.5 GW of distributed generation installations, primarily PV. There is still low tangible details of how it will works, but in a broader view the program's main initiatives are as follow:
  - Create and expand credit lines for financing investments;
  - Incentives involving certain equipment related to the wind and solar energy sectors, such as windmills and photovoltaic generators.
  - Development of national competitive technology for renewable energy;
  - Incentive in the work force in renewable market.

› ICMS Exemption: Government granted a tax exemption as to the valued-added tax (ICMS) on operations for photovoltaic generators that pour energy into the grid. This was decided in "convention ICMS nº16/2015" by the specific regulator CONFAZ – National Council of Treasury and Policy. Note that is competence of each state to define the legislation about this specific tax "ICMS", but most of them already adopted the incentive.

› Discounts on TUSD and TUST for renewable energy sources: The Brazilian government is providing incentives for the development and use of renewable sources in the country, especially wind and solar sources. Incentives include:
  - Renewable projects in general: Discounts granted to certain projects and applicable to Tariffs for the TUST and TUSD, in which projects based on solar, wind, biomass, and qualified cogeneration sources, whose power injected into the systems is more than 30,000 kW and less than or equal to 300,000 kW, are entitled to a discount of at least 50% on these tariffs.
  - Distributed Generation incentives: ANEEL has also granted an 80% per cent discount on the TUST and on the TUSD to solar projects of Distributed Generation that started their operation until 31 December 2017 for the first 10 years, being the 50 per cent discount applied as from the 11th year.

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**Any legal obstacles in entering long-term electricity supply contracts-off-grid or mini-grid PPAs?**

In general terms, in oder to directly participate in the Brazilian Energy Market as an energy generator, companies must incorporate a subsidiary in Brazil. The Brazilian legislation sets forth that in order to receive an authorization from the Federal Government the company must present a number of documents establishing their legal and economic capacity. However, in order to participate in the Brazilian energy market as a supplier of equipment, there does not exist any restrictions.

This said, there are no specific restrictions related to acquisition of sites/lands by foreign companies. In broad terms, such restriction would not create obstacles for a foreign investor to develop energy projects in Brazil.

In order to be able to operate in the free market and consequently to trade in the market by PPA, there are some requirements that should be fulfilled. Mainly, it is necessary to receive the relevant authorizations from the competent authorities, while the type of the authorization needed depends on the

- type of energy source,
- size and capacity of the plant,
- technical and operational aspects,
- Environmental impacts
- end-users.

Furthermore, the PPAs need to be registered with the Brazilian Energy Trading Chamber (CCEE), which consists in a non-profit and private entity authorized by ANEEL. PPAs are also subject to registration, approval or ratification by ANEEL, as applicable. Such authorities have the task to ensure the compliance of the PPAs with the applicable law. In particular, PPAs must specify the contractual period, the amount of energy and the demand contracted, as well as the amount and price of the energy contracted. The information provided related to the contracted and consumed in the ACR and ACL permits settlement mechanisms among power generated, which is carried out by CCEE in the short-term market and may result in the differences settlement price.

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**Have legal and regulatory developments already been announced or are they foreseeable?**

The market has considered raise the participation of the consumers in the Free market. One of the possibilities would be decrease the minimum consumption that each agent should achieve. In order to promote it, change in the legislation has been broadly discussed.

This point was specifically discussed by the Brazilian Ministry of Energy and Mines in July-2017 in the “public consultant 33” and materialized as a Law Project delivered by the Ministry to the Brazil’s President in February 2018

**Market potential, conclusion and outlook.**

With its abundancy in natural resources and continent’s extension, Brazil can be considered as one of the countries in the world having the highest potential to develop renewable energy generation. Brazil has ability to exploit different kind of resources (renewable or not) like wind, PV, Hydro, Biomass. It facilitates the authorities to think wisely in the best and more adequate energy matrix to consolidate.

Currently, Brazil is highly dependent of big hydroelectric power generators (that for this specific study in Brazil was not considered as renewable energy). This situation can be risky, for instance in rains shortage periods the government produces energy from more expensive sources, impacting considerably the energy cost in the country. Additionally this huge demand on hydroelectric energy can threat the level of the rivers.

Therefore, the government has increasing more and more the incentives and subsidies to renewable energy mainly in wind and PV generation. This is a strong indicative that the energy matrix tends to diversify sharply, as some studies presented In this e-book pointed out.

Additionally, the decrease of the costs for renewable energies are a strong indicative that the investments and options for this kind of energy source will gain more space in the following years.

The specialists and regulators expectations is that the installed capacity of energy in the country will rise from 13 GW and 1 GW in 2018 for 28 GW and 10 GW in 2028 for wind and PV, respectively. The impact will be directly in non-renewable energy sources, as Thermoelectric plants and big hydroelectric plants.

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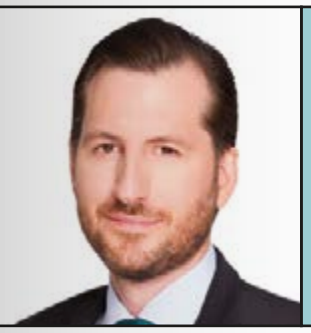
Regarding to specifically the market in Power Purchase Agreements – PPA, currently the interested parties in general is putting pressure in the legislators to decrease the barriers to be part of this environment (known as free market in Brazil). The government has responding by legislating and approving laws to increase this free market.

Due to the indisputable advantages of the signing of a PPA, and in particular the possibility to directly negotiate the energy price with the generators and to reach a budget predictability especially with long term PPAs, PPA market is getting more and more interesting in the last years and has a high potential to increase. From 2015 the number of new adopters, mainly related to renewable energy, has increased considerably. Regulated traders and generator plants has done significant marketing investments in order to attract even more adopter to PPA market.



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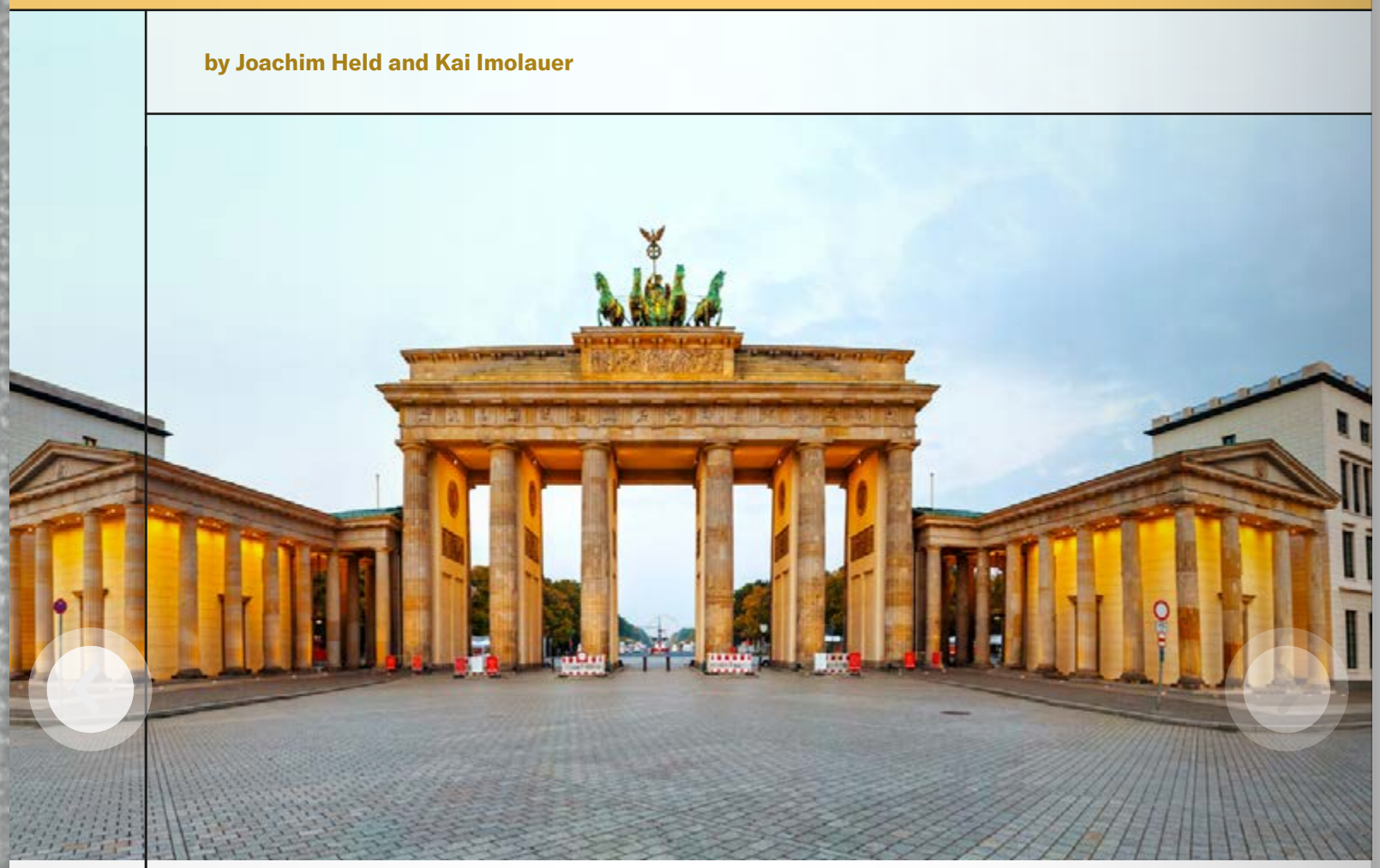
by Joachim Held and Kai Imolauer



## Developments in the area of expansion of capacities and current state of renewable energy generation capacities

The share of renewable energy sources in the total electricity consumption has considerably increased over the last 20 years: While in 2000 it still stood at 6 %, in 2017 it was already 36 % and, according to the target defined in § 1(2) sentence 1 no. 1 of the EEG 2017, it should increase to 40 % or even 45 % over the next eight years.

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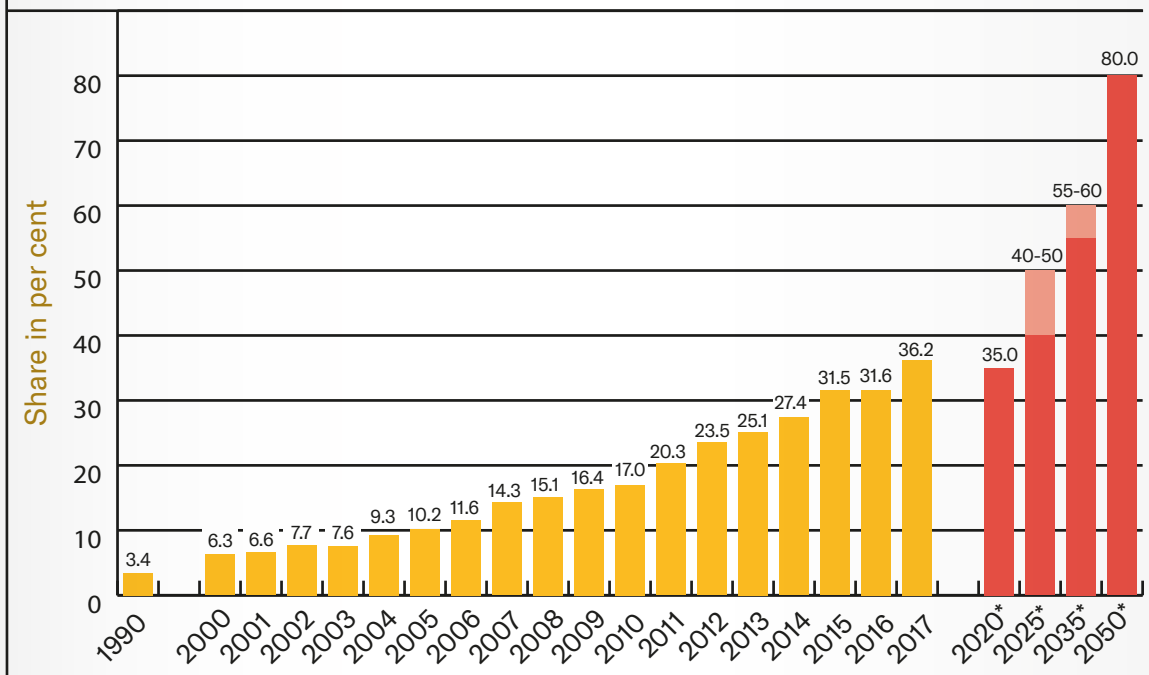
## Development of the share of renewable energy sources in the total electricity consumption in Germany




*Targets defined in EEG 2017 § 1 (2)

*Source: BMWI [Federal Ministry for Economic Affairs and Energy]: Development of renewable energy sources in Germany in 2017; p.7.*

The statutory incentive introduced by the EEG in form of a purchase guarantee (§ 11 EEG 2017) and payment entitlement (§§ 19 EEG 2017 et seq.) has been so far the key incentive to make an investment decision. The implementation of the – initially voluntary – so called „direct selling“ by the EEG 2009 (currently § 3 No. 16 EEG 2017) opened up the possibility for individuals to sell electricity. With the introduction of mandatory direct selling for larger EEG installations by the EEG 2012 (currently § 21 EEG 2017), direct marketing has become a necessity for a major market segment of larger-scale solar installations and wind turbines. The support in the form of market premiums, which is designed as a flexible shortfall guarantee (§ 20 EEG 2017), provides, however, only low incentives for demand-oriented and market-oriented selling; therefore, selling on the energy exchange is still the main focus here.

Following the implementation of the competition-based determination of the market premium by the EEG 2017, the level of subsidies was considerably reduced as a result of the competitive pressure. Thus, for example, especially in the case of auctions for

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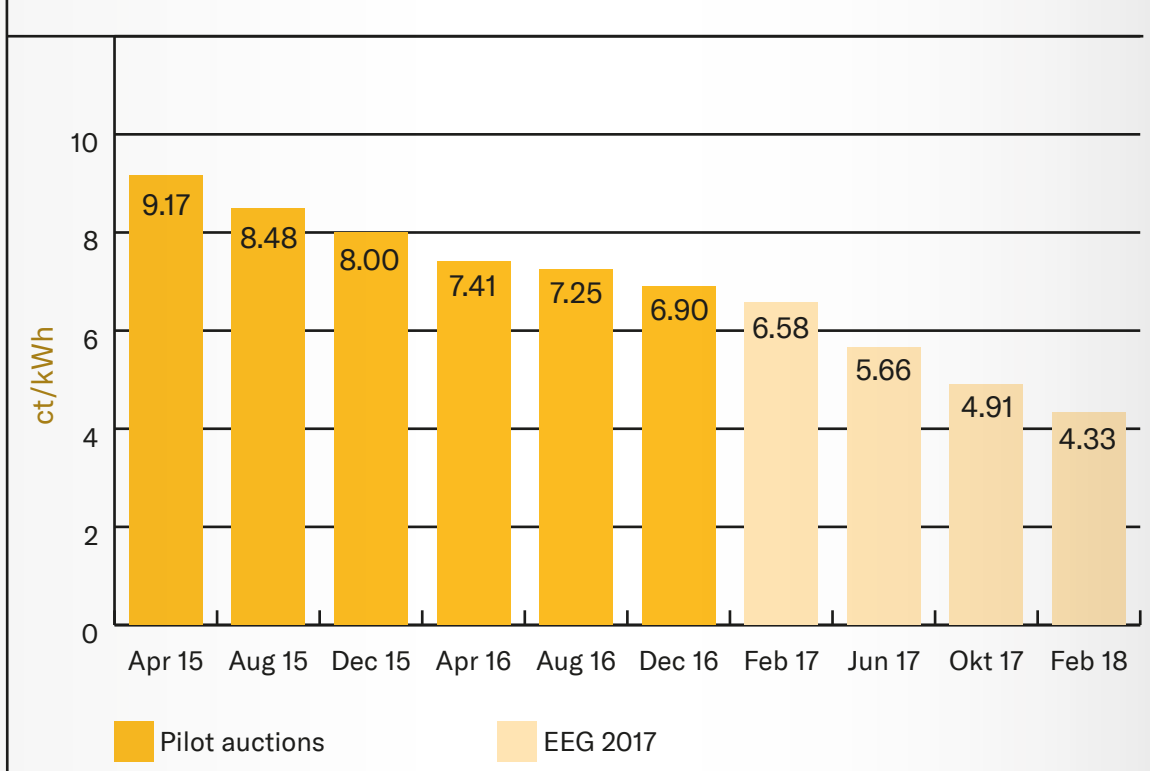
onshore wind energy installations bids for unsubsidised projects have made the headlines in the German renewable energy industry despite fluctuations in the average bid values. But also in other technology segments the auction system has led to a reduced level of funding rates. It is expected that the funding rates will continue to decrease for all technologies in the future.

Consequently, some RE technologies will no longer focus on the income from the EEG funding, but rather on unsubsidised selling of renewable electricity. Therefore, operators of installations are increasingly compelled to examine all other selling options in addition to selling electricity on the energy exchange.

## Auctions for ground-mounted PV installations reduce the average subsidy amount.




*Source: BMWi: https://www.bmwi.de/Redaktion/DE/Dossier/erneuerbare-energien.html*

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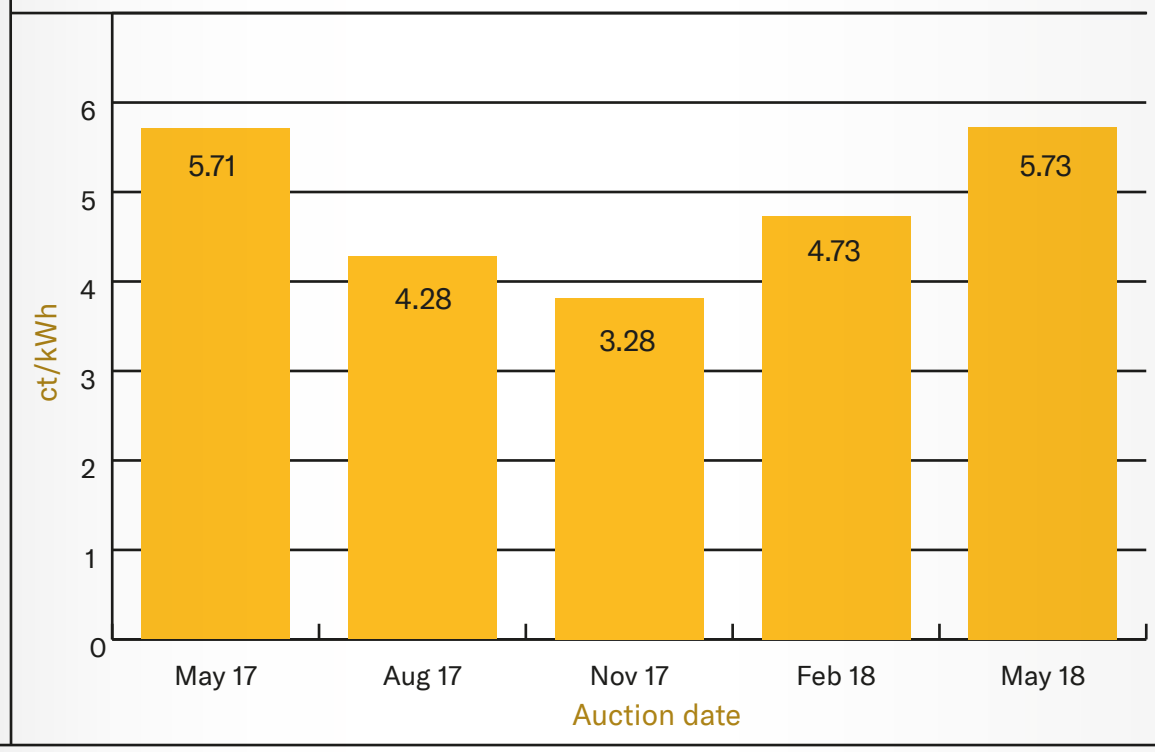
## Auction – onshore wind turbines




*In-house presentation; based on the data provided by BMWi: https://www.erneuerbare-energien.de/EE/Redaktion/DE/Dossier/nationale-ausschreibungen-und-ergebnisse.html?cms_docId=577134*

In addition to the level of selling prices, also the long-term refinancing security is important here. The so-called „Power Purchase Agreements“ (hereinafter: „PPAs“), i.e. long-term power purchase agreements between electricity consumers and power producers, could offer here a viable option for secure refinancing of an installation, next to auctions.

The so-called Corporate PPAs (hereinafter „CPPAs“) are specifically concluded with offtakers who are companies from the manufacturing industry being, as a rule, power-intensive end consumers of electricity.[1] Moreover, there are also other forms such as utility or merchant PPA, whereas our analysis below will focus only on CPPAs concluded with power-intensive enterprises. A characteristic feature of this form of selling is the long-term contractual commitment at constant purchase prices and the related (re-)financing security for both parties to the contract. Though, the support in the form of market premiums as per § 20 EEG 2017 will remain the main pillar of refinancing for renewable power plants due to the higher degree of security as regards the payment by



[1] Going Green – Corporate PPA Branchenstudie April 2018, Studie der HSH Nordbank, S. 4.

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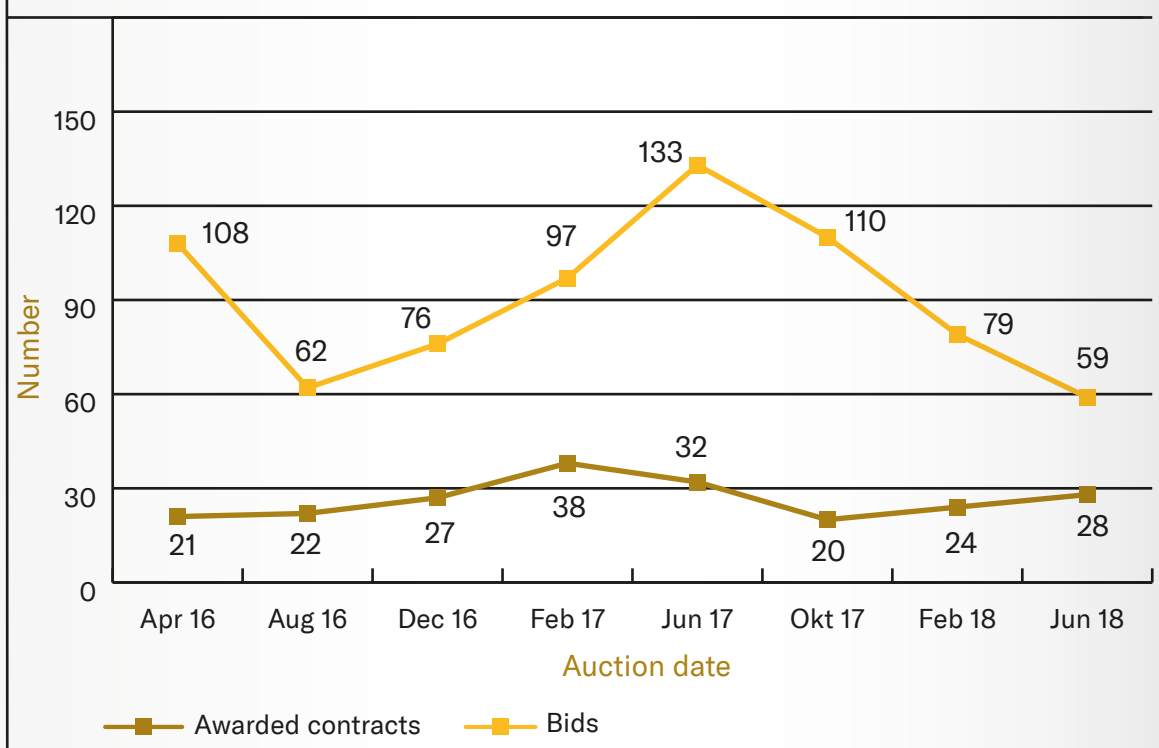
distribution network operators of market premiums in case of shortfall and the extensive statutory protection in form of shortfall remuneration. Nonetheless, the auction system is still marked by an oversupply of bidders encouraged to place „strategic" bids to outsmart the bidding competition, but they are still not awarded any contracts in the end. Sometimes, less than 25 % of all PV projects are awarded a contract (see graphics). While waiting for the next auction round, a large number of other renewable energy projects which did not receive any contract may use the possibility to implement their projects based on long-term power purchase agreements with large industrial customers. Thus, there is quite significant potential for renewable power plant projects which could be implemented through CPPAs and become economically viable.

## Auctions – PV installations




*In-house presentation; Data source: https://www.bundesnetzagentur.de/DE/Sachgebiete/ElektrizitaetundGas/Unternehmen_Institutionen/Ausschreibungen/Solaranlagen/BeendeteAusschreibungen/Ausschreibungen2017/Ausschreibungen2017_node.html*

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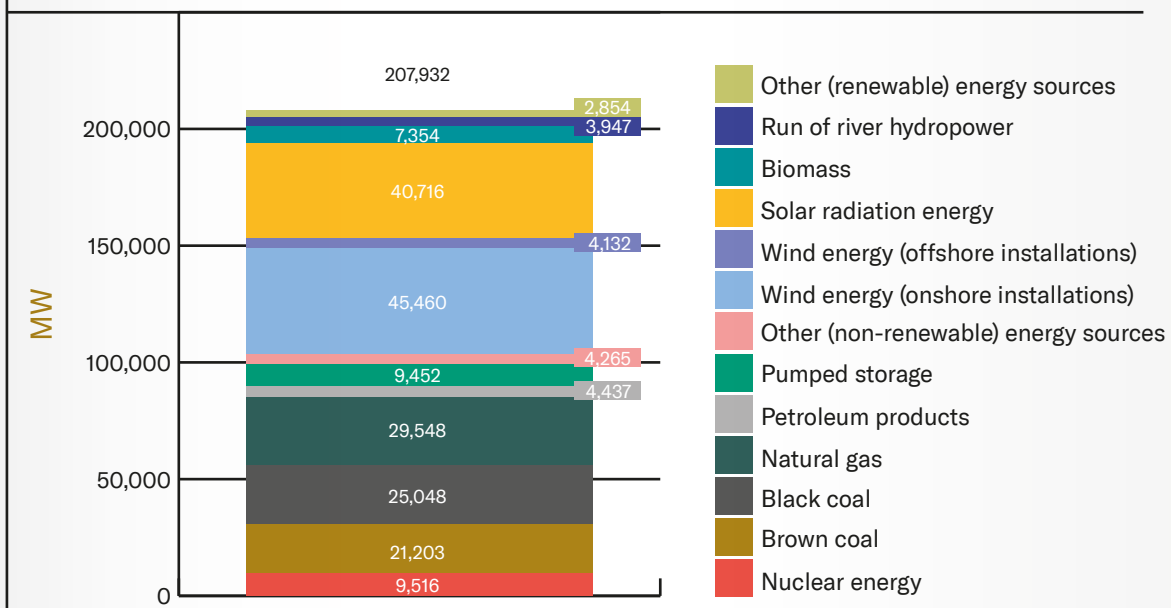
Finally, the EEG support system has meanwhile become so complex – fraught with barely graspable interpretation-related risks and extensive restrictions – that the huge administrative workload, legal risks and subsidy hurdles (e.g. for ground-mounted PV installations, prohibition of multiple sale, direct selling requirements or the privilege for self-supply) can also be a reason for opting for a simplified CPPA model.

## Nominal net installed capacity in Germany




*Source: Monitoring department of the Federal Network Agency, as of 02/02/2018*
*EEG installations – appraisal as of 31/12/2016*
*Other (non-renewable) energy sources, 50% waste, mine gas*
*Other (renewable) energy sources, 50% waste, landfill gas, sewage gas, geothermal energy, storage water (without pumped storage)*

In this case, the generation capacities of the so-called „industrial energy sector“ of Germany [2] can be used as a benchmark for the potential volume, as it has already purchased fossil-based electricity based on the so-called „virtual sliced power plant models“, leasehold and operational management models as well as so-called „operational service“ models. As part of the implementation of the political goal of decarbonising the energy industry, it should be assumed that these installations will be increasingly replaced with renewable power plants and partly refinanced based on CPPA selling models. A pioneering example of this trend could be the new Mercedes-Benz manufacturing plant based in Jawor, Poland, which procures all its electricity from a wind farm located 10 km away and is operated by a Dresden-based project developer VSB.[3]

[2] Federal Network Agency [German: Bundesnetzagentur or BNetzA]: https://www.bundesnetzagentur.de/SharedDocs/Bilder/DE/Sachgebiete/Energie/Unternehmen_Institutionen/Versorgungssicherheit/KWnetto_02_2018.jpg?__blob=poster&v=1

[3] https://www.energiejobs.de/news/artikel-35410-daimler-setzt-auf-windstrom-in-der-produktion

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Currently, the nominal net installed capacity of brown and black coal in Germany is over 46,000 MW and thus accounts for 22% of the total installed capacity. It is estimated that 62 TWh of electricity was produced in the process of generating energy for the generator's own purposes in 2014, of which 40 TWh was generated for this purpose in the industrial sector and 20 TWh in the commercial sector.[4] According to other estimates, about 46 TWh of electricity was generated in larger-scale (> 1 MW) industrial power plants in Germany in 2015. A vast majority thereof (70%) was produced in the combined heat and power (CHP) processes that largely use fossil fuels.[5] This creates enormous potential for CPPA concepts in the context of modernising, replacing and expanding such installations which increasingly need to be replaced with renewable primary energy sources.

Assuming that, compared to subsidised direct selling involving selling on the energy exchange, the selling of energy under a PPA is not financially viable, because the higher sales revenue is not able to cover the additional costs of generation and the selling process management, the installations using the subsidised direct selling model are not an option for selling under a PPA. The same applies also to selling involving feed-in tariffs under the EEG. The selling of electricity produced in self-supply power plants rules out the possibility of selling under PPAs (at least in the case of existing power plants), already from organisational aspects. Therefore, the segment of unsubsidised renewable power plants (§ 21a EEG 2017) currently remains the only potential for PPA selling models.

[4] Federal Network Agency, Leitfaden Eigenstrom [Guide on self-supply], p. 8 et seq., https://www.bundesnetzagentur.de/SharedDocs/Downloads/DE/Sachgebiete/Energie/Unternehmen_Institutionen/ErneuerbareEnergien/Eigenversorgung/Finaler_Leitfaden.pdf?__blob=publicationFile&v=2

[5] VCI Verband der chemischen Industrie e. V., https://www.vci.de/langfassungen/langfassungen-pdf/2015-05-27-industrielle-eigenstromerzeugung-in-deutschland-sichern.pdf

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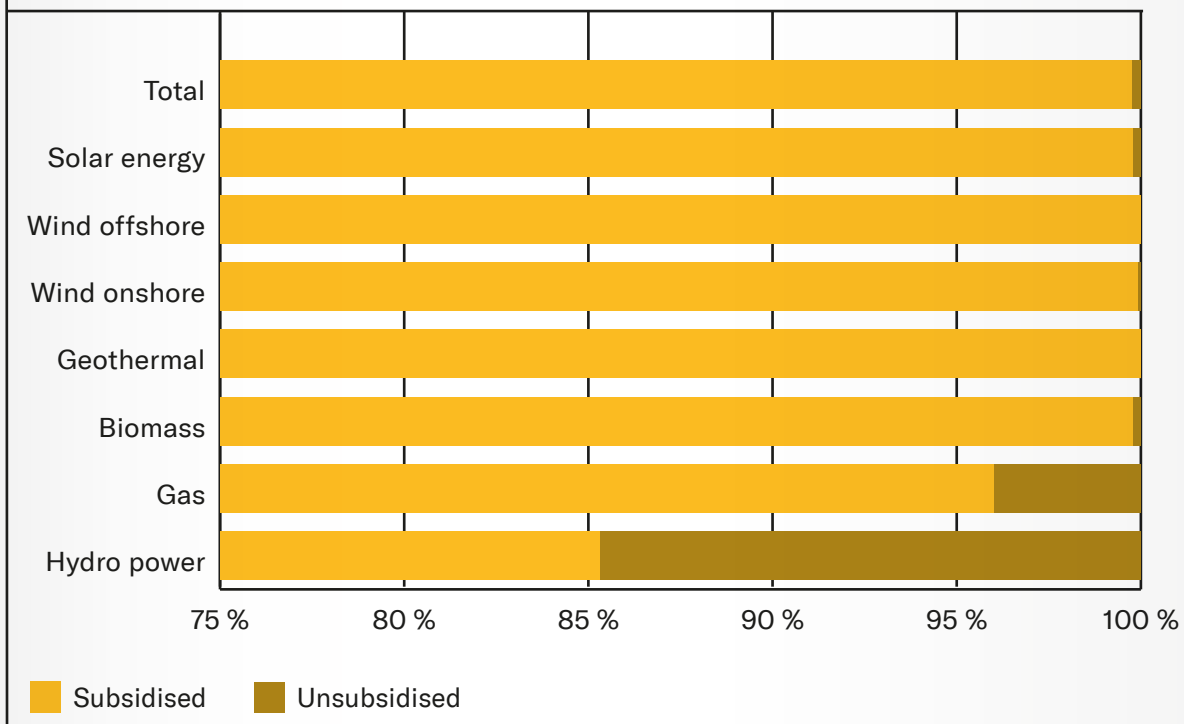
## Direct selling 2018




*In-house presentation; Data source: https://www.netztransparenz.de/portals/1/Direktvermarktung-Uebersicht_Juli2017.pdf, https://www.netztransparenz.de/portals/1/Direktvermarktung-Uebersicht_Dezember2017.pdf, zuletzt besucht am 16.08.2018.*

Another driving force behind long-term supply contracts with industrial offtakers is the indirect promotion of decentralised power generation in the immediate vicinity and the so-called self-supply (see § 3 No.19 EEG 2017). Thus, a part of the relief provisions under German energy tax and levy law assumes a geographical vicinity (e.g. the so-called contracting privilege as per § 9 (1) no. 3 b) of the German Electricity Tax Act [StromStG], the term „customer installation“ as per § 3 no. 24a and 24b of the German Energy Industry Act [EnWG], etc.), often combined with the requirement that the grid must not be used for supply of the general public (e.g. § 9 (1) StromStG) or for the generation and consumption of power by the same legal entity (the so-called „self-supply“) (e.g. § 9 (1) no. 3 b) StromStG, §§ 61a et seq. EEG 2017). Alone the concept of real privileges for self-supply excludes supplying power to others. The self-supply concepts may, however, pave the way for a PPA model as an organisational alternative since those concepts are technically comparable.

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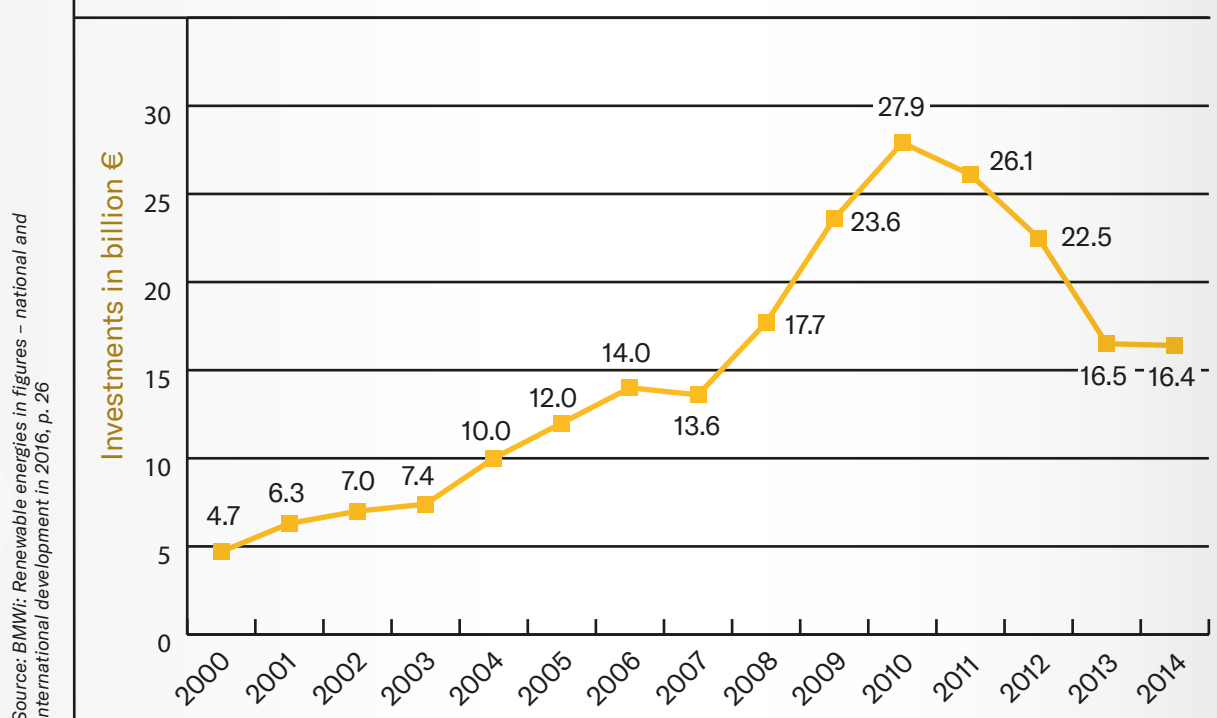
## Investments in new RE installations




*Source: BMWi: Renewable energies in figures – national and international development in 2016, p. 26*

Finally, the 20-year funding period for the first-generation EEG installations will expire in 2021. These will be followed by many more EEG installations, especially after expiry of the support for the installations from the peak commissioning years 2004 to 2012. So far, most EEG technologies have lacked follow-up support mechanisms for existing installations, so installation operators have to search for new sales channels.[6] It is questionable here whether the installations will continue to operate, especially those whose high running costs could previously only be covered by subsidies and which would have to compete now with more modern installations. In this context, existing biomass and geothermal installations are likely to be less suitable for CPPA models. By contrast, in the case of PV installations, wind turbines and hydro power installations, the running operating costs play only a subordinate role compared to investment costs. Alone in 2021, more than 5700 wind turbines with a capacity of 4500 megawatts will be affected; and 2,000 to 3,000 megawatts/per year in every subsequent year. According to estimates, this would thus mean a loss of one quarter of the current capacity of wind power by 2023. Consequently, even with the planned construction of new wind turbi-



[6] https://www.energate-messenger.de/news/177962/post-eeg-anlagen-werden-es-schwer-haben

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nes the capacity will decline.[7] According to an analysis conducted by BayWa r.e., the market volume for all renewable energy technologies in the case of which the funding expires in 2021 could exceed 6100 MW.

### Impact of PPAs on the structure of the German electricity market

A physical corporate PPA enables both the long-term refinancing of an investment in electricity generation installations and the supply of energy to power-intensive production facilities at prices that are stable in the long term. This would allow PPA models to help make investments in power generation and other production facility projects „bankable“. If successful, corporate PPA models could therefore help decentralise and decouple Germany‘s supply structures, which have been so far dominated by central generation capacities, long-distance transmission systems and central trading platforms, both technically and economically.

In fact, however, 95 % of the capacity of all PPAs signed in the EMEA countries (Europe, Middle East, Africa) in 2017 was attributable to Norway, Sweden and the Netherlands , with Germany cumulatively representing only 5 % together with all other EMEA countries.[8] Thus, the impact of PPA models on the German market has been so far only marginal. According to studies, Germany‘s PPA volume was actually only 10 MW in 2017, i.e. not even one percent of the volume of Sweden.[9] Some more significant examples of contracts signed so far have been so far recorded in the area of on-site PPAs. For instance, the Leipzig-based BMW plant has been procuring its electricity since 2013 from four 2.5 MW wind turbines of the wind farm project developer WPD. Consequently, the wind farms have a direct connection to the BMW plant and thus do not have to pay, among other things, grid charges or EEG surcharges that would otherwise be payable. After all, the electricity generated by the wind turbines is sufficient to cover 20 % of the electricity consumption at the Leipzig-based BMW plant and saves 21,000 t $CO_2$.[10]

[7] https://www.zdf.de/nachrichten/heute/auslaufendes-eeg-gefahr-fuer-windkraftanlagen-100.html
[8] Bloomberg New Energy Finance: https://about.bnef.com/blog/corporations-purchased-record-amounts-of-clean-power-in-2017/
[9] Going Green – Corporate PPA Branchenstudie April 2018, Studie der HSH Nordbank, S. 16.
[10] https://www.erneuerbareenergien.de/bmw-werk-laesst-windkraft-ran/150/434/57773/; https://www.windkraft-journal.de/2013/05/29/windpark-fuer-bmw-werk-leipzig-in-betrieb-genommen/39914

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## Legal and regulatory framework for PPAs

### Contract law related framework

The Power Purchase Agreement is – in the narrower sense – a long-term power supply contract between an operator of an electricity generation installation and an industrial offtaker. In that regard, contractual standards have long existed in Germany in the area of large industrial power plants (e.g. in the area of the supply of energy to refineries and chemical parks), which have recently been supplemented by the special economic and legal requirements of subsidised renewable energy generation installations.

Here, first of all, general contract law (§§ 311 BGB et seq.) forms the basis for power supply contracts which are generally classified as purchase agreements (§ 433 BGB et seq.) Due to the usually individual nature of power supply contracts signed with industrial consumers, the general consumer protection standards (§§ 305 BGB et seq.) and their special forms under energy law (§ 3 No. 18a EnWG in conjunction with § 41 EnWG) normally do not apply. Nevertheless, the power supply contracts signed with industrial consumers are also frequently based on the contractual standards for mass customer supply, standardised by law in the Electricity Basic Supply Regulation (StromGVV) and the Low Voltage Connection Regulation (NVV), so typical clause wordings are often found also in individual industrial power supply contracts. In particular, clauses on metering, recording and processing of production and supply related data, billing and access rights normally correspond largely to the general standards, whereas individual deviations are permissible up to the relatively broad limit of being contrary to public policy (§§ 138, 242 BGB).

In this process, the scope of supply, and in particular the coordination of generation and demand, plays an important role in the case of industrial power supply contracts. Even if installation operators, who have long not been subject to any requirements due to the EEG, often wish to receive a „supply to the best of the abilities“, it is often reasonable in terms of energy management to coordinate generation and demand. In this respect, in addition to the service and supply quantity agreement, regulations on the availability of the generation installation, the supply profile or schedule management, as well as demand coverage, minimum purchase and the corresponding lump-sum compensation and contractual penalty clauses (also referred to as ‚take-or-pay‘ clauses) play an important role in the PPA.

Another special feature of long-term power supply contracts is the need to adjust the agreed energy fees by way of price adjustment clauses to the cost and market develop-

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ments in the area of electricity generation, which are usually predictable only to a very limited extent. The purpose of a corporate PPA is not only to provide a production plant with low-cost electricity but also to refinance the investment in the generation installation. The share of volatile cost components in the case of PV installations or wind turbines is usually low. Therefore, it is not necessary to adjust prices to reflect the cost-related risks. Nonetheless, also here, market forecasts usually play an important role in pricing, so at least the so-called „profitability clauses“ are common. Due to the high investment outlays, typical technical useful life and economic depreciation periods, PPA models are characterised by long refinancing and contractual periods. Thus, even with largely fixed prices, regular price adjustments are an important aspect of this process. German energy law has been shaped by intensive legal disputes between suppliers and consumers, particularly with regard to price adjustments in energy supply contracts, which have led to establishing excessive law practice with complex requirements regarding the effectiveness of price adjustment clauses. Basically, a distinction can be made here between the so-called „unilateral performance determination rights“, where a contractual partner may unilaterally adjust the price but which are subject to a so-called „equity control“ (§ 315 BGB) by the courts, and the so-called „price escalation clauses“, where the price is adjusted according to objective, contractually defined criteria. Price escalation clauses are usually implemented based on a mathematical formula where the price is often adjusted based on the development of prices of the individual cost components for energy production, often based on the development of published price indices for comparable goods at certain adjustment dates (so-called cost and price comparison clauses). Price escalation clauses are subject to the provisions of the Price Clause Act [Preisklauselgesetz, PKlG], especially in the area of individual industrial power supply contracts.

Finally, all power producers and consumers are affected by a constantly evolving body of energy and levy law. A large number of special adjusting acts have been developed for this purpose: Tax and levy clauses, the so-called „statutory clauses“ aimed at recording special burdens arising from the EEG surcharge system, general profitability clauses and, last but not least, price escalation clauses – adjusting clauses, i.e. unilateral performance determination rights aimed at adjusting (and thus often curing) price escalation clauses and formulas to the changing situation in the costs of energy.

Due to the resulting dependence on an electricity generation installation and the far-reaching consequential damage to production of an industrial company, the issues of liability, insurance and provision of securities are of special importance in the case of industrial power supply contracts. Liability issues usually start to arise already at the stage of defining service obligations and the quality of supplies in the contract. Thus, the question of „provision of security“, i.e. the obligation to maintain or procure redun-

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dant supply capacities, corresponding deadlines, substitute performance and sanctions, plays a key role in this respect. Also the limitation of liability is an important issue, whereas the provisions of the Product Liability Act [ProdHG] and the Liability Act [HaftPflG] also set limits in the area of individual industrial power supply contracts. Especially in the case of project structures of externally financed special-purpose entities being operators of renewable power plants, which are typical structures in the German renewable energy sector, insurance and security are often essential components of PPAs.

A special topic of renewable and combined power generation is the proof and usability of the ideal value added of electricity generated in a renewable and efficient manner. On the one hand, ecological quality agreements are relevant for electricity consumers because they have to comply with funding requirements, be it in the building or industrial sector set out in the Energy Saving Act [EnEG] together with the Energy Saving Ordinance [EnEV)], the Renewable Energies Heat Act [EEWärmeG] (in the future the new Buildings Energy Act [GEG] or funding programmes of the federal government, federal countries or the municipalities (e.g. the BAFA programme for the promotion of SMEs). A breach of quality agreements can thus result in the loss of or necessity to repay subsidies, so there is a particularly high liability risk here. The prohibition of selling electricity labelled as green electricity and promoted under the EEG (the so-called „prohibition of multiple sale“ as per § 81 EEG 2017) was, on the one hand, an obstacle for selling electricity under the PPA models through EEG instillations and, on the other hand, a reason for enabling the operation of an installation without EEG support through a PPA model. However, the inconsistent concept of the German electricity labelling (§ 42 EnWG in conjunction with § 78 EEG 2017), which is often hardly communicable in the international context due to the contradictory evaluations and complexity, and the new concept of guarantees of origin and guarantees of regional origin introduced by the EEG 2017 (§§ 79 EEG et seq. in conjunction with the Renewable Energy Sources Ordinance [EEV]) have led to a situation where the prohibition of multiple sale is actually bypassed by allocating electricity indirectly to an electricity generation installation. This trend also affects PPA models, in particular, where no further regulation on the quality of renewable energy is required alone due to the existence of the contractual obligation and also often the geographical vicinity, as this arises from the factual context of the matter. Also in the case of the supply on the basis of blockchain technology such an allocation can be made, so no explicit quality agreement is required.

By contrast, acceptance obligations may also be decisive for the granting of support for the electricity generation installation. Thus, the support for thermal energy generation installations (e.g. wood and biogas block-type thermal power stations, the support for CHP installations, thermal storage facilities and networks through the Combined Heat

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and Power Act [KWK-G] and other support programmes (e.g. KfW, BAFA, federal states and municipalities) sometimes provide for a mandatory heat purchase obligation in order to meet CHP quotas. In the case of a breach of the mandatory purchase obligation [heat subject to the mandatory purchase is not purchased], the installation operator suffers a loss which should be avoided or at least minimised by means of lump-sum compensation, securities and sanctions or at least the regulations on which should be simplified.

If electricity is supplied as part of subsidised direct selling under the EEG, a breach of the „prohibition of multiple sale“ (§ 80 EEG 2017) by the electricity offtaker (e.g. where the offtaker resells electricity as green electricity) can result in losing subsidies on the part of the PPA supplier.

Finally, EEG installations are subject to the special regulations of the so-called „feed-in management“ pursuant to §§ 11 EEG 2017 et seq., under which the grid system operator can intervene in the regulations concerning the operation of electricity generation installation, to the often market-oriented intervention rights of the direct seller within the framework of direct selling, as well as to general grid bottleneck management pursuant to §§ 13 EnWG et seq. Therefore, priority and compensation arrangements in PPAs are usually advisable.

## The energy regulatory framework

Basically, only the supply of energy to household customers is subject to a notification duty (§ 5 EnWG), thus, the supply of energy to industrial customers does not require any permit, as a rule. But the energy regulator is imposing more and more extensive obligations on electricity generation installations. So, registration and reporting duties, in particular for the purpose of documentation in a so-called master data register for market participants (§ 1 Marktstammdatenregisterverordnung [Regulation on the registration of master data of market participants] (MaStDV)), were imposed on installations as a prerequisite for funding (see § 6 EEG 2017, § 13 KWKG [CHP Act] 2017) on the one hand and, on the other hand, in the context of regulating power grid security (§§ 13 EnWG [Energy Industry Act] et seq.). At the same time, the registration obligation has been introduced for nearly all relevant market players (see §§ 111d EnWG et seq.), so suppliers under a PPA are obliged to fulfil the respective reporting duties usually regardless of whether they receive incentives or not.

Moreover, according to § 49 EnWG, operators of electricity generation installations are subject to the supervision and control of safety aspects by the Bundesnetzagentur (BNA) [German Federal Network Agency]. In § 49 (1) sentence 1 no. 1 EnWG, it is presu-

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med that these regulations are complied with if the technical rules issued by the VDE Testing and Certification Institute and the set of rules of the German Social Accident Insurance (DGUV) have been implemented.

### The anti-trust framework

Long-term conditions for the exclusive supply of energy which include demand coverage clauses are usually problematic from the aspect of competition law. In this respect, the scope of demand coverage and the admissible duration of PPAs are limited by the national (§§ 1, 19, 20 GWB [Act Against Restraints of Competition]) and European regulatory regime for competition (Art. 1 d) of the Commission Regulation on the application of Article 101(3) of the Treaty on the Functioning of the European Union to categories of vertical agreements and concerted practices (Vertikal-GVO), § 101 of the Treaty on the Functioning of the European Union (TFEU)). In this context, demand coverage quotas in excess of 80 % and contract duration of more than 2 years are usually regarded as inadmissible from anti-trust aspects, whereas in each individual case it should be weighted to what extent the relation between the duration of the contract, demand coverage quota, investment volume and grid charges is appropriate. The overall assessment normally takes into account further competition-related aspects, such as e.g. the market position of the energy supplier and the offtaker (in particular, where a market player has already achieved a dominant market position in the meaning of § 18 GWB or where a significant decline in the size of the market players exists), the intensity of competition in the PPA market, and other (restrictive) competition clauses in the PPA.

### What selling options for renewable electricity do currently exist in Germany? Does the PPA model allow for the supply of subsidised renewable electricity to end customers?

The EEG regulations on selling electricity generally differentiate between the following forms of selling (§§ 19 EEG 2017 et seq.):

- Feed-in tariff (§ 21 EEG 2017)
- Subsidised direct selling where an incentive in the form of a market premium is paid (§ 20 EEG 2017)
- Unsubsidised direct selling (§ 21a EEG 2017).

Apart from this, the supply of energy for consumption in the immediate vicinity of the electricity-generating installation without using the grid network (so-called „direct sup-

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ply“ (§ 3 no. 16, 2nd half of the sentence EEG 2017)) is not regarded as direct selling and is, thus, not eligible for funding. But for electricity generated in small-scale PV installations an incentive has been introduced which is subject to strict additional statutory requirements: the so-called „landlord-to tenant-supply premium“ (§ 21 (3) EEG 2017). Since this form of selling is limited to small-scale PV installations and consumption in residential housing facilities, it is, however, of no relevance to corporate PPA projects. Finally, it is possible to use electricity for the purpose of self-consumption, although this option has not been expressly specified as a selling form in the EEG. Under the EEG, self-supply (§ 3 no. 19 EEG 2017) has been in whole or in part exempted from the EEG surcharge (§§ 61a – 61k EEG 2017). In this context, a complex system of various provisions has been developed that grant privileges to installations that are part of special constellations (§ 61a EEG 2017), to older and newer existing installations (§ 61c and 61d EEG 2017), to new installations (with commissioning date in 2014 and later, § 61b EEG 2017), and for the modernisation or renovation of existing installations (§ 61e EEG 2017) and impose comprehensive evidentiary and reporting duties (§§ 61f – k EEG 2017). Apart from the EEG surcharge also other tax and levy laws provide for exemptions and reliefs which apply to electricity self-consumption; consequently, the significant economic incentives for electricity self-consumption models have hindered the conclusion of PPAs, so far.

Under a PPA, it is theoretically impossible to supply electricity incentivised in the form of a feed-in tariff or privileges for self-supply because the concept of the payment of a feed-in tariff implies that electricity is offtaken by the grid system operator and the concept of privileges for self-supply implies that electricity is consumed by the operator of the installation. Though, direct supply in the meaning of § 3 no. 16, 2nd half of the sentence EEG 2017 would be possible also under a PPA. However, the EEG does not provide for any incentive opportunities for industrial offtakers in this case.

Basically, incentivised voluntary or obligatory direct selling (§ 20 EEG 2017) is possible also under the PPA model. But in any case, the loss equalisation system assumed in § 20 EEG 2017 is based on the difference between funding rate and the (average) market price quoted on the energy exchange, so while a different form of selling electricity might indeed entail an opportunity of earning higher revenue (if prices agreed in PPAs were above the market average) it could also involve the risk of loss if prices agreed in PPAs were below the market average. In addition, PPA-based selling is arranged to a large extent individually and this involves additional workload compared to direct selling on the energy exchange, which has been largely standardised by now. In this respect, considerable legal, economic and technical know-how as well as the willingness to implement complex electricity supply structures are currently necessary to unlock the economic potential of PPA models, e.g. through customer installations, off-grid systems or similar niche areas of German law concerning energy levies and support.

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## Current political framework for the implementation of larger-scale RE projects based on PPAs

The energy policy of the federal government elected in autumn 2017 has been marked by an inability to act due to the lengthy government formation process and disputes between the ruling political parties. The current initiatives of the CDU-led Federal Ministry for Economic Affairs and Energy which oversees energy affairs have been marked by an EEG-critical approach. Sometimes, there is no alternative concept (as e.g. a CO2 tax or capacity mechanisms) of creating incentives for renewable, highly efficient or decentralised power generation structures. The continued measures aimed at further reducing support instruments, levies and tax reliefs for decentralised electricity generation installations, the growing complexity of and an increase in bureaucratic workload as well as a loss of confidence in the protection of existing installations caused by the restrictive and retroactively applied interpretation of incentive-related provisions by German judicature have worsened the political and legal framework conditions for PPAs in Germany. Thus, it is rather unlikely that the energy policy related framework conditions for PPAs will improve for renewables in Germany in the near future. And so, it comes as no surprise that German companies which implement PPA projects seek to do it mainly in other European countries.

## Income and costs

The electricity price in Germany is mainly composed of the following three components: costs associated with the procurement and distribution of electricity, payable grid charges, levies (in particular the EEG surcharge), and taxes.

For a utility company, energy procurement is the only price component it can influence. Although the electricity price has significantly decreased since it reached its record high value of 10.70 ct/kWh in 2008, in particular the increasing EEG surcharge has caused the average electricity price charged to industrial consumers to continuously rise since 2000. However, since companies which are particularly energy-intensive have been exempted from the EEG surcharge, the surcharge is mainly financed from the pockets of private consumers and medium-sized enterprises.[11] Also compared with other European countries, the electricity prices in Germany are far above the average.[12] This explicitly shows the dependence of the electricity price development on economic policy decisions.

[11] http://www.photovoltaik.org/wissen/eeg-umlage-ausnahmen-fuer-energieintensive-betriebe
[12] http://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Electricity_prices_for_industrial_consumers,_second_half_2016_(EUR_per_kWh)_YB17-de.png

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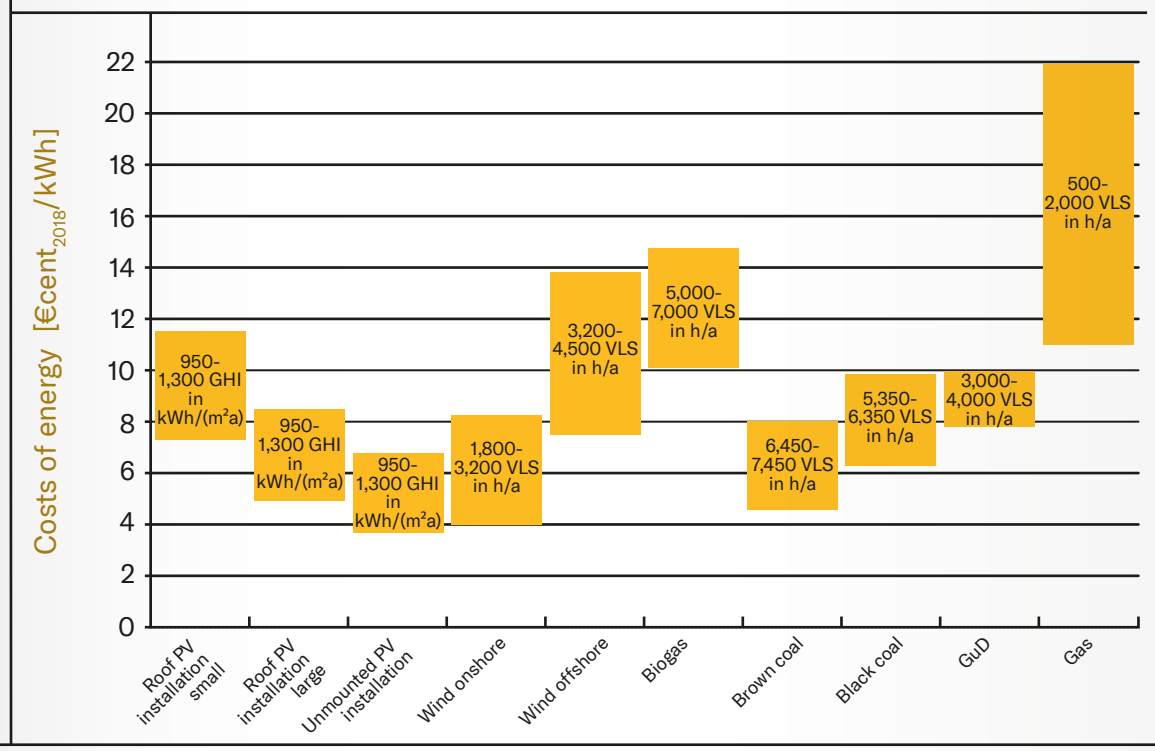
## electricity generation costs for renewable energies and conventional power plants




*As of March 2018*

According to a study published by the Fraunhofer-Gesellschaft the costs of energy (LCOEs) have been continuously decreasing, thus showing a trend that will intensify in the long term until 2035. Accordingly, photovoltaic installations are the most cost-effective facilities, on average: depending on the type of the installation and the global radiation, costs are between 3.71 and 11.54 eurocent per KWh. In this context, special emphasis deserves the fact that, already today, large-scale solar installations and onshore wind turbines can compete with black and brown coal-fired power plants. The declining prices in bids that win solar and wind power auctions (see the graphics on page 2) significantly reduce the gap in relation to market prices and, thus, confirm the growing competitiveness of RE installations. However, with prices ranging from 7.49 to 13.79 eurocent per KWh, offshore wind power is relatively expensive.[13] Whilst the competitive position in particular of variable renewable energy sources is improving thanks to marginal costs of power at close to zero, conventional power plants are getting less and less profitable due to declining full load hours and increasing fuel and $CO_2$certificate prices.



[13] https://www.pv-magazine.de/2018/03/20/fraunhofer-ise-photovoltaik-hat-niedrigsten-stromgestehungskosten-in-deutschland/

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**Is it possible to receive government subsidies of any kind (FIT, green certificates, tax credits, etc.) for renewable electricity that is subsequently sold via PPAs? Is it possible to combine PPAs with support mechanisms?**

In addition to the EEG incentives, Germany offers many other funding programmes of the EU, the federal government and individual federal states. For example, a grant under the energy research programme for the development of new technologies may be considered when planning innovative renewable energy projects. In that case, up to 50% of eligible costs can be reimbursed.[14] In similar circumstances, a grant under the BMU Environmental Innovation Programme can also be considered, in which case it is possible to obtain an investment grant of up to 30% of the financeable costs.[15] Furthermore, it is also possible to use opportunities of state-specific funding, such as e.g. the state financing programme Pro FIT in Berlin.[16] Nevertheless, the German support-related laws with their so-called „prohibitions of cumulation“ (§ 80a EEG 2017, § 6 (7) KWKG 2017) set strict limits on alternative funding, especially that EEG incentives still exceed the funding levels offered by competitive subsidies.

**Is there a possibility or even a claim to feed renewable electricity into the grid (as a backup) when the PPA is discontinued/terminated, and if so, on what terms?**

In principle, the German EEG support system allows switching between different forms of sale and support (§§ 21b EEG 2017 et seq.). In that case, some formal and time-related requirements must be complied with, though (§ 21c EEG 2017). These are, basically, not in conflict with the switch between sale under subsidised direct selling through a PPA and other direct selling (e.g. on the energy exchange), or even with feed-in tariff as a fall-back option. However, this does not apply to new installations of 10 MW or more, as these are subject to mandatory auctions as per the EEG, and in this case only the option of other direct selling without EEG support is possible. In this case, losses resulting from a sudden shortfall of an electricity consumer, e.g. due to insolvency or a breach of the contract, are to be cushioned by the short-term (§ 21 c (1) sentence 2 EEG 2017) shortfall remuneration (§ 21 (1) No. 2 in conjunction with § 53 sentence 2 EEG 2017), which still covers 80% of the feed-in tariff.

[14] http://www.foerderdatenbank.de/Foerder-DB/Navigation/Foerderrecherche/suche.html?get=d56c2ba583b8d0cd5130c834c43bd5e8;views;document&doc=7510
[15] http://www.foerderdatenbank.de/Foerder-DB/Navigation/Foerderrecherche/suche.html?get=d56c2ba583b8d0cd-5130c834c43bd5e8;views;document&doc=4100
[16] http://www.foerderdatenbank.de/Foerder-DB/Navigation/Foerderrecherche/suche.html?get=d56c2ba583b8d0cd-5130c834c43bd5e8;views;document&doc=8869

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## Summary and outlook

In Germany, EEG support has so far influenced corporate PPAs to the effect that they became not very attractive to installation operators for profitability reasons. However, in view of the steadily decreasing level of funding for new installations and the expiry of funding periods before the end of the service life of an increasing number of renewable power plants, it is forecast that it will become necessary to look for alternative selling options. Coupled with the low costs of energy, enormous market potential is expected in the future in this respect, since in the light of the increasing volatility of the electricity price, hedging is important for all market players. The EU has already introduced approaches such as the Clean Energy Package which aim to eliminate national barriers to corporate PPAs.[17] In this respect, the European Union could contribute to the deregulation of the electricity market and thus pave the way for PPAs in Germany. Also the current government's inability to act also seems to speak more in favour of market-based follow-up solutions such as PPA models at the moment. However, in view of the lack of a long-term energy policy concept to date, there are still significant risks concerning the energy policy forecasts. Nevertheless, the current trends suggest that corporate PPAs will become a model of the future for refinancing renewable electricity generation installations also in Germany. In this process, on the one hand, the new models will involve quite a development expenditure and will initially generate only low returns in most cases. However, if the trend forecasts are correct, an early start will pay off in the medium to long term due to the know-how and competitive edge that may be gained.

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[17] Martin Kantel: Corporate PPAs in Germany – Is there a rise of direct Power Purchase Agreements (PPAs) in the German wind onshore market? p. 6

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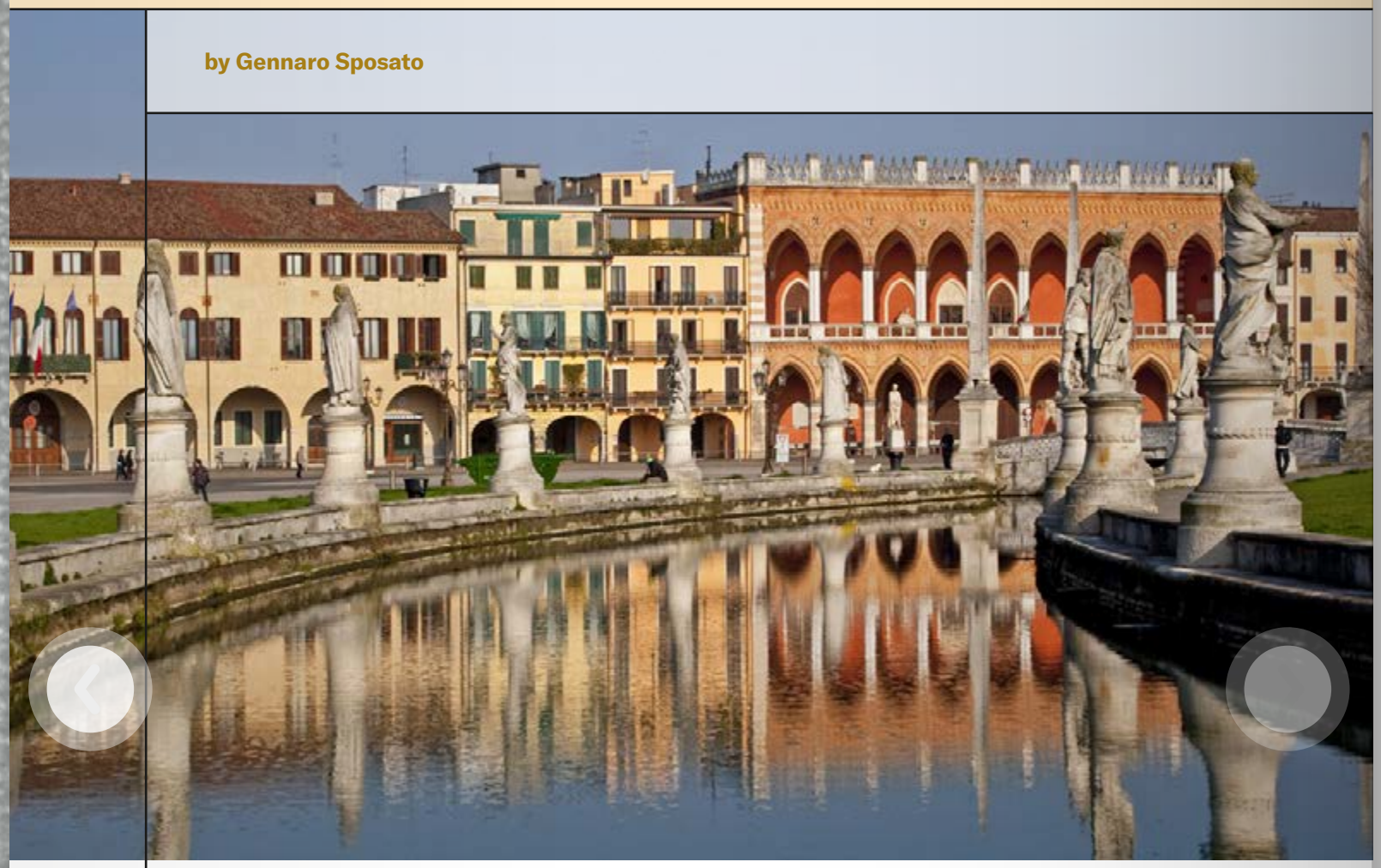
by Gennaro Sposato



## Current status of RE in Italy. Installed capacity. Incentive systems.

The installation of new renewable capacities in Italy has exceeded the targets set in the Renewable Energy Directive 2009/28/EC and, in recent years, Italy has confirmed its position as one of the major markets in the renewable energy sector in Europe. In 2015, renewable energies contributed 36.3 % to the Italian electricity demand; the contribution slightly increased to 36.7 % in 2016, and – after a slight decrease in 2017 – consolidated at 36.8 % in the first half of 2018. In absolute terms, the total installed renewable energy capacity is 117GW in Italy; 22 GW hereof is attributable to hydro power, nearly 10 GW to wind power and nearly 20 GW to photovoltaics[18]. The objective to replace conventional (fossil) electricity production (gas plays an important role in Italy) with renewable electricity has, thus, been set and also confirmed in the national strategy adopted in January 2017 (SEN – Strategia Energetica Nazionale[19]) which is said to advance the energy transition after the traditional funding instruments – Conto Energia[20] for photovoltaics and decreto rinnovabili for all other renewable resources – expire.

[18] Source: TERNA S.p.A.

[19] SEN – Strategia Energetica Nazionale, decree of the Ministry for Environment, Land and Sea Protection and of the Ministry of Economy and Finance dated 10 November 2017

[20] The regulations on Conto Energia funding for solar installations are contained in several decrees (Conto Energia I, II, III, IV and V) adopted between 2006 and 2012. Other renewable energy sources are regulated based on analogous provisions, decreto rinnovabili, which were adopted in the same period.

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In the context of the SEN, the support for renewable energy and energy efficiency is seen as an important instrument for reducing Italy‘s dependence on energy imports. While the share of electricity imports was still well about 75% in 2015, the aim is to reduce this rate to 64% by 2030. This should be reached, among other things, by earmarking EUR 35 billion for the development of renewable energies, which should be made available for this purpose by 2030. This plan is confirmed by the draft of a currently debated new decree on the incentive regime for renewable energy sources; the draft provides for funding of the further expansion of renewable capacities through auction systems but also in the form of direct incentives for renewable electricity. More reliable information on this matter can be provided as soon as the respective consultations are finished; although there is no doubt that Italy‘s trend towards expanding renewables has already been confirmed by the draft.

Apart from hydro power, which has traditionally played an important role compared to other renewable energy sources in Italy, photovoltaics is clearly in the lead with a share of 21.6 % spread among a total of 774,014 solar installations. Many of these installations receive support under the so-called „Conto Energia“ regulations which provide that a power plant operator is paid a tariff incentive for electricity fed into the grid and can additionally earn income from the sale of electricity (except for the latest power plants which were installed under the Conto Energia IV and V decrees and received an all-inclusive feed-in tariff that includes funds from the sale of electricity as well as incentives). The operator of a solar installation can, thus, sell produced electricity separately, in addition to receiving funding. They can do so under the so-called „ritiro dedicato“[21] where electricity is sold to GSE – Gestore die Servizi Elettrici S.p.a. at prices determined by the electricity authority, or, alternatively, by concluding a PPA, normally with a wholesaler. The closer it gets to the end of the period of funding under the Conto Energia regulations (it usually expires 20 years after the solar installation is commissioned) the more intensively solar installation operators – who will have paid off their financing by then – have to deal with the issue of selling electricity in order to continue to receive an attractive return.

Thus, the foundations for the development of a private electricity market, i.e. the sale of renewable electricity to third parties as part of a PPA, have already been laid in Italy‘s electricity market.

### PPA situation in Italy

As described at the beginning, PPAs have already played a role for power plants that receive funding under the Conto Energia regulations. Whilst at the beginning, operators of solar installations usually simply sold the electricity produced in subsidised power plants to GSE under the ritiro dedicato regime, acquisitions of solar installations



[21] Source: ARERA Nr. 280/2007.

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in recent years have shown that more and more operators decide to leave this regime to sell electricity as part of a PPA for distribution through a wholesaler. Thus, this option is playing an increasingly important role on the Italian secondary renewable energy market because it helps snatch those extra percentage points of an additional return , which can be important for an operator purchasing many solar installations to make such a large-scale purchase project – which is currently the trend in the Italian market – profitable.

Most of the respective PPAs are rather simply structured and usually consist of short-term agreements on the sale of electricity to a wholesaler. Since these power plants usually already receive funding mostly in the form of incentives and, moreover, the return to the ritiro dedicato scheme is always possible, short terms of contracts are usually not a problem.

Apart from this, various press releases have announced the launch of PPA projects and/or the conclusion of respective agreements for renewable power plants in Italy this year.

In February 2018, for example, Wienerberger AG, a leading international supplier of building materials and infrastructure solutions, announced the conclusion of a PPA based on which the renewable plant operator Engie Italia would supply renewable electricity to the company‘s four manufacturing sites. Apart from the information that the term would be five years and a fixed price would apply for the full duration no further details on the agreement were published. Thus, the agreement could be structured as a so-called financial PPA under which the offtaker pays the producer a fixed price plus the relevant difference earned by the producer on the spot market, which can be advantageous or disadvantageous to the producer depending on the situation. Due to the fact that the electricity supplier itself is also a wholesaler and, thus, is authorised to act as a professional on the electricity market, also a direct corporate PPA could have been concluded.

Several weeks later, Octopus Investments, a UK-based investment fund company, announced the conclusion of a five-year PPA based on which electricity produced in overall five solar installations with a total capacity of 40 MW in Sardinia is to be sold to the Italian utility Ego.

In the last months, in parallel to the abovementioned press releases, the Italian specialist press have reported about plans announced by various renewable energy market players to implement renewable power plants with grid parity, thus, to sell electricity as part of PPAs. Thus, the direction is clear and it can be expected that further announcements of new projects and/or press reports about concluded transactions will follow within the next 12-24 months – similar to the situation in Spain.

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The existing renewable power plants that in the future will no longer be eligible to receive incentives under the respective programme – be it Conto Energia for solar installations or the decree on the incentive regime for other renewable power plants – will, of course, play an increasingly important role for PPAs in the future. With no allowances being paid and, usually, having fully repaid the entire financing costs, these power plants will generate electricity – available for sale to third parties – virtually free of charge except for the normal maintenance and operational costs. Taking into consideration the fact that the funding period is about 20 years and most of the power plants were built between 2009 and 2012, this issue may not be important in the short term but will surely become relevant in the medium term.

## Legal framework for PPAs in Italy

First, it can be stated that from the regulatory perspective there are no specific legal barriers that would hinder the conclusion of PPAs in Italy. This applies to all types of PPAs, that is both to corporate PPAs (both on- and off-site) and to financial PPAs.

On-site solutions, that is renewable power plants implemented in immediate vicinity to the offtaker, equipped with a direct line and generally with no access to the public distribution or transmission grid network, are certainly the simplest alternative for transferring electricity between two parties. These structures are regulated by decision no. 578/2013/R/EEL of the electricity authority ARERA (Autorità di Regolazione per Energia, Reti ed Ambiente). This framework subsumes under the term „Simple production and consumption models[22]„ different consumption and distribution models which differ from the conventional exchange of electricity through the public grid in that they provide for self-consumption options (autoconsumo) or the said direct connections between the power producer and the offtaker; the aim is to ensure a substantial degree of equal treatment of the different electricity market players and to regulate the interaction between these systems and the public grid.

In this article it should be pointed out that these models include the SEU (Sistema Efficiente di Utenza) system which offers the possibility to directly connect a renewable power plant to an offtaker without using the public grid. For the SEU regulations to apply it is necessary that the renewable power plant is built on a site which the offtaker is at least legally entitled to dispose over; the renewable power plant itself may be owned by a third party. Thus, it is possible that two parties – the power producer and the offtaker – use this system for the direct sale of electricity as part of a PPA. Besides, another advantage is that these systems participate in the payment of grid charges only to a low extent, a fact that can certainly be used as a competitive advantage provided that there is physical proximity between the power producer and the offtaker.



[22] Sistemi Semplici di Produzione e Consumo (SSPC).

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Since the offtaker‘s load curve will be different from the power producer‘s electricity production curve it will be necessary for the offtaker to satisfy the possibly higher electricity demand through supply from the public grid. In the case of the SEU system, the offtaker‘s connection to the public grid is explicitly required by the regulatory authority – which, thus, is a necessity also under this model. In this context it should be taken into consideration, however, that this kind of indirect funding in the form of nearly full exemption from the obligation to pay grid charges is criticised and, thus, it is possible that the legislator will take measures to include these systems in the redistribution mechanism for grid charges. SEUs and the other similar systems addressed in the abovementioned decision of ARERA must be registered with GSE under a specific approval procedure which was newly established in July 2018.

Apart from the self-consumption and direct connection models described above, it is also possible to conclude bilateral off-site power agreements outside the energy exchange; those agreements, however, must be registered on a specific platform operated by GME (Gestore dei Mercati Energetici S.p.a.) and the respective electricity amounts intended for sale on the exchange must be regularly notified. In Italy, this kind of an agreement is usually concluded between a power producer and a wholesaler who also takes over all activities relating to the registration and the participation in the platform, also on behalf of the power producer based on a separate power of attorney to be issued by such a power producer. The costs incurred in this context and, of course, all charges relating to the use of the public grid must be included in the electricity price agreed with the wholesaler.

Although legally possible, from our experience we know that electricity market players have been unwilling to agree on too long durations of PPAs so far; the reason for this are the related risks as regards the (difficult) predictability of electricity prices.

But the Italian legislator has recognised the opportunities arising from PPAs for the energy transition and the further development of the Italian electricity market; it has, thus, addressed this issue both in the new national strategy SEN and in the currently debated new decree on the renewable energy incentive regime so as to provide for various regulatory mechanisms. In this context, the SEN states for example that in respect of large renewable power plants it is still necessary to devise instruments that support financing of the respective renewable technology projects. They should take the form of supportive and accompanying measures such as e.g. new incentive mechanisms that will be part of financing and ensure that price fluctuations are counterbalanced by respective state-guaranteed additional payments in order to add stability to this structure.

Simultaneously, the aim of the SEN is to incentivise the signing of long-term PPAs, for example by establishing sales platforms in which renewable power plant operators can participate – also in association with others – in order to offer their generated electri-

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city to offtakers – who can also act in association with others. Moreover, it is planned that respective contractual models for long-term PPAs will be made available by the regulatory authority so as to reduce the administrative effort for companies and to simplify the obtaining of financing.

The currently debated new decree on the incentive regime for renewable energy sources includes various regulations that take into account the abovementioned objectives of the SEN with regard to PPAs and provide for the establishment of the abovementioned platform – after a public consultation process takes place – and the development of the respective contractual models.

### Other sales options in Italy

As an alternative to direct sale via the OTC[23] structures, it is also possible to participate in trading in electricity on the energy exchange operated by GME S.p.a. – Gestore dei Mercati Energetici – in Italy. On the energy exchange, power producers or wholesalers can offer electricity which is bought by different market players such as other wholesalers, Acquirente Unico[24] or energy-intensive companies.

Thus, also private companies may qualify for participation in the energy exchange although – due to respective administrative hurdles (minimum energy volume, performance of grid services, payment of respective fees etc.) – this comes into consideration only for suppliers/offtakers of large electricity amounts or for wholesalers.

The Italian Day-Ahead Market[25] distinguishes between zonal prices for the sale of electricity and a National Single Price (Prezzo Unico Nazionale – PUN) for purchase transactions. The PUN is established as the average value of all zonal prices weighted for total electricity purchases.

Over the last years, the PUN had been steadily decreasing, amongst other things due to a decline in electricity demand, an increase in renewable energy production and a reduction in gas prices, whilst since 2016, an upward tendency could be observed which has also been confirmed by the data available for 2018 so far (2016: EUR 42.78; 2017: EUR 53.95). According to analysts, this increase is also associated with a decline in electricity imports from France after some nuclear power plants were shut down.

[23] Short for „over the counter“, i.e. agreements concluded outside the energy exchange, such as PPAs.
[24] Acquirente Unico (literally „single wholesale buyer“) is a joint stock company established by GSE whose objective is to supply electricity to private customers and small enterprises within the framework of the so-called „protected market“ (mercato di maggior tutela). This protected market is a state-regulated electricity market functioning in parallel to the free market, the abolishment of which has already been resolved on but has been repeatedly postponed.
[25] MGP – Mercato del Giorno Prima.

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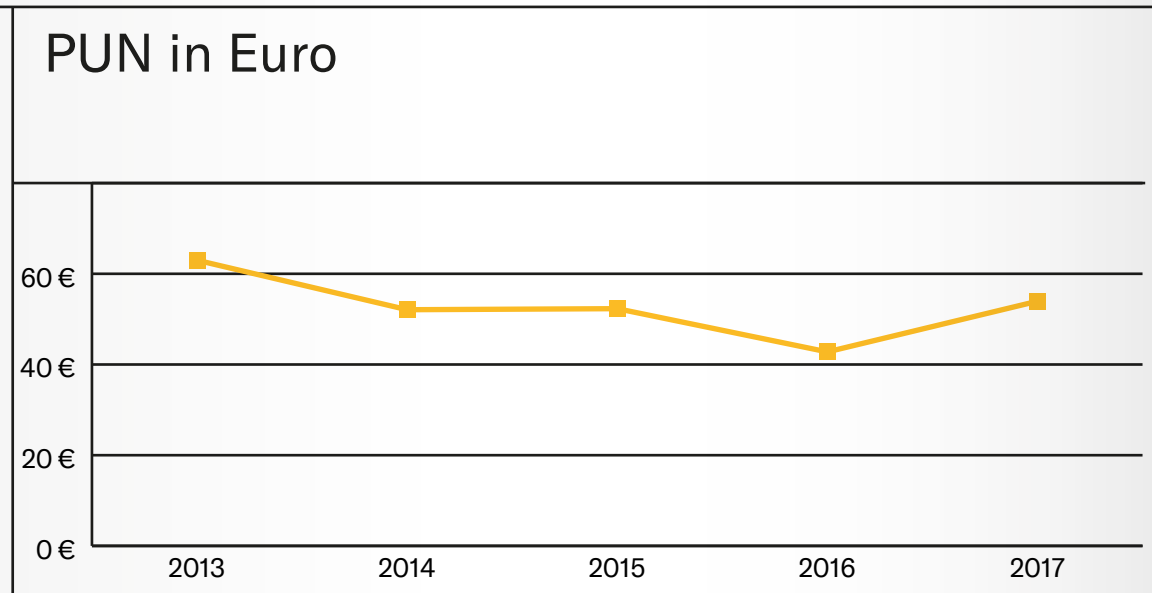


Making a forecast about the future development of the electricity price is not an easy task. It will depend, amongst other factors, on the further economic development and, of course, a further increase in renewable energy capacities. In the short and medium term, also international tensions may play a role, due to Italy‘s dependence on electricity imports.

### Installation of new renewable power plants

The SEN also provides for certain principles which the state will observe when granting the necessary permits for the installation of large-scale renewable power plants to ensure an appropriate reconciliation of interests; the reason for this are the rather small amounts of electricity produced in renewable power plants relative to the area occupied by them (this applies in particular to solar installations). Therefore, large-scale solar installations should preferably be built on buildings, in immediate vicinity to electricity consuming manufacturing sites or to cable routes that enable further transfer or, last but not least, on abandoned industrial areas after appropriate conversion of such land. Only after that should agricultural areas be used for the installation of solar installations, paying particular attention to the protection of nature.

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As for onshore wind, measures for repowering the already existing turbines should be first adopted before new locations are assessed; for offshore projects, the SEN has set the objective to overcome the actually existing barriers to the issuance of permits. This is to be implemented by a cross-ministerial working group which will develop the respective solution approaches and regulatory drafts.

Anyone who has experience in renewable energy in Italy knows that, in the past, fragmentary legislation posed a major hurdle in the evaluation of renewable energy projects as far as permit procedures were concerned; this problem was aggravated by the fact that the competencies of the state, the regions and the municipalities were intertwined but not coordinated. But in the meantime, also in this area a consolidation process took place which has nearly completely homogenised the legal situation across the country.

The current legislation provides for three different types of permits i) Autorizzazione Unica (Uniform Permit, AU), which is issued on regional or, if correspondingly delegated, on provincial level; ii) Procedura Abilitativa Semplificata (Simplified Permit Procedure, PAS) which has replaced the former DIA and is issued in a permit procedure on municipal level; and iii) Comunicazione al Comune (Simple Construction Notification).

For larger-scale renewable power plants which are currently gaining in importance in the context of PPAs it is sufficient to say that, generally, they are subject to a permit issued in the AU procedure.  No special problems occur as regards the issuance of AUs. By now, more or less all of the public authorities involved have gained certain experience in this kind of projects. No bottlenecks – which were caused at the offices of some authorities in the past following a flood of applications – need to be feared either; on the other hand, for example, the Region of Sicily has recently announced the abolishment of the moratorium on permits – which has de facto blocked the implementation of new renewable power plants.

Smaller renewable power plants and PPAs, however, could be combined as part of the implementation of participation models for citizens. Apart from some smaller cooperative models, most of which were developed in the South Tyrol region already at the beginning of the 19th century, these types of projects are still in the start-up phase in Italy but are attracting more and more attention. The government of the Piedmont region, for example, has recently adopted a law[26] on the support of energy communities. The regulations are vital for sale of electricity within the community (regarding the electricity consumed by the community itself) but also outside the energy community as regards the sale of excess electricity to third parties.



[26] Law no. 12 of 3rd August 2018 adopted by the Piedmont regional government.

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## Subsidies

The currently most interesting renewable energy funding instrument on national level are tax facilitations which allow deducting for tax purposes up to 50% of costs incurred in connection with the implementation of renewable power plants. But this applies only to small-scale renewable power plants (on principle, exclusively photovoltaics) that are installed in private homes as part of restructuring measures. This is, thus, an interesting option for renewable energy companies engaged in the retail market for renewable energy (residential solar installations, storage systems etc.) but not for companies whose business objective is the acquisition or implementation of large-scale renewable power plants.

Of equal importance for the promotion of the energy transition – but not in the context of PPAs – are the various existing regional renewable energy funding instruments such as e.g. for the agricultural sector or for the implementation of energy efficiency measures.

Concluding from what was said above, Italy‘s current legislation does not provide for direct incentives for renewable power plants in the form of granting respective funding or feed-in tariffs. But this could change in the near future if the debated new decree on the incentive regime for renewable energy sources was actually adopted. This is to be expected by the end of this year, according to the present state of affairs.

The currently circulated draft provides for funding tariffs that would be granted as part of respective technology-neutral auction and registration procedures. For solar installations and on-shore wind turbines with a capacity of over 1 MW a base value of EUR 0.07 /kWh has currently been set. Any possible premiums (e.g. in the case of asbestos removal) must be added to this base value, while the respective zonal average price per hour must be deducted. The rate of the tariff that will be actually received will then be determined in the auction procedure.

In any case, an interesting feature is that the energy produced in the given renewable power plant will remain at the disposal of the power plant operator for possible further sale under a PPA. Thus, subsidies and sale (that is PPA) could be combined. If this structure was approved in its current form this decree itself would be a first important measure to stabilise the PPA market, that is to help to improve the opportunities for receiving appropriate financing as already proposed in the SEN.

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### Income and costs

Income naturally depends primarily on the electricity price paid in the respective country (please refer to the information under item 4 above). Another factor important for renewable power plants is, of course, the availability of the respective renewable resource, i. e. solar radiation for photovoltaics and wind speed and frequency for wind turbines; here, the Italian peninsula offers very attractive conditions, in particular as regards sunlight.

Just like other European countries, also Italy has seen a massive reduction in investment costs in recent years. A reference value of between EUR 800 and EUR 900 per kWh can be assumed, whereas it should be borne in mind that this range already includes land costs and planning and permit procedure costs.

### Market potential, conclusion and outlook.

Between 2006 and 2012, Italy experienced a veritable boom in the popularity of renewable energies, fuelled in particular by the economically attractive incentives provided under the Conto Energia regulations. Many renewable power plants were implemented at that time and the local companies, professionals, and also the competent authorities gained a treasure trove of valuable experience and developed a professional approach which is of key importance for the further development of the electricity market. This refers to the renewable energy retail market, electrical mobility, the development of innovative energy solutions such as e.g. for storage, and, last but not least, the establishment of an economically attractive PPA market.

These factors together with the positive signals already sent by the Italian legislator indicate that renewable energy companies that want to succeed in this business wil l have to take account of the Italian market in their planning also in the future.

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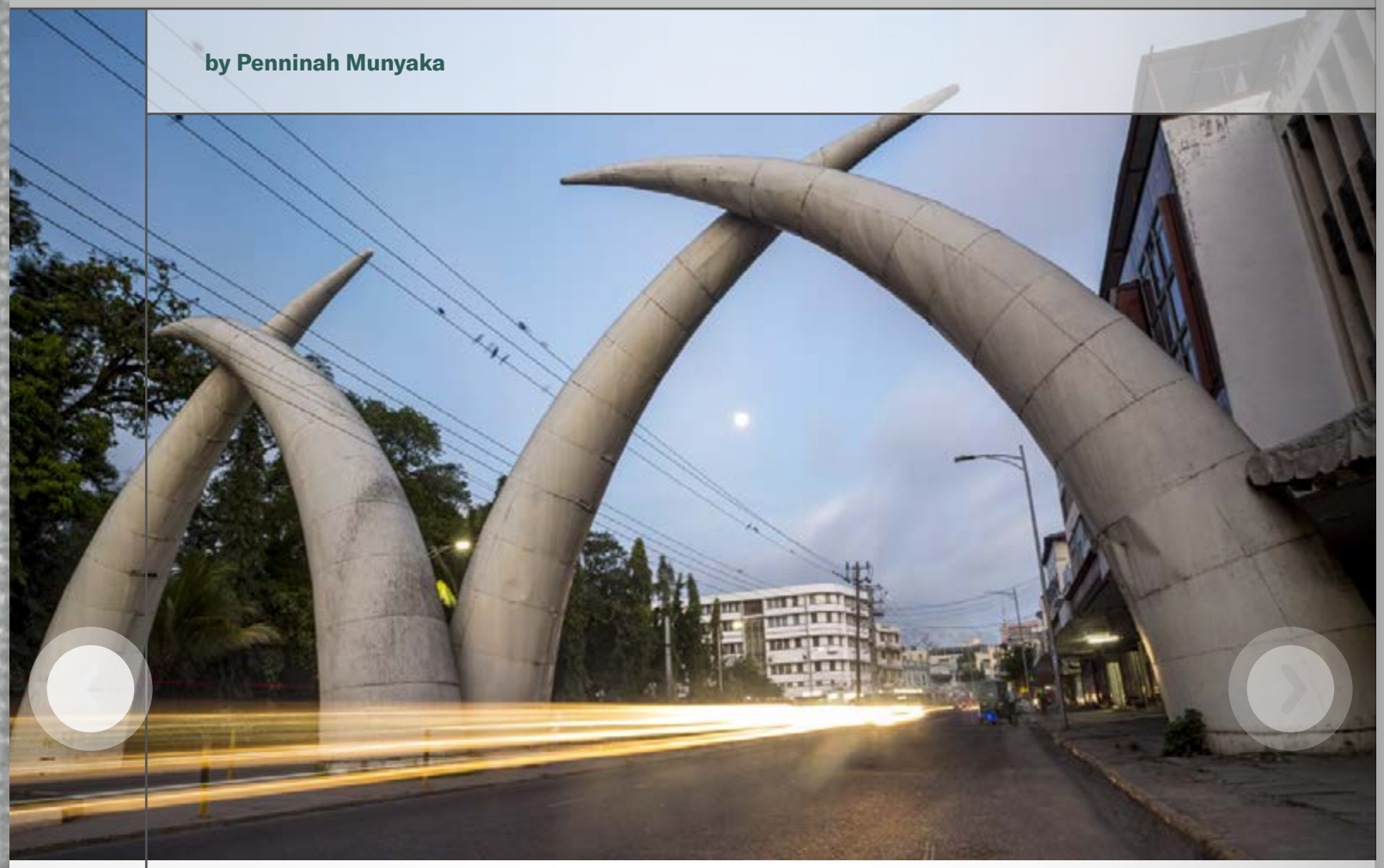
# 05 KENYA

by Penninah Munyaka



## Status of Renewable Energy in Kenya

In Kenya, renewable energy continues to be the main source of energy with well over 60% of energy generated and consumed in Kenya being sourced from hydro and geothermal power. There has been an outcry from the consumers and industry experts on the need to have a diversified energy mix to reduce the level of power outages. In any event, reliance on hydropower has been frowned upon given the environmental changes and reduced rainfall in various parts of Africa.

The Kenyan government in 2017 launched an ambitious development plan known as the Big Four Agenda whose four pillars are to enhance manufacturing, create affordable housing, improve food security and create universal access to healthcare. The government has identified energy as one of the enablers for Kenya's achievement of the Big Four Agenda.

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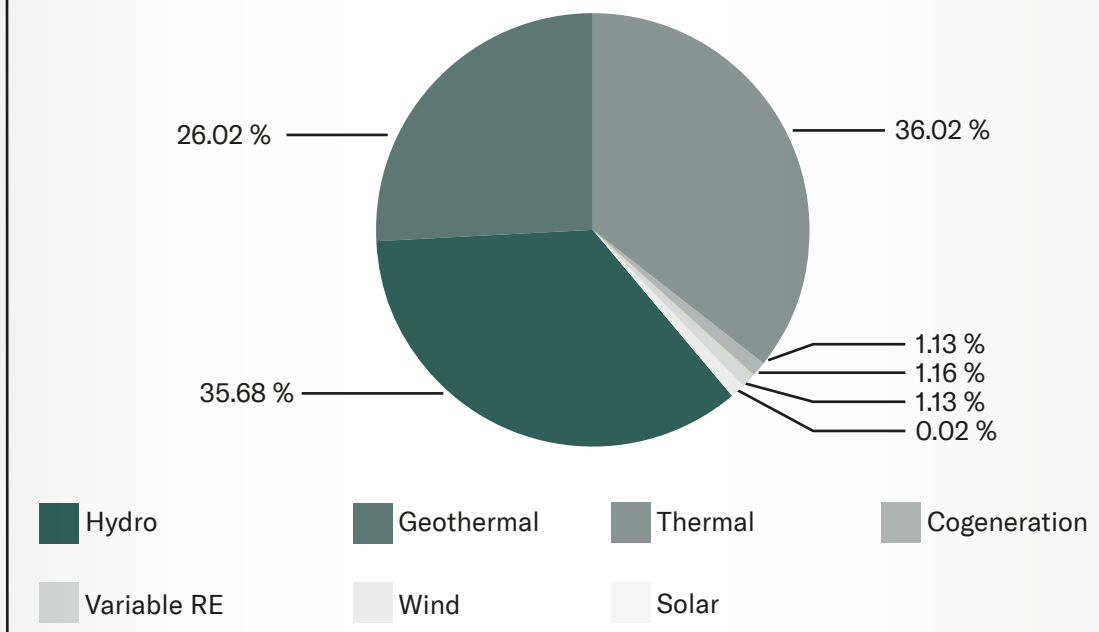
The government has therefore taken steps to realize the vision by pushing for a more diversified energy mix. To this end, the government has adopted various measures including a 20 year Feed-in Tariff (FiT) Policy to promote and generate electricity from diverse energy sources including wind, solar, biomass and biogas[27]; specialized equipment for development and generation of solar energy is duty exempt[28] and specialised solar equipment and accessories are exempt from Value Added Tax provided the equipment is designed to exclusively use and store solar power[29]. In order to further increase the use of solar energy, the government has enacted and has threatened to enforce regulations[30] that mandate the installation of water heating systems in residential buildings.

Research has reflected change in the energy mix as the reliance on hydropower drops and the use of other renewables remain at below 5 %.

## Kenya Power Annual Report – 2015




[27] Feed-in Tariffs Policy on Wind Biomass, Small-hydro, Geothermal, Biogas and Solar Resource Generated Electricity, 2nd Revision: December 2012, - https://www.renewableenergy.go.ke/downloads/policy-docs/Feed_in_Tariff_Policy_2012.pdf

[28] EAC Legal Notice No. 39 published on 30th June 2016, - https://www.kra.go.ke/notices/pdf2018/EAC%20Vol.%20AT%201-2016-005-30th%20June%20-%20Budget.pdf

[29] Paragraph 45 of Part I, Section A of the First Schedule to VAT Act 2013.

[30] The Energy (Solar Water Heating) Regulations, 2012

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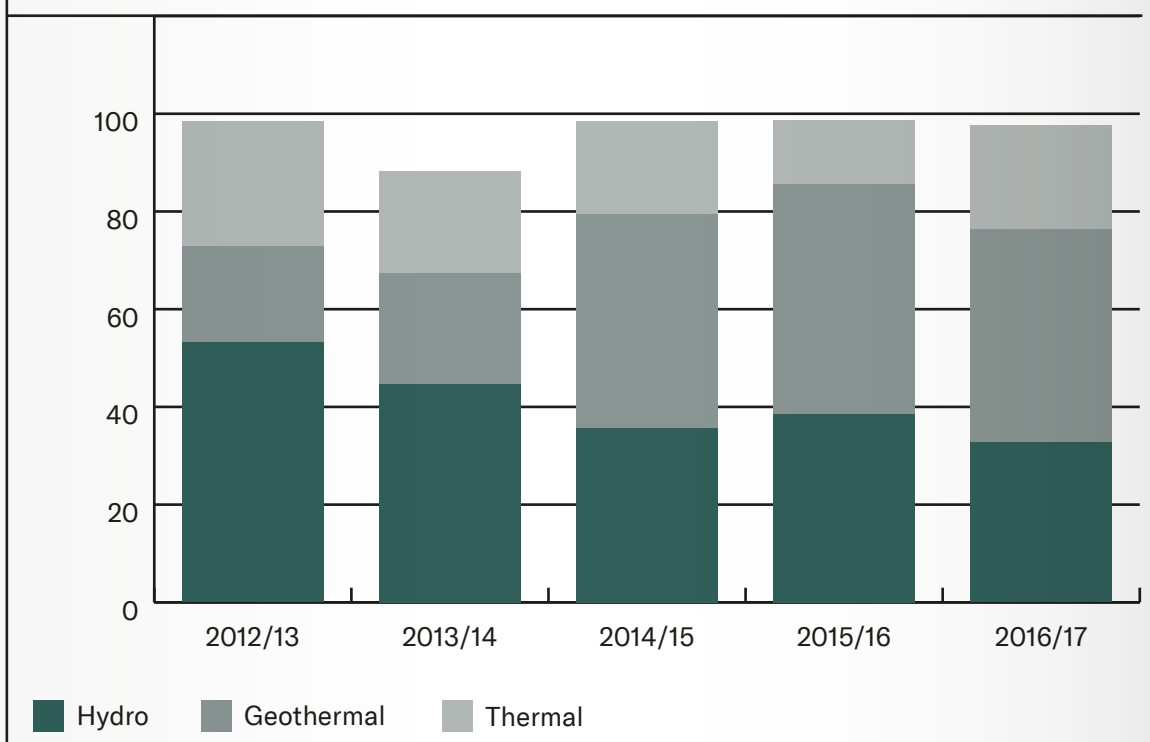
Kenya Energy Mix 2012–2017 (GWh)




## Types of PPAs in Kenya's Energy Market

There are two main applications of PPAs in Kenya. The first being on-grid PPAs, that is an agreement between the Independent Power Producer (IPP) and the primary licensed off-taker Kenya Power & Lighting Company (KPLC).

Though it is not a mandatory requirement, producers of relatively large amounts of power, 10 MW or more, tend to supply their energy to the grid and therefore enter into PPAs with KPLC. KPLC signs standard PPAs with all the generation companies, including KenGen the largest generation company in Kenya with 70 percent of the market share, in terms of installed capacity. KenGen owns thirty one (31) power generating plants with a combined installed capacity of 1,337MW from diverse generation modes comprising of hydro, thermal, geothermal and wind technologies. KenGen sells all electric power generated in bulk to KPLC, who then distributes it to consumers. Both

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KPLC's and KenGen's majority shareholding is in the hands of the government. The energy that gets capitalized per on-grid PPA is more than 90%.

The second application is the private PPA that is made between two private entities, also referred to as a mini-grid solution. Private PPAs tend to serve either the commercial and industrial sector or communities located in remote areas that have no access to the national grid. The generation capacity of plants meant to serve this group of people tends to be below 1 MW. The energy capitalized by private PPA per year is currently negligible and is in any event below 5% given the percentage of other renewables available on the energy matrix though this number could increase in the future.

PPAs in Kenya are governed by the law of contracts and other substantive laws. This means that parties are free to negotiate the terms of their contracts which they will be bound to observe and perform with the court available to aid enforcement.

However, freedom to negotiate is somewhat limited for on-grid PPAs. The Ministry of Energy and Petroleum (MoEP) and the Energy Regulatory Commission (ERC) have developed standardised PPAs to be used by IPPs and the KPLC. On-grid PPAs for the generation of up-to 10MW are standardized with no negotiable clauses, while renewable energy projects with capacity exceeding 10MW are subject to a negotiated PPA which has a very limited number of negotiable clauses. On-grid PPAs are long duration contracts, typically 20 years such as the 310 MW Lake Turkana Wind Power Project. Currently on-grid PPAs, from the perspective of the Independent Power Producer (IPP), are limited to the supply of the electrical energy to KPLC who then supply to end-users. Currently there is no possibility for an IPP to produce and sell power directly to consumers using the national grid. This is only possible through mini-grids using private off-grid PPAs which we discuss here below.

The off-grid PPAs or mini-grid solution is an integrated system for local electricity generation, transmission and distribution that can operate in isolation from or in addition to the national electricity distribution network. This kind of PPA also acts as a long-term contract between a seller of renewable energy (typically solar energy) and an end user. Based on this agreement, the seller installs power production facilities, such as solar PV cells, on the customer's property and, thus, supplies them with electricity. Usually, the seller does not immediately and directly charge for the installation but instead staggers the cost over a period of 15 to 20 years. The seller also commits to provide maintenance during the period of the contract.

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## Regulation & Controls in the Kenyan Energy Market

Both on-grid and off-grid energy projects are subject to regulation depending on their scope, the energy capacity and intended use of the power.

In summary, a person does not require any authorization to generate energy for own use of a capacity not exceeding 1MW. Generation of a capacity exceeding 1MW for own use requires a permit from the ERC. Any person who engages or intends to engage in the generation, transmission, distribution and supply of electrical energy in Kenya is subject to The Energy (Electricity Licensing) Regulations, 2012[31] which require that such a person obtain a permit or licence from the ERC for the particular activity.[32]

An important point to note for any investor is that the regulations do extend to setting controls on the prices consumers can be charged for energy. The ERC has the legal mandate to protect the interests of consumers and for that reason has been given the powers to set, review and adjust electric power tariffs and tariff structures. The ERC regulates the market and sets controls on the prices consumers pay for energy balanced against the need for investors to make a return.

The tariffs for on-grid PPAs are set by the FiT Policy developed by the MoEP. The FiT values vary depending on the technology used in the generation of the energy and the installed capacity.

The charges for electricity in respect of off-grid PPAs are set by the power producer with regard to their commercial considerations and subject to the approval by the ERC. It is important to note that most off-grid power projects in Kenya are located and have been developed to serve rural communities in poor remote areas of Kenya which have no access to the national grid. As these mini-grids cater to an unserved population and because they bring about quite important improvements to the social welfare of these communities, the ERC and MoEP have allowed mini-grid operators some flexibility in setting the prices for the electricity they supply. The prices must of course remain within the limits of what the local communities can afford. Typically communities in these areas have modest and basic power needs, only requiring some lighting and a few power outlets to charge mobile phones or to power home appliances such as televisions, radios and refrigerators, or equipment used in the businesses they run such as kiosks, salons and barbershops. Some mini-grid operators in these areas prefer to use prepaid pay-as-you-go models to commercialise their electricity.

In areas where there is grid electricity which is supplied by KPLC, mini-gird operators would have to ensure that their rates compete with those set by the KPLC. This is also

[31] For an overview of the licensing requirements - https://renewableenergy.go.ke/index.php/license/browse
[32] For an overview of the fees chargeable see Fourth Schedule, The Energy (Electricity Licensing) Regulations, 2012 - https://www.renewableenergy.go.ke/asset_upIds/files/Energy-Electricity%20Licensing-Regulations%202012-1.pdf

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true for commercial and industrial PPAs where customers are looking for cheaper alternatives to the already available power sources such as diesel, coal and utility supplied electrical power.

### Anticipated developments in the energy market and their effects on on-grid and off–grid PPAs

The most significant anticipated legislative development in the energy sector is the coming into force of the Energy Bill, 2017. The Parliament of Kenya is currently deliberating the provisions of the Bill. The focus of the Bill is to rationalise and consolidate the legislation relating to energy bringing it in line with the provisions of Kenya's 2010 Constitution that creates two levels of government, which have different roles in the regulation of the energy sector. It also updates the law to account for developments in the energy sector and introduces new incentives to attract investment such as net-metering.

The most recent form of the Bill does not contain any provision that will alter the current PPA regime in a big way. The standardised PPAs for sale of power to the licensed off-taker will continue to be used. In the commercial and industrial setting, PPAs are subject to the private negotiations between the parties and will therefore not be affected. In addition, the Bill brings in the concept of net metering; a concept through which a consumer who owns a renewable energy generator may have a metering system that operates in parallel with that of a licensed power distributor. A consumer who owns a renewable energy generator will therefore be in a position to consume its own power and to sell excess energy to a power distributor. It is expected that detailed regulations will be issued to govern net metering. We are aware that the key industry players are not fully supportive of this concept thus causing delays in the passing of the Bill into law.

Though there still is uncertainty regarding the policy and regulatory framework surrounding mini-grids such as the lack of clarity around tariff setting, we hope that the current development in regulation will give clarity on tariff setting and in overall the future of mini-grids in Kenya.

Further uncertainty faces mini-grid operators in areas where the national grid is soon to be expanded. This is likely to affect mini-grid operators without concessions the most. Due to KPLCs licensed monopoly for the supply of electrical power, it is unclear whether the IPPs will be permitted to continue operating in such areas or whether they will be forced to sell their power to KPLC. The MoEP has indicated that it would prefer to move customers on mini-grids to the national grid. Discussions are currently ongoing to determine the best solutions. Currently there are proposals for KPLC to buy out the mini-grids or alternatively to sell the generated power to the grid.[33]



[33] Mini Grids In Kenya, A Case Study Of A Market At A Turning Point. Energy Sector Management Assistance Program, 2017.

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**Market potential, conclusion and outlook.**

Access to cheap and reliable energy is key to realizing the Big Four Agenda. The manufacturing pillar of the Big Four Agenda envisions the manufacturing sector's contribution to the economy increasing from 9.2 % to 20% through the development of the iron, steel, leather, textile, agro-processing and ICT industries. The affordable housing pillar will see the development of 500,000 homes intended to be within the reach of low and middle-income earners.

One of the key factors that will contribute to the achievement and success of these projects is the availability of cost-effective and reliable energy. The government does see renewables as a viable energy source and on its part in 2018 and 2019 will be on boarding large renewable energy projects such as the 365 MW Lake Turkana wind farm and the 168 MW Olkaria V geothermal plant.

The Big Four Agenda projects represent a great opportunity for renewable energy entrepreneurs as they will be central in supporting the government on the one hand in developing renewable energy resources and the private sector on the other hand in deploying the technology to support and power their businesses and homes. Entrepreneurs can take advantage of the various incentives the government has already put in place such as the FiT policy and the tax exemptions already discussed above.

Entrepreneurs should nonetheless be aware the government is not solely focused on the development of renewable energy resources but it is looking to diversify its energy mix to include Kenya's yet unexploited coal and petroleum resources. While Kenya's government is very keen to generate clean energy from renewable energy sources, it will not hesitate to add coal and petroleum to its energy mix once the resources are being viably and cost effectively exploited to generate electricity.

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# 06 POLAND

by Piotr Mrowiec

## Current status of PPA in Poland

As in other countries, also in Poland the interest in PPAs concerning purchasing electricity from renewable power producers is constantly growing. The main reasons for the rise in popularity of PPAs as instruments for purchasing renewable energy are no different to those in other countries and include e.g. the constantly decreasing costs of energy (LCOEs) generated by renewable power plants, the increasing costs of energy generated from conventional sources, consumers‘ growing environmental awareness (even if this is often attributable to marketing) and the possibility of a long-term supply of electricity for a price agreed in advance.

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So far, the number of PPAs signed in Poland has been limited, but it can be assumed that this contractual structure will become a serious alternative. This significantly correlates with the spectacular increase in electricity prices in 2018 and the forecasts indicating their further increases in the coming years.

## Promotion of renewables in Poland

In Poland, there are currently two simultaneously operated main models in place to support enterprises generating green electricity: the system of green certificates introduced in Poland on 1 October 2005, and the auction model intended to replace the green certificate-based regime. Renewable power plants which started to feed energy into the grid before the end of June 2016 receive support in form of green certificates whose price has strongly fluctuated in recent years (see illustration 1). Project developers who did not manage to complete their projects before the end of June 2016 must compete for support at energy auctions, whereas the two energy auctions held so far only referred to power plants with a nominal capacity of up to 1 MWp. Energy auctions for large-scale PV power plants but mainly for wind power projects are scheduled for late 2018. As part of the auction system, bidders specify the amount of energy they would like to put up for sale during the auction and determine the purchase price which cannot exceed the reference price set by the state. Bidders who are awarded contracts as part of the auction sell energy for the price achieved during the auction, the pay as bid (power plants of up to 500 kWp), or sell electricity on the market and are refunded the price equal to the difference between the market price and the auction price. Irrespective of the support model, the support period is 15 years, counted from the date the relevant power plant starts to produce energy.

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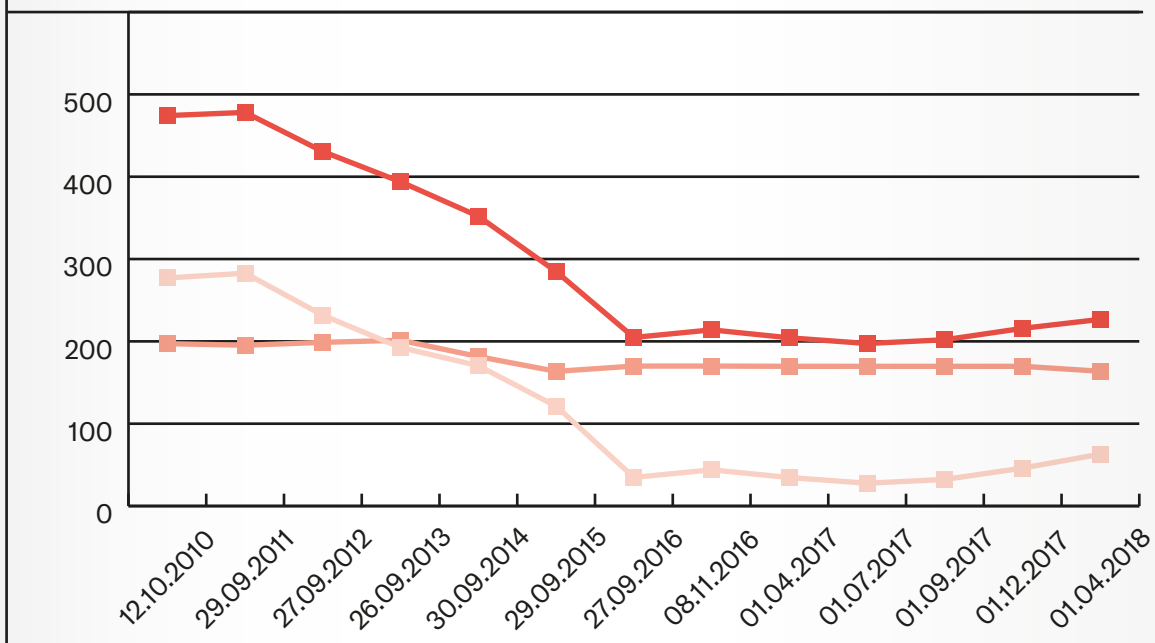
price trend




Price for green certificates of origin (2010 to date)

Total

Average price for electrical energy on the competitive market [PLN/MWh] in the relevant year

The problems with the effective organisation of auctions, and, in particular, the fact that large-scale projects are not admitted to the auctions, have caused a set-back in the development of the large Polish renewable energy sector. The record high surge in the installed capacity, especially in wind power, recorded between 2012 and 2016 suddenly collapsed. But PV power plants which earlier did not stand any chance of developing due to underfunding managed to hold their ground in the category of installations of up to 1 MW and are now developing into a very serious alternative to the dominant wind power.

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## PPAs in Poland, the general framework

As for the development of large-scale wind projects incentivised under the green certificate system, the practice so far has been that the relevant renewable power plants would sell the produced electricity, including green certificates obtained by wind farms, directly to a utility company by signing a relevant (rather simple in form) PPA. Electricity was then sold by the energy corporate groups to the end consumer.
The first long-term PPA between the industry and a utility company was signed in August 2018 by Mercedes-Benz Manufacturing Poland, based on which the automobile company secured itself a long-term supply of electricity for a fixed price from a 45 MWp wind farm, located quite close to Mercedes's engine factory.

Although PPAs are still a novelty on the Polish energy market, it seems that it is only a matter of time before they become a profitable alternative for enterprises which invest in renewables in Poland. Therefore, it is advisable to take a closer look at the legal framework for signing PPAs in Poland. In Poland, various PPA models are possible and allowed, such as: on-site PPA, near-site direct wire PPA, or classic off-site PPA, with various „variants" such as multi-seller PPA or multi-buyer PPA. Polish energy law does not obligate the renewable power producer to use network operators' distribution or transmission network grids located near the renewable power producer and its customer (certain limitations apply to renewable power producers who receive funding as part of the auction model or the green certificate system, for details see below).

Parties to the PPA can agree on building a section of the „private" network through which the producer will supply electricity to its offtaker (near-site direct wire PPA). Thus, there is a possibility to transmit energy without using the „public" electricity grids and, in this case, the contracting parties do not have to pay any grid charges for the transmission of electricity or any fees for feeding electricity into the public grid.

On the other hand, the network operator is obligated to distribute energy to all offtakers and from all power producers on equal terms.[34] Thus, the network operator must enable all renewable power producers access to its networks so that they can feed their produced electricity into the grid. The above-mentioned provision is the embodiment of the TPA principle (Third-Party Access), according to which third parties are to be granted full access to the network to enable the end consumer to purchase electricity directly from the power producer. For the electricity transmission, the network operators receive a separate fee from the electricity consumer. The grid charges vary but generally all network operators apply the following fee model: 1) a fixed charge which, in the case of large electricity consumers, is about EUR 2-3 thousand per month for a grid-connected



[34] Article 4 (2) of the Polish Energy Act dated 10 April 1997 (Polish Journal of Laws of 2018, No. 755).

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nominal capacity of 1MW and a variable grid charge for the transmission of energy (about 10 eurocents/kWh) plus charges under electricity plans and electricity quality maintenance fees.

### Restrictions on signing PPAs with subsidised renewable power producers

As stated above, the Polish legal framework for PPAs is quite liberal. Where the subject matter of a PPA is the selling of electricity whose production was in any way subsidised then certain legal restrictions apply depending on the incentive system (quota regime, auction model). For maximum clarity, the various cases are discussed separately below.

### 1. PPAs are signed by operators of renewable power plants supported under the green certificate system.

For every 1 MWh of generated power over a term of 15 years - counted from the date electricity is fed into the distribution grid for the first time, such investors receive a certificate which they can sell either on the energy exchange or on the basis of bilateral agreements. In addition, they have the possibility to sell all of their generated electricity for a price equal to the average sales price for electricity paid on the competitive market in the previous quarter and advertised by the President of the Polish Energy Regulatory Office; in the 1st quarter of 2018 the price on the competitive market was 174.95 PLN / MWh (≈ 4 eurocents/kWh). There is, however, no obligation to sell electricity to a mandatory buyer (i.e. the state utility). The producer is fully authorised to sell electricity to a freely chosen business partner and for a price agreed with that business partner without losing the right to receive green certificates. A significant restriction should be considered though: the producer must not agree on selling a portion of its electricity generated on a daily basis, e.g. 3 MWh, as part of a PPA to a freely selected business partner while selling excess electricity to a mandatory buyer in line with the legal principles. The rule is: „The requirement for selling electricity to a mandatory buyer (...) is that all of the renewable electricity generated in a renewable power plant and fed into the distribution or transmission grid must be offered for sale at least within 90 consecutive calendar days".[35] A solution where all of the electricity is sold under a PPA over three quarters of the year and to a mandatory buyer in one quarter of the year is however perfectly allowable. Owners of power plants with a capacity of over 500 kWp are not authorised to sell electricity for the legally determined price, therefore they are free to decide how to sell the generated electricity - whether on the energy exchange, under the direct sale model, or as part of a PPA.



[35] Art. 72a (2) of the Polish Renewable Energy Sources Act dated 20 February 2015 (Polish Journal of Laws of 2018, No.1269)

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It should be emphasised at this point that existing power plants which enter into PPAs do not lose their right to receive green certificates. In this context, it should be noted that an ambiguous phrasing of the Polish Renewable Energy Sources Act initially caused legal uncertainty as it misleadingly read that operators of renewable power plants which receive green certificates must sell all of the electricity generated in their renewable power plant on the energy exchange. As per Art. 72a (3) of the Polish RES Act[36], the President of the Polish Energy Regulatory Office decides on the exclusion [of the power producer] from the entire support system under section 4 of the Act - i.e. also from the quota regime. But if you interpret this provision taking into account its purpose and especially considering the circumstance that the exclusion can be ordered if the operator fails to submit a relevant declaration [required under the law] 14 days before commissioning of the power plant and this provision became effective only on 14 July 2018, it becomes clear that this restriction is not intended to apply to existing power plants.

## 2. PPA is signed by operators of renewable power plants who would like to participate in auctions

Renewable investors who offer for sale electricity to be generated in planned renewable power plants have so far adopted a business model where they would offer all of the energy intended to be generated in the relevant renewable power plant over the entire period of 15 years. It should be mentioned, however, that also a scenario is very possible that only a portion of the generated energy is sold as part of the auction. The Polish auction system is characterised by the fact that the subject matter of the auction is not the sale of all of the electricity generated by a relevant renewable power plant, but an amount of energy that the producer would like to generate and offer for sale at the auction. According to Art. 92 (1) of the Polish RES Act, the state is under the obligation to buy from the producer who won the auction electricity “only in an amount which does not exceed the amount stated in the bid by the producer“. A structure where the owner, e.g. a wind farm, chooses this option to diversify the investment risk by auctioning 50% of its estimated energy production to ensure that it receives a fixed remuneration over the period of 15 years and by selling the remaining amount of energy on the energy exchange is possible and can be an attractive alternative to auctions where, although indexed on an annual basis, the achieved price proves to be not particularly attractive after several years.



[36] Art. 72a (3) of the Polish Act on Renewable Energy Sources dated 20 February 2015 (Polish Journal of Laws of 2018, No.1269)

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Problematic, however, would be a procedure where the power producer would sell part of electricity under the auction system and the other part under a private PPA signed between the producer and a freely selected offtaker (e.g. an industrial company). On 14/07/2018, the extensive amendment to the Polish RES Act imposed a strict obligation on most renewable power producers (except micro and some smaller-scale power plants) to feed all of the produced electricity into the distribution network and sell the electricity on the energy exchange or on another regulated market in Poland - this is the so-called obligatory sale on the energy exchange.[37] If the operators breach this provision, they must be ready to face the punitive consequence of being fully excluded from the support system. The applicability of this provision, however, is limited in time because it relates to renewable power plants which start to produce electricity no later than 31/12/2020. If the provisions are not amended, this scenario will be possible only from 1 January 2021. In this context, the legislator has scheduled the auctions to be held by late 2020 at the latest, which means that this regulation will most likely apply to all renewable power plants receiving support under the auction system. In mid-September, the President of the Polish Energy Regulatory Office announced rules of the procedure for the auctions. The rules also include a significant regulation on the sale of electricity. According to the vague wording of Article 9 (26) of the rules of the procedure for the auctions[38], the electrical energy generated by the renewable power plant subject to the auction system should be sold not on the energy exchange but to a mandatory buyer. Importantly, however, this regulation relates only to the amount of electricity which the relevant power plant operator who won the bidding process committed to sell as part of the auction system. In this model, if only a part of energy is put up for sale during the auction, it should be expected that the remaining amount of the energy will be subject to the obligatory sale on the energy exchange. In conclusion, it should be stated that the combination of support in form of the auction price and the PPAs might not be  possible, whereas we should wait for another consolidation of the regulatory framework due to the vague wording of the provisions.

### 3. Public aid and PPAs

It should be noted that some renewable power plants were or are being built using significant support in form of aid granted under EU funding programmes or from state resources. The level of co-financing and the payment conditions usually depended or depend on the type of the operational programme normally advertised by the relevant voivodship. Nonetheless, the signing of PPAs is quite safe for operators of renewable

[37] Art. 72a (1) of the Polish Act on Renewable Energy Sources dated 20 February 2015 (Polish Journal of Laws of 2018, No.1269)

[38] Rules of procedure on the conduct of auctions for the sale of energy produced from renewable sources, dated 12/09/2018.

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power plants who implemented or want to implement their projects based on the CAPEX investment support in form of EU or national grants. Although the Polish RES Act does include provisions aimed at eliminating the so-called over-funding, the provisions apply to situations where aid is accumulated as part of the auction system and combined with other forms of state funding. It is thus admissible to sell electricity under a PPA in the case of power plants whose construction benefitted from public aid.

## New renewable energy projects and PPAs, market analysis and outlook

As already mentioned above, PPAs are particularly suitable for existing larger-scale renewable power plants which receive green certificates and can sell the produced electricity in any way of their choice. But a question arises whether this model can be also attractive to developers of new renewable energy projects. First of all, if you analyse the drastic increase in electricity prices in Poland, this question should be answered affirmatively. 80% of the Polish electricity production is based on coal. Due to the enormous level of their CO2 emissions, coal-fired power plants are required to pay a high price for the CO2 emission permits. The price for the „CO2 certificates“ however increased by 250% over the past 12 months alone: from EUR 5 per ton in August 2017 to over EUR 20 (as of 24/08/2018). In combination with the quite significant increase in coal prices, this has led to an increase in the prices for electricity to be supplied next year, from PLN 163 per MWh to over PLN 250 per MWh. In the summer of 2018, the electricity price in Poland was much higher than that in the neighbouring countries.

Electricity market experts assume that this tendency will not change in the coming years. According to the forecast of the European Commission, Poland‘s average electricity price will reach nearly PLN 340 in 2020 and EUR 373 per MWh in 2025 (see illustration 2). If you compare this price with the maximum auction price for on-shore wind (with a capacity of over 1 MWp), being PLN 350 per MWh, then the question will arise whether the support scheme in form of the auction system makes sense at all in the long term. It should be also considered that because the auction rounds have not been organised yet, projects with a total capacity of 3 GW are waiting for development. PPAs can become an opportunity to indeed develop such projects.

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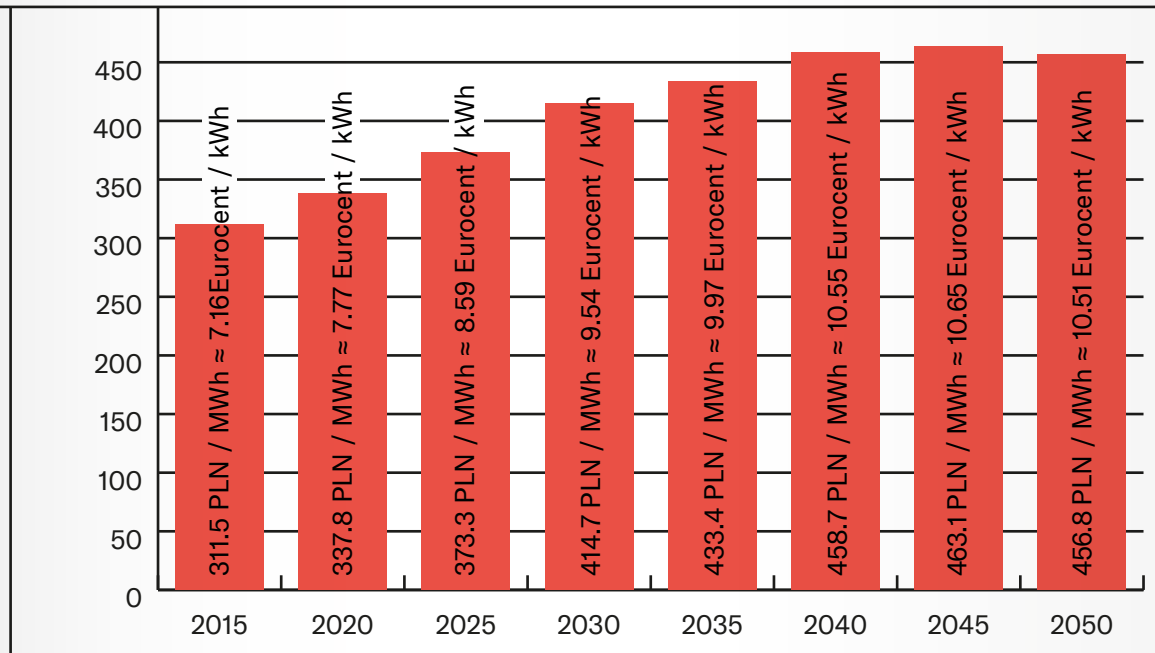


In conclusion, it should be stated that the increase in electricity prices might soon lead to the emergence of grid parity for renewable power projects. Paradoxically, it is the strong reliance of the Polish electricity production industry on coal that can lead to a quick rise of renewable energy sources and increase their competitiveness. In this process, it is highly likely that PPAs will be becoming more and more popular and will establish themselves as a common business model in the near future.

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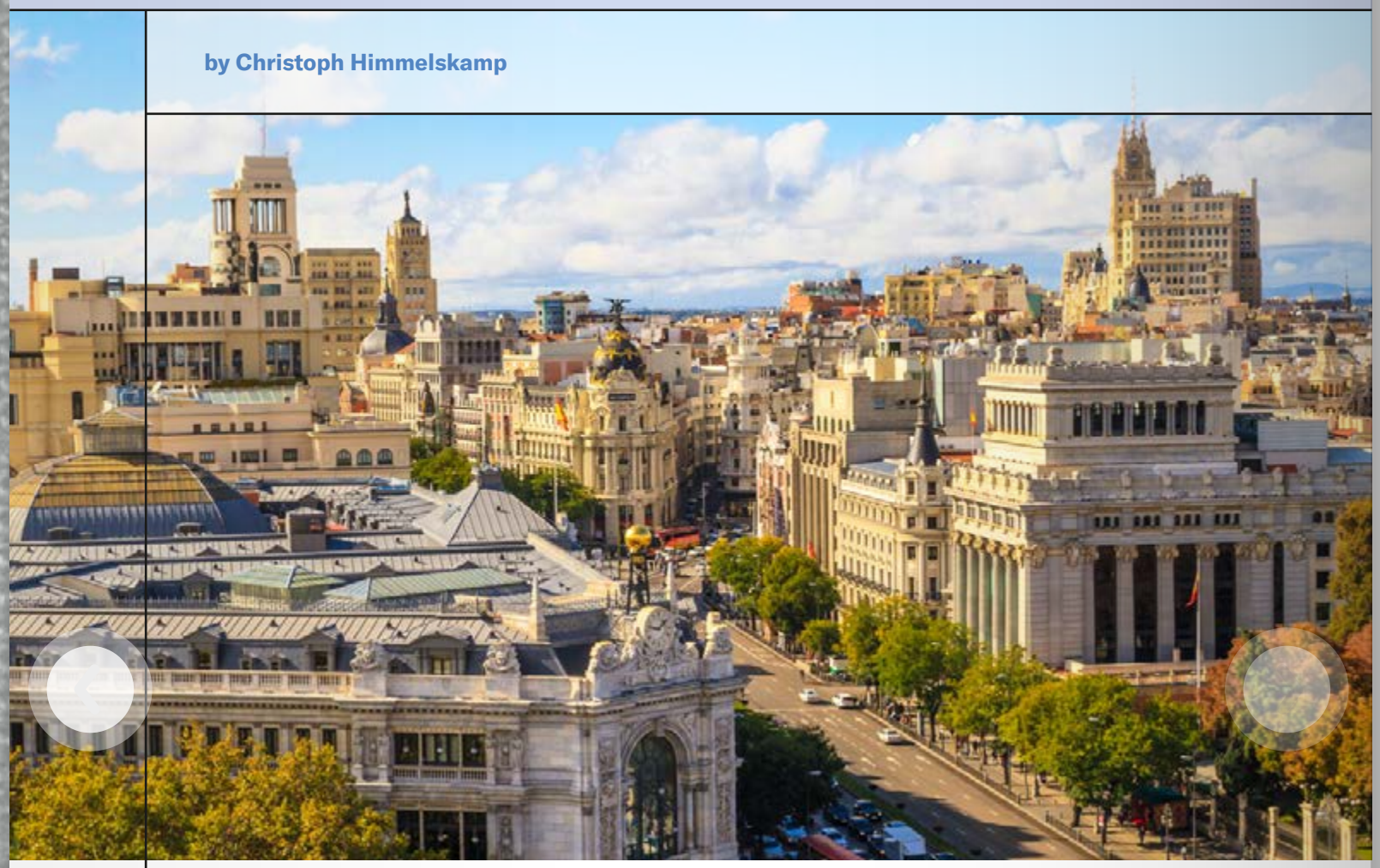
# 07 SPAIN

by Christoph Himmelskamp



## Current status of RE in Spain. Installed capacity. Incentive systems for old power plants.

In 2017, RE plants with a total capacity of 51GW were connected to the grid in Spain. Hydro power (20GW) and wind power (23 GW) are the leading technologies, followed by solar (mainly PV) (7 GW) and biomass (about 1 GW). In Spain, the total installed electricity production capacity is 104 GW, which means that renewable energy already accounts for approx. 50 % of the installed capacity. In 2017, however, only 32 % of the total of 260 TWh of produced electricity came from renewable sources. The leading technology here was wind power (48 TWh). Electricity generated from solar also already amounted to 14TWh. (Source REE – Red Eléctrica de España).[39]

As for the years ahead, it is planned to intensify the expansion of installed RE capacities. As part of two technology-neutral auctions, feed-in rights for approx. 8 GW were auctioned. The structure of the auctions held in Spain was extremely complex and was therefore strongly criticised. To give a simplified summary: The winning bidders of an



[39] Source: REE – Red Eléctrica de España.

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auction receive a premium added to the electricity spot market price only if the electricity market prices fall below 32EUR/MWh in the long term and only if the „reasonable rate of return“ (more information on this below) is not revised downwards in 2020. This means that – although awarded the contract – the winning power plants do not gain any economic benefit unless the electricity market prices fall below 32EUR/MWh in the long term.

The UNEF association even expects that the newly installed capacity will reach up to 24 GW by 2022; while the transmission system operator Red Eléctrica de España (REE) has allotted to renewable sources grid connection points of „only“ 15GW so far.

The feed-in tariffs (FiTs) were abolished for all RE and CHP plants as per RDL 9/2013 (Real Decreto-ley 9/2013, de 12 de julio, por el que se adoptan medidas urgentes para garantizar la estabilidad financiera del sistema eléctrico[40]) with effect from 13 July 2013. In respect of old power plants, FITs have been replaced with a premium (feed-in tariffs were granted until 2012) which a producer will receive for the generated electricity from the CNMC (Comision Nacional de los Mercados y la Competencia) in addition to the market price in order to cover the initial investment costs which an efficient and well-managed company would not recoup by selling electricity during the operating life of the power plant. New installations have received no more state grants since 2012.

The new remuneration system is intended to enable competition between different energy producers; whereas a standard power plant is ensured a reasonable return which may not exceed the framework regulated by law. Higher grants may exceptionally be granted for certain investments to be carried out within a specified period of time if they contribute to a significant reduction in technology costs on the Spanish islands or the mainland.

A „reasonable return“ is understood as a rate of return of power plants before taxes that is equal to Spain 10-Year Government Bond Yield on the secondary market plus spread. For power plants that were eligible for a feed-in tariff as of 13 July 2013, the spread is 300 basis points (approx. 7.5 percent). The remuneration parameters may be revised every six years, i.e. the next review of profitability will be in 2019. If, at the time of the revision, the Spain 10-Year Government Bond Yield is under 4.5 percent (currently 1.5 percent) the Spanish government will be able to appropriately lower the regulated rate of return.

In 2018, a typical 100kW PV power plant put into operation in 2007 receives a fixed premium of EUR 56,971.60 on top of the electricity market price. In 2017, the average electricity market prices were at 52.22EUR/MWh, which, given annual production of about 1640 hours, means further revenue of about EUR 8,600. As explained above, this applies only to old power plants that were put into operation before 2012 and were registered for the special regime for renewable energies.



[40] Real Decreto-ley 9/2013, de 12 de julio, por el que se adoptan medidas urgentes para garantizar la estabilidad financiera del sistema eléctrico.

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## PPA situation in Spain

Since 2017, various press releases have announced the advent of PPAs in Spain. According to estimates, they will cover at least 1.5 GW. Attention should be paid to the announced PPAs of Baywa, Solar Ventures, Cox Energy, Talasol and Forestalia.

The term of the agreements is between 12 and 15 years. In most cases the business terms are confidential and, therefore, the framework values are of a speculative nature. The prices take into consideration a certain mark-down on the current electricity market prices and the risks of price changes will also be mirrored; the price range will therefore be between 35 EUR /MWh and 45 EUR /MWh.

All of the mentioned PPAs are structured as financial PPAs and thus they hedge against the risk in the electricity market. If the electricity market price achieved by the producer on the spot market falls below the price agreed on with the PPA partner (offtaker), the offtaker will pay the power producer the difference amount. If the electricity market price exceeds the PPA price, the producer will pay the offtaker the amount of the difference between the price agreed in the PPA and the electricity market price.

Corporate PPAs are not popular in Spain yet, with some exceptions. On the one hand, this is because of the electricity market prices which fell between 2010 and 2016 and did not recover until 2017 and, on the other hand, because of the cultural peculiarity that long-term purchase agreements are not common in Spain.

## Legal framework for physical PPAs in Spain

The simplest PPA one can imagine is the production and consumption of energy directly on site without the necessity to access the public distribution or transmission network (on-site PPA). If, in addition, the consumer has no other point of access to the public network, the installation is called an off-grid system which in Spain can be mounted without any problems and for no grid charges. However, since the load curve and the electricity production curve must be identical and also emergency power systems must be kept available, this option is not economically attractive in most cases.

If the generated electricity has to be fed into the public grid (distribution and/or transmission network) before it is off-taken by a direct consumer, this is called an off-site PPA.

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In Spain, off-site PPAs can be concluded between the conventional or renewable power producers and the specially qualified end consumers (bilateral PPAs), according to Royal Decree 2019/1997 (Real Decreto 2019/1997, de 26 de diciembre, por el que se organiza y regula el mercado de producción de energía eléctrica[41]). Both types of producers and end consumers must register in specific registers and the end consumer must submit certain guarantees.

Off-site PPAs have a special feature where the producer and the end consumer can be the same person („Autosuministro"): in such a case, electricity is transferred at the price of 0 and, thus, the tax base (electricity tax of 7%) is also 0. The end consumer need not be the owner of the RE power plant, it is sufficient if he/she derives possession on any legal ground (rent, lease etc.).

Renewable power producers, however, are required to pay grid charges, in particular 0.5 EUR/MWh; to this end, both parties („CIL" – being the producer's identification code, and „CUPS"- being the end consumer's identification code) conclude grid connection agreements with the respective network operators which also take over the communication with REE and provide other services (for a fee). The end consumer can protect themselves against production shortfalls or increased power consumption by concluding another purchase agreement with a power trader (comercializadora). Usually, a renewable power producer does not consume 100% of the produced power for his or her own purposes but sells part of it on the electricity market or concludes other PPAs as a hedge to benefit from market developments.

Concluded bilateral off-site PPAs as well as daily consumption and production volumes must be notified to the system operator (Red Eléctrica de España – REE). In a scenario where there is no autosuministro (i.e. where the producer is not the end consumer), apart from grid charges, revenues are also subject to electricity tax and other taxes.

Terminated PPAs must be notified, too, and the renewable power producer is required to start placing bids on the spot market in line with the operating licence. Thus, a renewable power producer is both entitled and obliged to produce power and feed it into the grid if the economic conditions allow doing so, i.e. if the bid is accepted on the spot market. Thus, sale on the spot market should be treated as a back-up to the PPA in case it is terminated early or is otherwise not performed, e.g. because the offtaker is insolvent.

All economic conditions being equal, renewable electricity has priority over conventional electricity when it comes to feeding electricity into the grid. It remains to be seen what impact a massive expansion of renewables in Spain will have on the grid if the best-case scenarios come true. The network operator REE emphasises that power grid security is the top priority and new grid connection points will only be allocated if power grid security is ensured at all times.



[41] Real Decreto 2019/1997, de 26 de diciembre, por el que se organiza y regula el mercado de producción de energía eléctrica.

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## Other options of selling electricity in Spain

As an alternative to selling electricity as part of PPAs, Spain offers participation in the spot market. The Spanish government expects that the minimum spot market price will not be less than 32 EUR/MWh in the long term. This view is supported by various analysts and is also taken as the basis for financing decisions by Spanish banks. A Sabadell-based bank uses the minimum price over a term of 25 years, plus inflation allowance of 1%, and, on this basis, calculates business cases for the financing of RE power plants in Spain. Financing covers up to 70% of the investment volume and, subject to appropriate levels of LCOEs, such projects can become profitable.

It is unclear how the electricity prices will continue to develop in Spain. Some factors such as the nuclear power and coal phase-out, healthy economic growth, electrical mobility, and trends in prices of fossil fuels suggest a long-term increase in the prices. What indicates a stagnation or even a decrease in electricity prices is the increasing integration of international electricity markets, in particular with France, and the „cannibalisation effect“ which could already be observed in mid-day trading sessions.

In addition to the above-mentioned spot prices, RE power producers receive Certificates of Origin which can also be traded internationally provided that the RE plants do not receive state incentives. Currently, no tax advantages are granted to RE power producers. It remains to be seen whether the new socialist government will manage to successfully tackle the support for RE sources also from the financial perspective.

## Installation of new RE plants

In Spain, numerous projects involving PV installations of up to 50 MW are being currently developed and efforts are made to bring them to a „ready to build“ state as quickly as possible in order to agree a PPA or a financing arrangement. The 50 MW limit is not a discretionary value but results from a regulation on competencies allocating the competence for granting licenses for power plants with a capacity of 50 MW and over to the Spanish state whilst power plants with a capacity of less than 50 MW are approved by local authorities (Comunidades Autonomas). Spanish project developers are often of the opinion that the fact that ministerial officials in Madrid have competence over regional projects hinders project development and reduces possibilities of influencing their implementation.

For a 50 MW project, the average period of bringing the project to the ready to build state is between 12 and 18 months; for projects of more than 50 MW, this period is often longer than 24 months. Also here, of course, the exception proves the rule.

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The first crucial hurdle is the allocation of a grid connection point (against a bank guarantee of 10EUR/kw) with the same geographic and quantitative parameters as applied for. Often, instead of the 50 MW applied for, only 30 MW or even less are allocated, and, to make it worse, at a different network node, which leads to higher grid connection costs. Therefore, a good piece of advice for developers is to secure the already allocated grid connection points instead of relying on greenfield development. Then, the usual barriers in the form of environmental impact assessments should be overcome and, in part, also unknown obstacles such as water authorities or cultural heritage agencies.

Obtaining a local construction permit is usually not a problem, because the municipal authorities have strong motivation to approve power plants as a construction tax (ICIO) of 3-4 % is levied on the total investment.

The approval procedure is not particularly complex, especially that Spanish engineers already have years of experience in this area. The biggest problem are the long processing times by the different authorities. Great attention should be paid to submitting accurate applications and correct documents since every extra step in the process will add months to the processing time in the ministries.

## Income and costs

The spot market in Spain is organised by OMIE (OMI-Polo Español S.A.) and is a joint electricity trade platform for the markets in Spain and Portugal. About 80% of the Iberian demand for electricity is traded via this platform and for most of the day the prices in Spain and Portugal are identical. The electricity market is very liquid and price fluctuations are minor compared to other European markets. Negative prices are not (yet) allowed by law and, in 2017, the maximum prices were 180 EUR/MWh whilst they ranged between -500 EUR and 3,000 EUR/MWh in other European markets.

In 2017, the electricity market prices in Spain were as follows (source OMIE)

| | |
|---|---|
| Jan | 71.49 €/MWh |
| Feb | 51.74 €/MWh |
| Mar | 43.19 €/MWh |
| Apr | 43.69 €/MWh |

| | |
|---|---|
| May | 47.11 €/MWh |
| Jun | 50.22 €/MWh |
| Jul | 48.63 €/MWh |
| Aug | 47.46 €/MWh |

| | |
|---|---|
| Sep | 49.15 €/MWh |
| Oct | 56.77 €/MWh |
| Nov | 59.19 €/MWh |
| Dec | 57.94 €/MWh |

Large industrial customers can either participate in the electricity market as purchasers by themselves or act through power traders representing them. In the case of representation by a power trader such trader will charge a certain margin for taking over the fluctuation risk because, in most cases, the end consumer will choose a flat tariff.

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The LCOEs for PV have massively decreased in Spain in the last years and are in line with European standards. For 2018, Spain‘s average LCOE is assumed to range between 600 EUR and 720 EUR/kW. This includes planning and approval procedure costs of 180 EUR up to 210 EUR/kW.

Spain‘s OPEX costs for PV vary between 0.022 und 0.026EUR/MWh and lease costs are between 850.00 and 1,200 EUR/ha/year; but also higher lease prices have been observed, in particular on the islands.

## Further auctions in Spain

After the new socialist government took office in Spain several months ago, a range of measures aiming to support RE in Spain were announced, such as abolishing the so-called „solar tax“ on electricity self-consumption, reducing administrative hurdles and organising further auctions for renewable electricity. Amongst other things, reference was made to auctions for the Spanish islands since, there, electricity is still generated mainly from fossil fuels. As of the date of finishing the editorial work on this article, no draft regulations were released yet.

## Conclusion

Currently, the Spanish electricity market is the first European market to enter a post FiT phase where different power producers compete on an open market (nearly) without government influence. RE power producers have the possibility to sell the generated electricity on the spot market or as part of a PPA to end consumers or power traders. In the opinion of many market players, the market environment is stable in 2018 and numerous investments are being initiated in the Spanish market.

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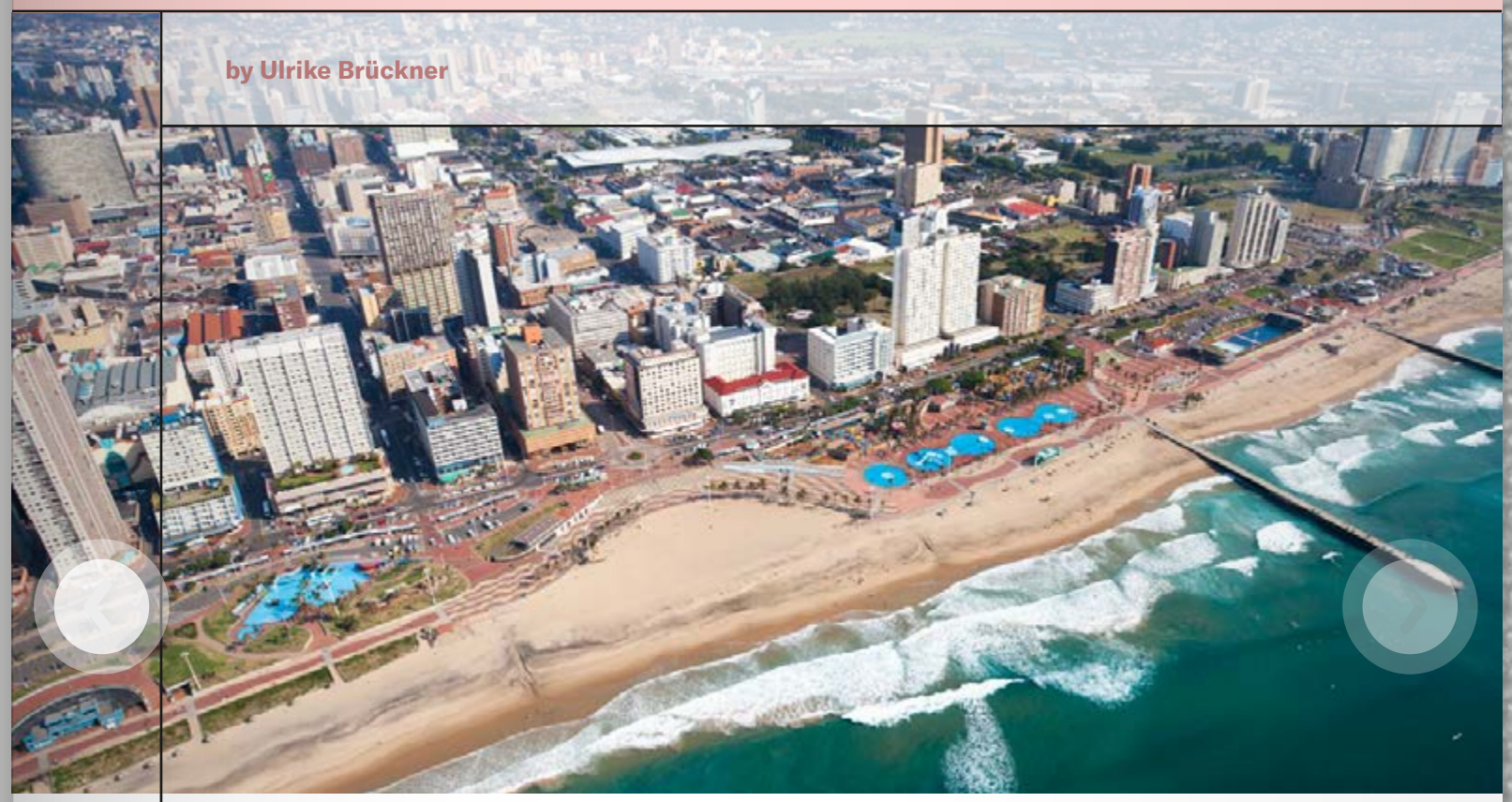
# 08 SOUTH AFRICA

by Ulrike Brückner



## Initial situation in South Africa – Auctions instead of feed-in tariffs

According to the latest official figures published in 2017, the installed grid-connected renewable capacity was 3.86 GW in South Africa. This represents about 8% of the country's electricity generation capacity. The most important guidelines for South Africa's energy policy have been stipulated in the so-called Integrated Resource Plan for Electricity (IRP) 2010-2030. According to this official strategy paper of the South African government, the share of renewable energies in the determined energy mix should be increased up to 26% by 2030.

In 2011, South Africa launched the "Renewable Energy Independent Power Production Procurement Programme" (REIPPPP), a public tender programme for renewable energy projects, intended to implement the IRP. From the very beginning, the programme has covered all common technologies: (onshore) wind, solar PV, CSP and bioenergy/biogas. Despite the enormous potential of South Africa's coastlines, offshore wind has not really become a publicly discussed issue yet because this technology is relatively expensive and renewable energy is still at an early stage.

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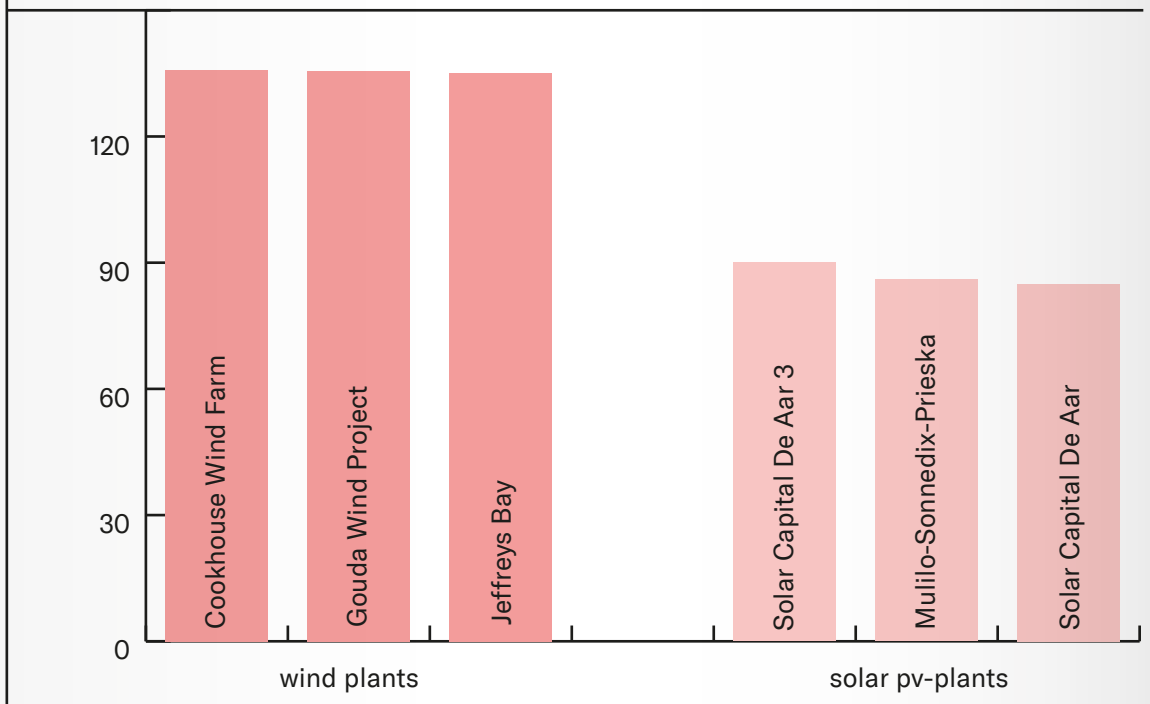
By adopting the REIPPPP, South Africa decided against the implementation of a feed-in tariff. The programme is aimed at large-scale renewable energy projects of over 5 MW. Apart from this, also an auction programme exists and provides for support for smaller-scale projects of between 1 and 5 MW. Within the framework of the REIPPPP, the purchase price to be paid by the state-owned electricity utility Eskom for the power generated by independent power producers is determined by way of competitive bidding. Successful bidders are awarded power purchase agreements (PPAs) with Eskom for 20 years. A template of such a power purchase agreement is provided to the bidders together with the Terms of References for the auction. Until today, four tender rounds have been held under which contracts were awarded for more than 6,300 MW. About 2,500 MW have already been installed and connected to the grid. Further tenders are to be launched for another 6,300 MW.

## The three biggest wind and solar-pv plants of South Africa




*Source: https://www.businessinsider.co.za/5-massive-new-renewable-energy-projects-that-transformed-south-africas-landscape-2018-4*

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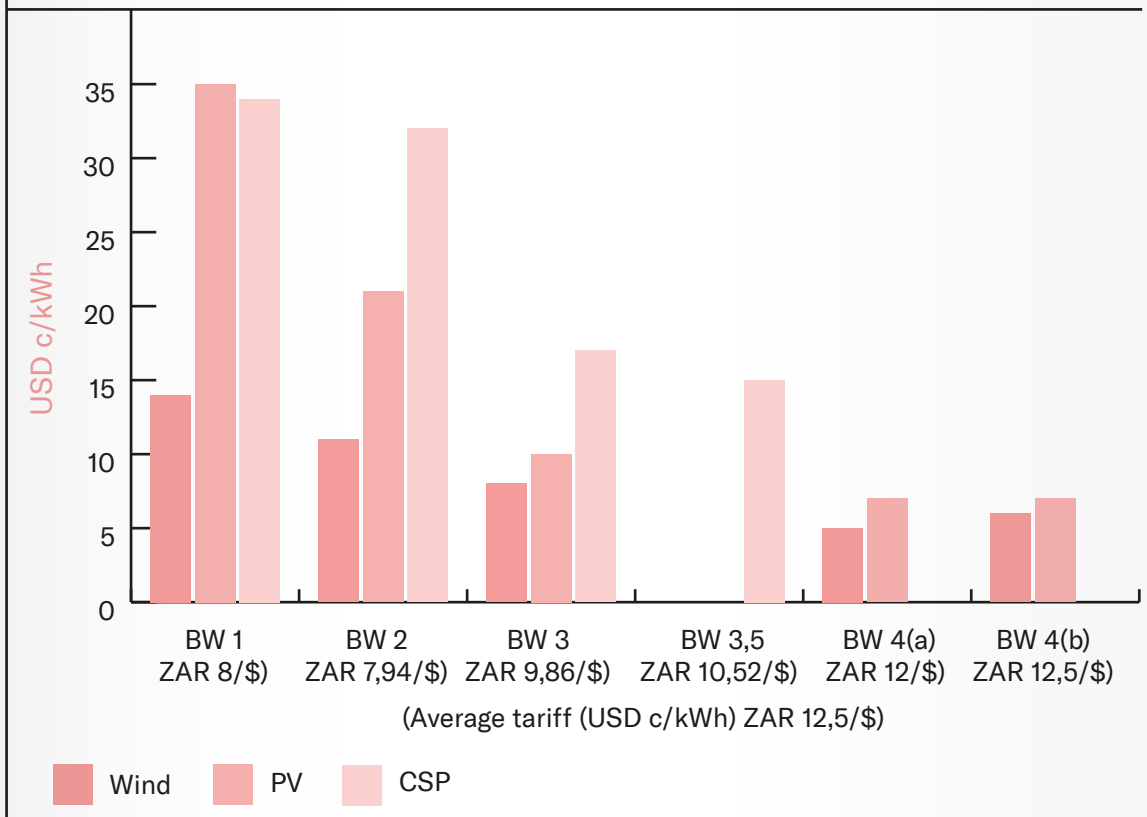
The REIPPPP was celebrated as a great success in the first years. It was even called one of the best investment programmes worldwide. The programme also attracted interest and was partly imitated in the other countries of sub-Saharan Africa. The possibility of achieving extremely low electricity prices makes such auctions very attractive to developing countries which would not be able to finance the implementation of feed-in tariffs.

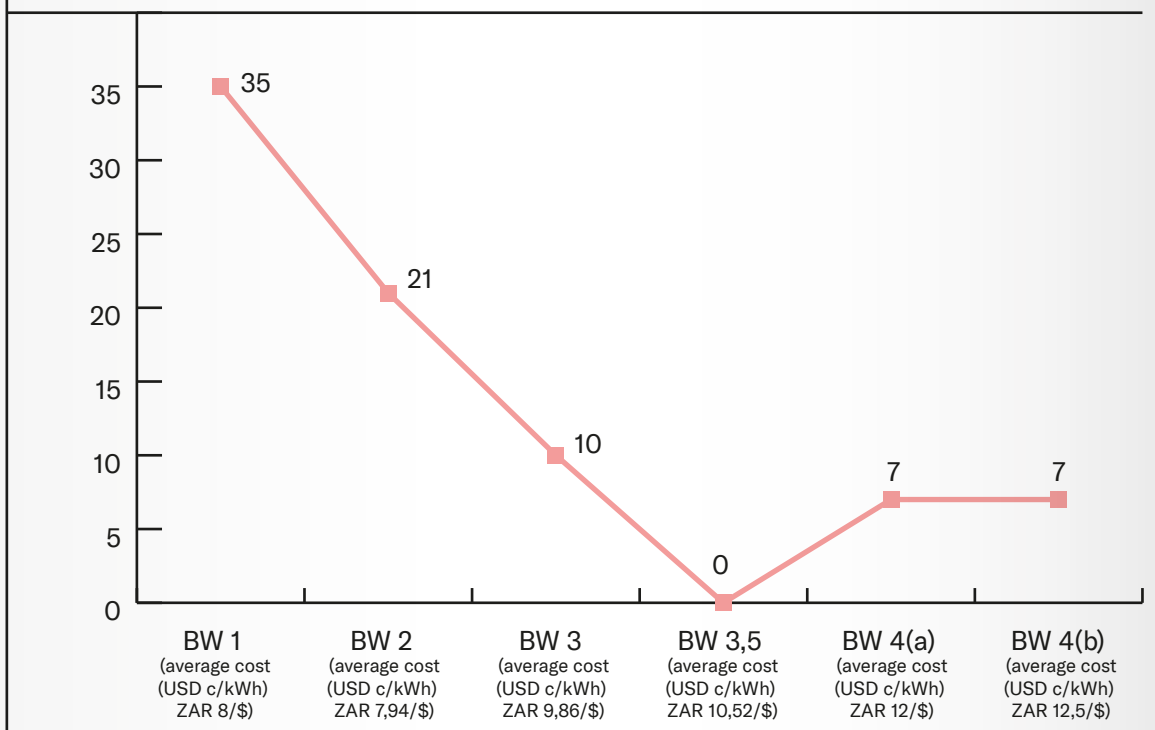
## price trends




Source: https://www.gsb.uct.ac.za/files/EberhardNaude_REIPPPPReview_2017_1_1.pdf

# 08 SOUTH AFRICA

price trend for electricity by solar-pv (bid windows 1-4)




*Source: https://www.gsb.uct.ac.za/files/EberhardNaude_REIPPPPReview_2017_1_1.pdf*

But in the context of the two-year standstill after 2016, the programme engendered criticism. The reason was Eskom's refusal to sign power purchase agreements with the successful bidders. The dispute with Eskom has now ended. The outstanding power purchase agreements have been signed and the 5th auction round is scheduled for late 2018.

# 08 SOUTH AFRICA

## The role of Corporate PPAs in South Africa

The interest in Corporate PPAs is growing and they are increasingly sought after. The reason for this is the strongly increasing electricity price, amongst others. Since 2008, the electricity price has risen by more than 15 % p.a. on average. In addition, South Africa has been affected by controlled load shedding measures due to coal power supply constraints since 2007. 93% of the energy supply from Eskom is coal-based. Although two large coal-fired power plants Kusile and Medupi, each with a capacity of 4 800 MW, have been recently connected to the grid, the insufficient supply of coal power continues to cause supply constraints. Many industrial and corporate electricity consumers, in particular the numerous mines in South Africa, have therefore invested in backup power supply in the form of diesel-powered generators and are looking for alternative sources of electricity supply in South Africa.

The large-scale renewable power plants established under the REIPPPP are still relatively new and have been bound by power purchase agreements with Eskom with a 20-year term. South Africa has no law comparable to the German Renewable Energy Law [EEG] and, therefore, it is not legally regulated and there is no legal certainty as to how in particular larger-scale renewable energy projects outside the Eskom monopoly could be carried out. So far, it has been the rule that PPAs could only be concluded with ESKOM or a municipality, depending on who owned the respective grid. Thus, little is reported about examples of successful Corporate PPAs in South Africa and no data on PPAs is known. But some isolated pilot projects do exist. One successful example is a biogas plant located in the province of Gauteng which supplies electricity to a BMW plant.

## Legal and regulatory framework for PPAs

The legal and regulatory framework for Corporate PPAs significantly improved in late 2017 because the requirement to hold an electricity generation licence was abolished in certain cases. In South Africa, basically for any kind of power production an electricity generation licence must be obtained; such a licence is granted by the national energy regulatory authority NERSA (National Energy Regulator of South Africa). Since a legal amendment in late 2017, however, the following six situations have been exempt from the requirement to hold an electricity generation licence:

- Grid-connected power plants with an installed capacity of up to 1 MW without energy wheeling;
- Grid-connected power plants with an installed capacity of up to 1 MW allowing for energy wheeling;
- Grid-independent power plants with an installed capacity of up to 1 MW;

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- Power plants for demonstration purposes;
- Power plants where electricity is generated as a co-product, by-product, waste product or residual product of an underlying industrial process;
- Power plants serving exclusively for standby or backup electricity supply.

For these power plants simple registration with the NERSA is sufficient. This means great progress since, due to the vague and/or missing legal framework regulations, obtaining a power generation licence outside the REIPPPP is a time-consuming process and involves major difficulties. Thus, it can be stated that for power plants with a capacity of up to 1MW Corporate PPAs are basically possible. From among the situations where the electricity generation licence is not required, the scenario no. 3, i.e. the installation of a renewable power plant on the premises of the electricity consumer, might probably be the easiest to implement using the model of Corporate PPAs in South Africa (and in many other African countries). During the process of the legal amendment, an increase in the threshold to up to 10 MW was discussed. It is, thus, possible that such an increase will be implemented in the future. But it should not be expected that this will change soon.

In the case of off-site PPAs that allow for energy wheeling, the IPP and the offtaker pay use-of system charges. This is a standard charge which is also included in the electricity price levied by Eskom. The rate of the charge depends on various factors, such as e.g. maximum transmission load, location and distance. Energy wheeling has been tested out only to a little extent so far. One of the few renewable power plants that use this feature is the above-mentioned biogas plant supplying the BMW plant. But, as experience has shown, the implementation of energy wheeling is difficult and involves lengthy contractual negotiations with Eskom and the competent municipality.

### Opportunities for selling renewable electricity

Selling renewable electricity is still in its infancy in South Africa. According to information published by NERSA, the first distributor who obtained a NERSA licence is POWERX. The South African company purchases/sells electricity from renewable energy sources. POWERX offers PPAs with a term of 1 to 20 years. The question whether the sale of electricity to POWERX is possible depends on whether POWERX holds a permit for energy wheeling from the respective municipality, amongst others.

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## Development and composition of the electricity

The strong increase in the cost of electricity in South Africa has a negative impact on the country's attractiveness as a location for production facilities. The historically low electricity prices were mostly one of the major reasons for production companies to invest in South Africa.

In South Africa, tariff rates vary depending on the amount of electricity needed and the location of the customer. The electricity price is regulated by NERSA, i.e. any increases in the electricity price must be approved by NERSA first. The electricity price consists of different components. Contracts between large power users and Eskom basically include the following electricity price components:

- Energy consumption charge: Cent/kWh plus electricity generation charge;
- Energy demand charge: Rand/kVA/month;
- Network access charges: Transmission and distribution network charges in the form of network capacity charge and network demand charge (Rand/kVA/month);
- Reactive energy charge;
- Subsidy charge;
- Administration and service charges;
- Ancillary service charge;
- Value added tax.

## State subsidies for renewable energy

In South Africa, support for renewable energy has been confined to tax reliefs for equipment elements, so far. Tax law provides for a tax incentive in the form of an accelerated depreciation allowance for machinery, plant and equipment and parts used for the generation of electricity from renewable resources. The basis of assessment of the tax deduction are the acquisition costs. The tax deduction is made over three years and is 50% in the first year of commissioning, 30% in the second year and 20% in the third year.  For solar PV installations of up to 1 MW, the deduction is 100% in the year of commissioning.

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### Feed-in and net metering

South Africa has no national regulations on feed-in. Thus, there is no right to feed renewable electricity into the national grid if a PPA ends or is otherwise terminated. As for net metering, a few examples of projects can be found, in particular in the region of the Cape Province, and the issue is being hotly debated. But currently, only few municipalities allow feeding electricity into the grid with remuneration based on net metering for power plants of up to 1 MW. A prerequisite for this is, however, that the power plant operator must be a net consumer of electricity from the grid.

### Market potential, conclusion and outlook.

The market potential for PPAs is great for power plants of up to 1MW. The new regulations on situations where an electricity generation licence is not required should be welcomed and have put an end to the formerly legal grey zone in this area. It would be desirable if the threshold was increased to 10 MW. Also a nationwide official procedure for approving and implementing net metering would be very good for the market. However, no quick development should be expected with regard to these issues. In South Africa, the on-site renewable power plant model is clearly more common than the off-site plant model and should, thus, be primarily taken into account since the regulations on energy wheeling have not been tested out much so far.

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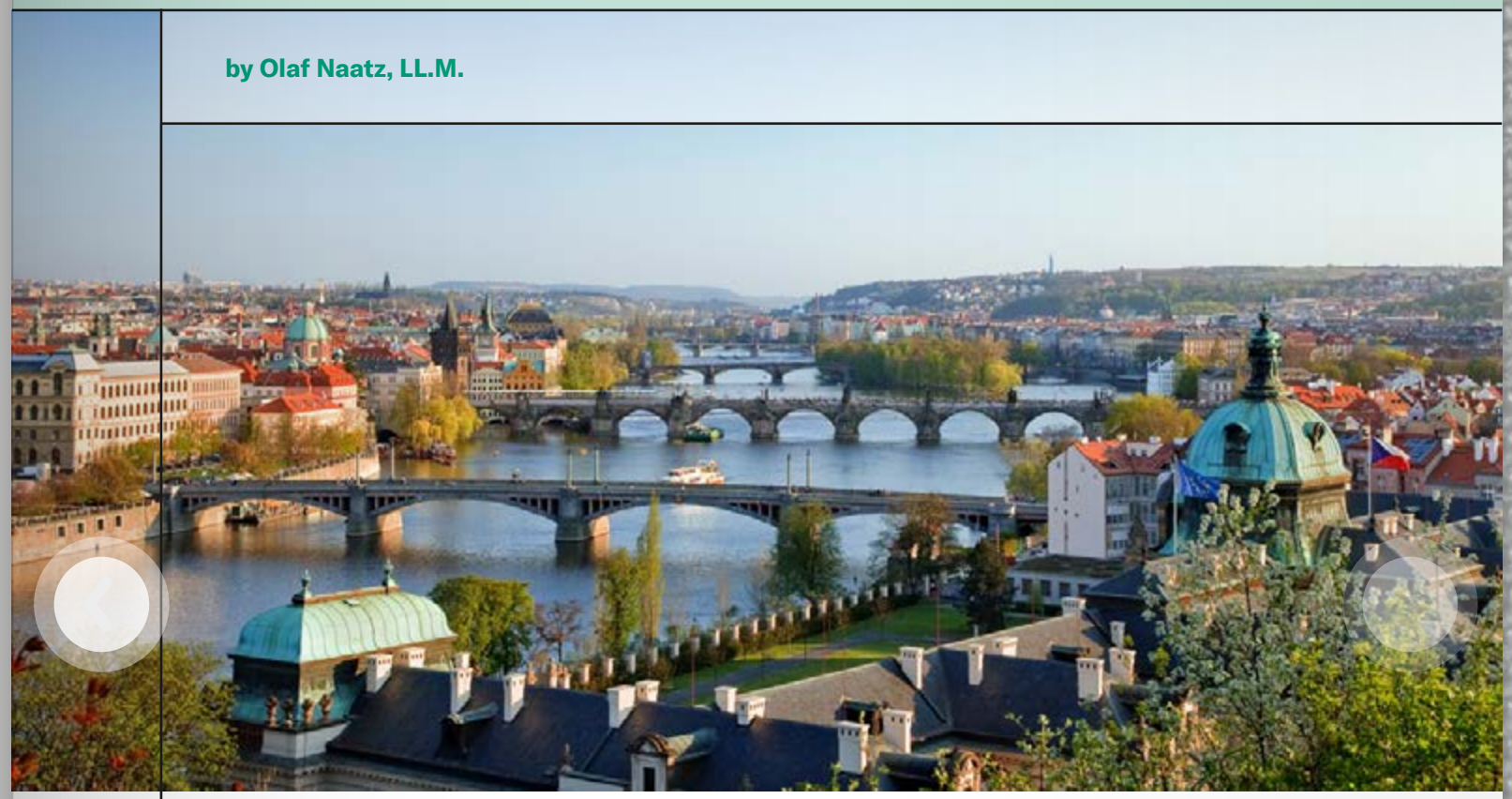
by Olaf Naatz, LL.M.



## State of affairs: Growth in Renewable Energy Capacities

The Czech Republic has strengthened the environmental awareness of local and international project developers and investors only with the enactment of the renewable energy act[42] in 2006. Till that time, no photovoltaic systems had been built and the installed capacity of wind power and biogas plants had only been a single-digit number of megawatts. Only biomass and hydro had been used to a more considerable extent.

The first legal act on the promotion of production of electricity from renewable energy sources was adopted for renewable energy to achieve the 13 % share in gross energy consumption required by the 2020 emissions reduction goal. This act established the support in form of a feed-in tariff or the so-called Green Bonus. The feed-in tariff applies to the sale of all produced electricity to the so-called mandatory buyers paying out the feed-in tariff. In the case of the Green Bonus, the electricity producer receives



[42] Act No. 180/2005, Law Gazette, on the promotion of production of electricity from renewable sources

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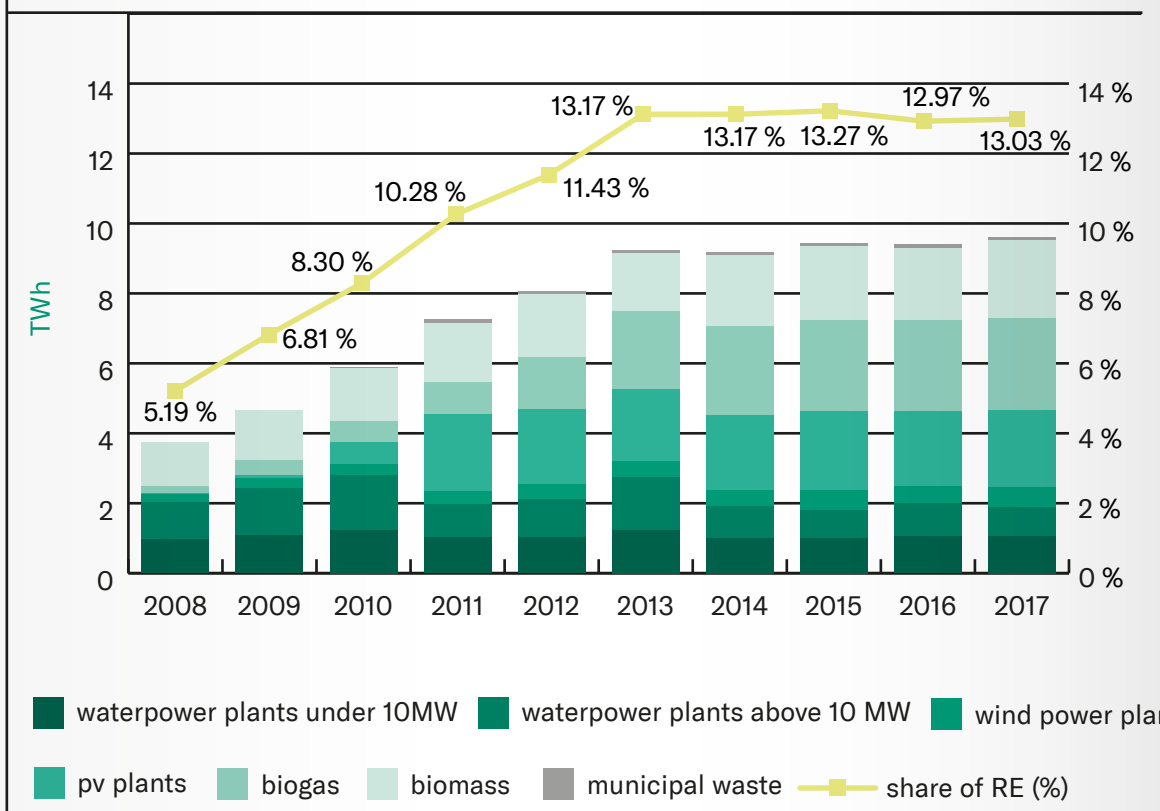
business support on top of the price for the electricity distributed by the producer by itself or for the saving in electricity consumed in-house.

## Development of gross electricity generation from renewable energies in TWh




## Number of sources registered in SES system in specific years

| sources registered in | Subsidised | | Unsubsidised | |
|---|---|---|---|---|
| | number of sources | installed capacity (MW) | number of sources | installed capacity (MW) |
| 2012 | 24,827 | 13,672 | 24 | 8,396 |
| 2013 | 29,351 | 13,976 | 26 | 8,062 |
| 2014 | 31,532 | 16,106 | 28 | 6,405 |
| 2015 | 31,878 | 16,141 | 27 | 6,365 |
| 2016 | 31,742 | 13,152 | 373 | 9,547 |
| 2017 | 32,003 | 12,251 | 467 | 9,806 |

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The renewable energy act should enable return on investment within 15 years. In order to ensure planning security, the law stipulates that the feed-in tariff for the power plants going into operation in the subsequent year cannot be reduced by more than 5% in relation to the previous year.

Due to rapidly decreasing prices for PV modules, which could not be counterbalanced with the 5% reduction in the feed-in tariff, the expansion of the PV power plants boomed in 2009 and 2010. Especially in 2010, the Czech Republic registered growth of 1.5 GW in the PV area, which was one of the highest growth indexes in Europe and worldwide in this area.

With the total installed capacity of 2.1 GW, PV is, in addition to biomass, one of the most developed sources of renewable energy in the Czech Republic. These two energy sources have the installed capacity only slightly below that of the Czech Republic's two nuclear power plants. Wind power has an installed capacity of 310 MW. Also this area grew most significantly between 2008 to 2010.

The rapid expansion especially of PV led to a rapid increase in the EEG surcharge which is paid by electricity consumers and which had initially been the only source of financing of the incentive. Therefore, the legislator found it necessary to introduce a cap on the incentive and to finance it in part from public funds. Since 2011, new ground-mounted PV power plants have thus not been eligible for support. Since 2014, new power plants have not received any business support. Only the power plants which obtained a building authorisation in accordance with the Energy Act[43] or a construction permit already before the enactment of the amendment[44] to the Czech renewable energy act may be put into operation again and receive the business support. The transitional period will end not later than 30 September 2019[45]. There is no transitional period for PV power plants. Therefore, the expansion of the renewable energy sources is currently in stagnation in the Czech Republic. The programs for installation support tendered in the last years, e.g. concerning energy efficiency, have not achieved any significant results and covered only consumption of power by prosumers.

Therefore, most of the installed capacities were put into operation in 2009 and 2010 and receive business support though the feed-in tariff or Green Bonus.

[43] Section 30a Energy Act No. 458/2000, Law Gazette.
[44] Law No. 310/2013, Law Gazette, on the amendments to the Act on supported energy sources No. 165/2012, Law Gazette.
[45] Art. II of Act No. 310/2013, Law Gazette, on amendments to Act on supported energy sources No. 165/2012, Law Gazette.

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The period of support granted for these plants is disputable. On the one hand, the law does not clearly say whether the support is granted for 15 or 20 years, but the political decision-makers currently assume the support period of 20 years. On the other hand, the Czech Republic has undertaken to audit possible excessive funding and to set up the legal framework for cancellation, reduction or reclaiming of the support[46]. These power plants may receive business support only until 2030.

## Legal and regulatory framework for the PPA

Every electricity producer licensed to generate electricity according to the Energy Act[47] is entitled to supply its own generated power through the power distribution grid but now also directly to another market player and thus also to electricity consumers. For power plants with a capacity of below 10 KW there is a possibility to produce and to consume electricity without a licence under certain circumstances.[48] But, if such power plants are to be used for direct marketing, the licence for electricity production must be obtained.

Basically, direct marketing is possible with or without the power distribution grid. In the first case, which corresponds to an off-site PPA, the electricity producer must be licensed as an electricity trader to be able to cover the consumer's entire electricity demand (it is hardly likely that the consumer will enter into two contracts with two different energy suppliers); furthermore, the electricity supplier must recharge grid fees and applicable surcharges to the consumer, affecting the profitability and competitiveness of this model. By contrast, in the case of direct marketing without using the power distribution grid (on-site PPA), basically no grid fees are charged and no EEG surcharges must be paid by the consumer. The latter situation applies where it is proven that the electricity is used in off-grid operations.[49]

A prerequisite for direct marketing in the off-grid scenario is obviously the existence of a direct line between the power plant and the consumer. In accordance with the definition in the Energy Act[50], this direct line must connect the power plant not connected to the power distribution system with the acceptance point also not connected to the distribution system, or ensure electricity supply to the production facilities of the electricity producer or its associated companies or customers whereas this line must not be owned by the distribution system operator.

[46] Notification procedure with the EU Commission regarding the support on the basis of Act 180/2005, Law Gazette, and Act No. 165/2012, Law Gazette..
[47] Section 23 (1), Energy Act No. 458/2000, Law Gazette.
[48] § 3 Nr. 3 und § 28 Abs. 5 Energiegesetz Nr. 456/2000 Gbl.
[49] Section 28 (5), Act No. 165/2012, Law Gazette, on supported energy sources
[50] Section 2 (2) No. 9, Energy Act No. 458/2000, Law Gazette.

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A direct line between the electricity producer and the consumer generally meets the foregoing definition. But usually the consumer is already connected to the public distribution system and has entered into a contract with an electricity supplier or an electricity trader who has assumed the liability for deviations and would supply the power which would be additionally needed by the consumer, but possibly not supplied by the electricity producer in the context of the (newly) concluded PPA. The operator/trader would have to approve the supply by the electricity producer before the consumer is directly supplied with electricity. It is disputable whether and on what terms the operator/trader will give their approval; consequently this solution - a PPA between the electricity producer and the consumer where the consumer is connected to the public distribution network - is hardly practicable.

Since in most cases the electricity producer cannot cover the consumer's entire electricity demand or the consumer is not able to accept all produced electricity in the peak times, the electricity producer itself should be connected to the distribution network and cover the rest of the consumer's demand through the agency of an electricity trader and sell the excess power to that electricity trader.

The electricity producer itself must enter into a contract with an electricity trader concerning power acceptance and supply.

Furthermore, of course, the electricity producer and the consumer must conclude an electricity supply contract in any case. Besides setting out the obligation to supply power and the payment terms, this contract with the consumer must also include the following mandatory information:[51]

(i) Designation of the acceptance point; (ii) type of payment for the supplied power; (iii) in the case of a contract for an unlimited period - termination notice period which may not exceed three months, with termination effective at the end of a month; (iv) the right to withdraw from the contract in the case of breach of the obligation by the supplier and in the case of rejection of a proposed amendment to the contract; (v) the procedure for notification of such amendments with a reference to the right to withdraw; (vi) the contract term.



[51] Section 50 (1), Energy Act No. 458/2000, Law Gazette.

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As can be seen, the legislator defining the content of a power supply contract did not take into account the contracts on direct electricity supply.

Of course, other regulations may be included in a contract in addition to these mandatory contractual regulations. Especially, regulations on the recharging of costs of the consumer's remaining electricity demand should be included. It should be pointed out that only electricity and maintenance costs may be recharged. The electricity producer may not derive any profit from buying and re-selling the remaining electricity to the consumer. This commercial activity is not covered by the electricity producer's licence. As regards the contractual term, which usually exceeds 10 years, the application of Section 2000 (1) of the Czech Civil Code (No. 89/2012, Law Gazette) should be excluded for the sake of legal certainty. According to that section, a contract concluded for a term longer than 10 years without a "good reason" may be terminated by court (upon request). The court cancels the contract if the circumstances, which were obviously the basis for the contractual relationship established between the parties, have changed to an extent that the party undertaking the obligations cannot be reasonably expected to continue to be bound by the contract. It is disputable whether this prerequisite could be fulfilled in a particular case. A legal entity, which the consumer usually is, should be able to waive its right to apply Section 2000 (1) of the Czech Civil Code.

In an event of such direct marketing without involvement of the public distribution system, the electricity producer must discharge not only its obligations under the license[52] but also the obligations of an electricity trader.[53] Most of these obligations can be fulfilled by the electricity producer and are only an additional administrative workload. The blanket reference to the electricity trader's obligations is not fair in view of the special position of the electricity producer in the case of direct marketing (e.g. the assumption of the function of a supplier of last resort in the meaning of Section 12a of the Energy Act). Under certain conditions, this supplier is obliged to supply the consumer at the request of the electricity market operator.

Furthermore, the owner of a direct line connected to the public distribution system is in particular obliged to enable the distribution system operator to use the system in case of an actual or threatening emergency and must follow the instructions of the distribution system headquarters.[54]

[52] Regulated by Section 23 (2), Energy Act No. 458/2000, Law Gazette.
[53] Regulated by Section 30 (2), Energy Act No. 458/2000, Law Gazette.
[54] Section 43, Energy Act No. 458/2000, Law Gazette

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**What marketing opportunities for renewable electricity currently exist in the country? Is direct marketing of supported renewable electricity to end consumers possible?**

Due to the possibility to receive business support in form of the Green Bonus and to sell the generated power independently, renewable power has been marketed under the direct marketing model since the introduction of the support scheme in 2006. Thus, the power produced by a renewable power plant is supported by means of the Green Bonus and additionally it can be sold to a third party.

In 2017, 7,094 GWh were supported with the Green Bonus and only 1,393 GWh with the feed-in tariff.[55] In the case of the feed-in tariff support, since the entry into force of the second Renewable Energy Act,[56] the so-called mandatory buyer is under an obligation to accept the power and to pay the support.

The rate of the feed-in tariff and the Green Bonus paid in the annual mode is determined annually by decision of the Czech Energy Regulatory Office. The Green Bonus paid in the hourly mode is calculated by the electricity market operator[57] because it depends on the actual electricity price on the day-ahead market.[58] The market price that the individual renewable energy sources should reach in the opinion of the Energy Regulatory Office can be derived from the price decision for 2018[59] because the average annual market price should be equal to the difference between the feed-in tariff and the annual Green Bonus. In the case of wind power, the difference between the feed-in tariff and the 2019 Green Bonus is equal to the assumed market price of CZK 790 per MWh and in the case of PV it is between CZK 980 and CZK 1,130 per MWh depending on the power plant size and age.

Large power suppliers buying electricity up play an essential role in direct marketing in the Czech Republic. Usually electricity producers generate slightly higher revenues from direct marketing than from the feed-in tariff. Unless the power plant is already designed for consumption by the prosumer, electricity is usually not directly marketed to the consumer.

On the one hand, this is due to the necessity to connect renewable power plants to the distribution system for them to be eligible for the support; on the other hand, direct marketing though a direct line has only become possible after the introduction of the amendment to the Energy Act[60] on 1 January 2016.

[55] OTE Annual Market Report 2017, page 94
[56] Act No. 165/2012 on supported energy sources entered into force on 1 January 2013
[57] OTE, a.s.
[58] The Green Bonus rates in the hourly mode can be found at http://www.ote-cr.cz/statistics/statistics-poze/difference-of-the-purchase-and-market-price?set_language=en
[59] Decision on prices No. 3/2017 of the energy control authority
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### Political and legal framework for implementation of RE projects

There are no major administrative obstacles as regards the construction of new power plants. There are no special distance-related regulations applicable especially to the wind power plants. All power plants with a planned installed capacity of over 1 MW must apply for a construction permit to the Ministry of Trade and Industry. The permit is granted if the project is in line with the governmental energy concept, the National Action Plan for Renewable Energy Sources, the Land Use Plan and satisfies the criteria regarding energy efficiency, safe and reliable operation of the electricity system, safety of human life and property, power supply security, expected future demand for electricity, assurance of supply and demand equilibrium in the electricity sector in the Czech Republic[61]

### Revenues and expenses: Overview of trends in electricity prices in the country.

The average annual market prices assumed by the Czech Energy Regulatory Office for each renewable energy source are: CZK 790 per MWh for wind power and CZK 980-1,130 per MWh for PV depending on the power plant size and age. The data are based on the currently applicable Decision on prices issued by the Czech Energy Regulatory Office.

### Is it possible to receive state support of any kind (FITs, green certificates, tax credits, etc.) for renewable electricity to be sold under a PPA? Is the PPA combinable with the support arrangements?

Business support for future power plants is currently not possible. The support for most of the currently supported power plants will expire not later than in 2030. Even if there is no specific draft law as yet, according to those close to the government, an auction model based on the German standard is said to be implemented in 2020 to support new renewable power plants.



[61] Section 30a, Energy Act No. 458/2000, Law Gazette.

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**Is there a possibility or even a right to feed renewable electricity into the grid (as a backup) in case of cancellation/termination of the PPA? If yes, on what conditions?**

Generally, the operator of a renewable power plant is entitled to priority connection to the power distribution system.[62] However, this clearly applies only in cases where sufficient supply capacity exists in the relevant licence area of the distribution system operator. As described in the foregoing, in the case of direct marketing though a direct line to the consumer, the electricity producer will have to have a sufficient capacity to supply into the public distribution network in order to be allowed to sell and feed excess power not consumed by the consumer into the distribution network. The electricity producer may only feed power up to the amount of the reserved capacity only where they have a purchaser of such an amount of power; otherwise such an activity will be treated as an illegal feed into the distribution system. The electricity producer is liable for the damage caused as a result of such an activity.[63]

If the consumer withdraws from the contract, it depends mainly on the agreement with the electricity trader whether and on what conditions the trader is required to accept all produced electricity. The supported power plants commissioned before 2013 or having an installed capacity of less than 100kW (for hydro power less than 10 MW) may exercise their right to the feed-in tariff and sell power to the mandatory buyer. The type of support can be changed from the Green Bonus to the feed-in tariff, however, only once a year and each time on 1 January of the following year at that.

## Market potential, conclusion and forecasts

Due to the Green Bonus- or FIT-based support model chosen by the Czech Republic, it has been possible since 2006 to directly market power through a distribution system or to use it for the prosumer's own purposes. Most power plant operators sell their electricity independently and do not use the feed-in tariff. The power is bought mainly by large electricity suppliers, but it does not exclude opportunities for other purchasers, e.g. large industrial companies which consume a lot of power.



[62] Section 7 (1), Act No. 165/2012 on supported energy sources
[63] Section 52 (2), Energy Act No. 458/2000, Law Gazette.

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Since 2016, direct marketing has been possible with or without involvement of the distribution system. In case of an on-site PPA, the power plant must usually be connected to the public distribution system because the electricity producer must be able to cover the consumer's entire demand for electricity, and buys power from an electricity trader to recharge it to the consumer at the same rates. No grid fees or EEG surcharges are charged on top of the renewable electricity price agreed with the consumer. But the electricity producer must fulfil the functions of the electricity trader in this case.

Therefore, there is a legal framework for direct marketing and for the conclusion of the relevant PPAs. It is also expected that the implementation of the EU "winter package" will lead to further simplification of the applicable regulations and of the relevant procedures.

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# III CONCLUSION

It is no news that renewable energies develop differently in every country. Whilst in most European countries renewable energies have been supported mainly by means of feed-in tariffs financed from public means, in other regions, e.g. in South America or Africa, the sector‘s development and the achievement of the economic equilibrium was left directly to the various players in the sector. Whereas in recent years the various funding tariffs have been criticised in Europe in part of the cases also due to the high costs which were passed on to power consumers today, there is little doubt that this kind of funding was an important, if not even an absolutely necessary initial investment in this sector.

It, thus, gave renewable technologies any chance at all to enter into competition with fossil fuels and offered them a kind of protection to reach market maturity, even if the funding tariffs were sometimes reduced quite soon afterwards, which caused significant setbacks in various European countries.

Now, this stage of development has been reached and it can be seen in particular that in countries such as Spain, Italy, Poland and the Czech Republic Corporate PPAs, apart from other innovative technologies in the areas of storage systems, smart grids and e-mobility, constitute one of the most important instruments to further develop a mature and multi-faceted RE market. Even when based on a different assumption, Corporate PPAs play an important role for the energy markets also in other parts of the world. Attractive investment opportunities are emerging for example in Brazil, which boasts remarkable capacities for the production of renewable electricity and where the government has successively reduced obstacles hindering the participation in a free electricity market. The example of Kenya shows that Corporate PPAs enable both private households and the industry inexpensive and reliable access to electricity, although this instrument is still in its infancy. This forms a solid basis for the further economic development.

Large international players such as utility companies or multinational industrial groups have already recognised this trend and have started to prepare for the future challenges by increasing production capacities on the one hand and concluding the respective long-term power purchase agreements on the other hand. This development is accelerated in particular by the continuous decline in the levelized cost of electricity, which opens up further opportunities for the market players.

It is no surprise that there are still countries where the electricity market continues to be embedded in rigid regulatory structures which do not (yet) allow for free participation, including negotiation and the conclusion of the respective power supply agreements.

# III CONCLUSION

However, the developments and tendencies presented in the individual articles show a trend that is clearly positive. Regulatory obstacles are gradually being reduced, e.g. by introducing models such as decentralised (off-grid) electricity supply to tenants [Mieterstrom] and power cooperatives in countries that did not know these instruments before.

In parallel to this development, private and public entities reflect on how to improve the financeability of the respective projects so as to unlock the financial resources needed for the implementation of these projects. Thus, all renewable energy market players are more or less consciously pushing in the same direction, i.e. the implementation of new large-scale RE plants or the creation of a new sales market for existing power plants whose funding period is about to expire in order to directly supply the respective electricity to large purchasers. However, when looking at projects that are closer to the retail market, which is no less interesting and important in terms of its volume, the emergence of new energy production and supply concepts can be observed that serve to directly supply renewable electricity to end consumers without the involvement of the traditional utilities.

The growing need of people for economically and ecologically sustainable solutions, in particular also as regards the supply of electricity - be it in the industry or in their homes - suggests the conclusion that, in the near future, investors should not leave the issue of Corporate PPAs out of account if they want to use the opportunities offered by renewable energy and to further the necessary expansion of renewables worldwide. The fact that the mechanism to make this happen will be a contractual structure the basic structuring of which has been known ever since people had electricity will render the matter even more exciting!

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# VI ABOUT RÖDL & PARTNER

Since 1995 we have been building up a worldwide-active group of 95 experts from Germany outwards with the focus on renewable energy. Our interdisciplinary service spectrum makes us a successful consultant in all business and legal issues. Our clients include the European Commission, the African Union Commission, the World Bank, KfW, UNEP, dena, the German Ministry for Environment, Nature Conservation, Building and Nuclear Safety in addition to well-known plant manufacturers, project developers, energy suppliers, banks, municipalities, financial institutions and fund managers.

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# VII IMPRINT

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