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Managing Regulatory Risk in the Planning Phase of Renewable Energy Investment Projects Utilizing Corporate Power Purchase Agreements in Polish Law

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Abstract:

Purpose: *This article investigates the key regulatory risks affecting Corporate Power Purchase Agreements (cPPAs) in Poland. It aims to define the primary risk factors, assess their implications, and propose legal and contractual solutions to mitigate them.* ***Design/Methodology/Approach:*** *A qualitative, theoretical analysis is employed, based on a critical review of Poland's legal and economic framework relevant to the implementation of cPPA projects. The research applies document analysis and legal interpretation methodologies to assess the regulatory landscape.*
Findings: *The study identifies that cPPAs are exposed to multifaceted legal risks due to their embeddedness in dynamically evolving national and EU-level energy policies. These include risks related to grid access and infrastructure use, regulatory compliance, licensing, public fees, and legal unpredictability. The absence of a dedicated legal framework for cPPAs exacerbates uncertainty, compelling market actors to rely on private law instruments.* ***Practical Implications:*** *The findings suggest that the optimal response to these regulatory challenges lies in the precise contractual structuring of cPPAs. Tailored legal provisions and risk allocation clauses can effectively address uncertainties and protect stakeholders.* ***Originality/Value:*** *This paper offers a novel perspective on cPPAs in the Polish context, where legislative support remains limited. By foregrounding contract law as a strategic tool for risk mitigation, the study contributes to the broader discourse on private sector participation in the energy transition.*

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1. Introduction

The adverse impact of the industrial and energy sectors on the environment and climate change is perceived as a significant investment risk affecting access to financing opportunities as well as operational risk in conducting business activities affecting the ability to generate stable profits. Consequently, ambitious goals for transformation and sustainable development in the areas of ESG (Environmental Social Governance) are widely embraced. However, the designated path of energy transition poses entirely new challenges.

In the traditional model, energy is sourced from fossil fuels, which produce a stable level of energy over time that can be easily adjusted according to demand, regardless of weather conditions. A small number of large entities typically account for the majority of production, owning few generating units.

Energy sales are usually facilitated by trading companies, which procure energy from producers and resell it to end consumers. Under these conditions, consumers had relatively convenient access to predictable and low energy prices. However, this system was unsustainable due to its adverse environmental impact.

Promoting a modern energy industry based on a distributed model of RES (Renewable Energy Sources) addresses issues related to environmentally friendly energy generation, but it also gives rise to numerous and significant challenges of a different nature. In the future model, each of the traditional elements mentioned above changes, and along with it, the associated market security and predictability disappear. Therefore, managing risks related to technological issues in the industry and energy contracting methods has become a crucial challenge. Particular attention should be directed towards technical issues in network management, as an optimal solution for them has not yet been found. Among these, we should especially mention:

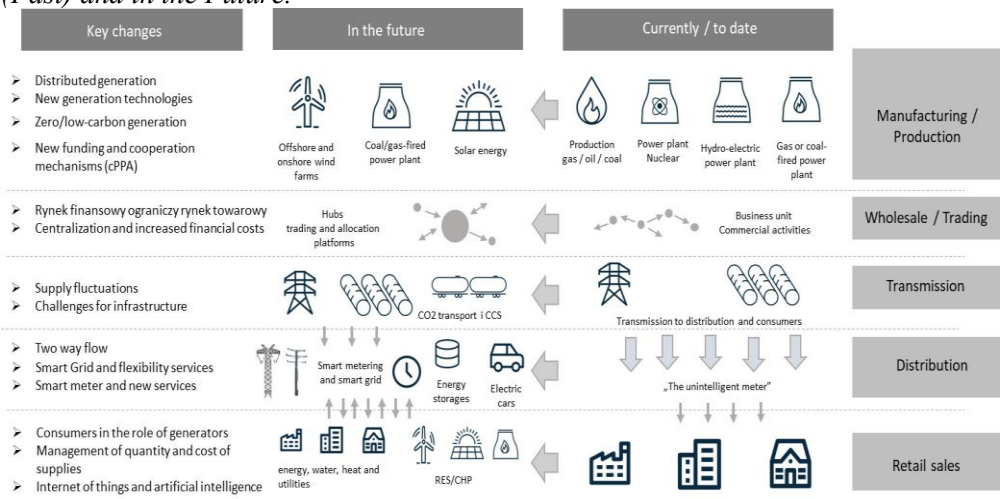
Energy supply instability: RES are characterised by fluctuations in the amount of energy supplied, making them unreliable sources that require constant readiness of backup sources.

Innovations: The instability of production from multiple sources necessitates extensive modernisation of existing network infrastructure (e.g., overloads in specific installations during peak production hours of RES).

Operational security: The distributed energy generation model is more complex and requires increased supervision and operational security.

This implies that managing the network under conditions of source diversification and dispersion requires advanced technologies, operational flexibility, and coordinated efforts within the framework of effective management of a diversified energy market, as we aim to illustrate in Figure 1.

Figure 1. *Challenges of the Energy Sector Transformation - Energy Currently (Past) and in the Future.*



Source: *Own elaboration.*

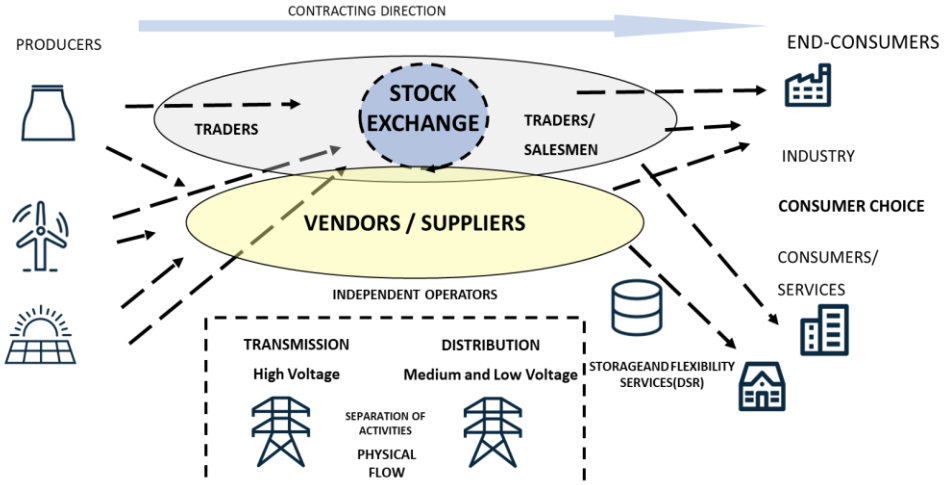
The aforementioned changes may contribute to the development of smart grids, encompassing the expansion in the "future" model to include other energy sources (energy from RES, hydrogen, natural gas, LNG) or municipal services (telecommunications, transportation, environmental protection data, social services). In this regard, there is further potential for the utilization of Artificial Intelligence and the Internet of Things.

These new conditions largely render the conventional model of electricity procurement contracts obsolete. They affect fundamental assumptions underlying the traditional energy economy, at all stages, from generation to consumption by the

end-user. Currently, the electricity market is undergoing a transformation towards the generation of energy from RES. Technologically, this is an unstable process dependent on weather conditions. In this transition, the role of producers is being assumed by broad groups of smaller and medium-sized producers as well as prosumers, who operate multiple installations. The renewable (environmentally friendly) energy they offer experiences significant price fluctuations.

The new model of energy flows changes the functioning of the energy market, introducing a new energy contracting model presented in Figure 2.

Figure 2. *Model of Energy Flows and Contracting in the Energy Market*



Source: *Own elaboration.*

In the new model, key elements include managing continuity of supply risks and maintaining a stable price benchmark for end consumers. In this area, there are numerous diverse challenges, including:

- Ensuring a balance between energy demand and supply,
- Significant price fluctuations (especially negative prices) that threaten cash flow in the area of hedging and settlements (particularly the cost and value of securities in trading),
- Varied increases in green transformation burdens and new ESG requirements for individual countries. The EU has burdened companies with severe obligations that are not imposed in other regions of the world, creating challenges for financing investments in new energy sources that ensure stable energy supplies for the EU industry and economy,

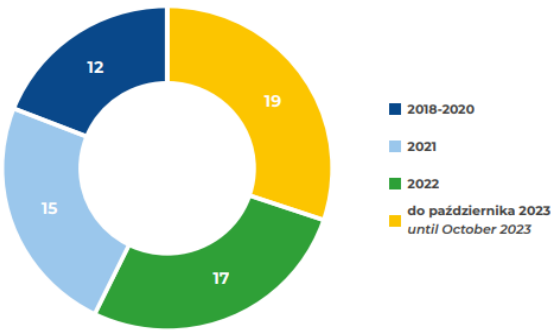
- Intensification of state interventions subsidizing domestic industries in a manner that violates principles of fair competition and equitable redistribution mainly at the expense of less developed countries and consumers.

The influence of the abovementioned factors is well illustrated by the example of a strong trend in Poland and the EU regarding electricity contracting through corporate Power Purchase Agreements (cPPAs). Energy sales contract markets have come under influence from this new phenomenon, which is unique in many ways. It not only introduces significant changes in the energy business but also in risk management.

cPPA agreements are gaining control over an increasingly significant portion of the renewable electricity market in Poland. This is particularly noteworthy due to its multifaceted market share. Recent research indicates that the Polish cPPA market experienced dynamic growth from 2018 to October 2023. Over the past five years, Poland has entered into over 60 cPPA agreements (Figure 3).

The upward trend pertains not only to the number of concluded agreements but also to the annual volume of energy contracted through this method and the installed capacity of RES installations covered. There is a high likelihood that this trend will generally continue in the coming years (Twobirds.com, 2023)

Figure 3. *Number of concluded cPPA agreements in Poland from 2018 to October 2023*



Source: *Resourcepoland.pl, 2023 p. 9.*

It is estimated that during this period, the volume of electricity contracted under cPPA agreements in Poland increased to approximately 1.6 TWh annually (approximately 33 percent increase). Meanwhile, the installed capacity of facilities covered by cPPA agreements increased to around 970 MW (approximately 50 percent increase).

The average contract length in 2022 ranged between 11 and 12 years (Resourcepoland.pl, 2023, p. 9-13). This is consistent with international practice,

where the contractual period for cPPAs typically ranges from 10 to 20 years (Twobirds.com, 2023, p. 4). This underscores the importance of cPPAs to the market due to scale but also length.

Available business surveys confirm that in the early stages of shaping cPPAs, before 2017, the primary reason for approximately 90 percent of businesses considering entering into cPPAs is economic factors (long-term energy cost stability) or green factors (reducing carbon emissions). This result comprises 60 percent of companies primarily driven by economic factors and 30 percent of companies primarily driven by green factors (Bakermckenzie.com, 2015 p. 6).

The mentioned two motivations go hand in hand, as indicated by another study, where 92 percent of businesses procuring renewable energy do so precisely to reduce supply costs (Resource-platform.eu, March 2020, p. 10). The size of the cPPA market is also defined in relation to renewable energy. It is estimated that by 2030, the energy contracted in the EU under cPPAs will represent between 140 to 190 TWh, which corresponds to approximately 10 percent to 23 percent of the total solar and wind energy production in the EU (18 percent of the total renewable energy production) (Advisory.eib.org, 2022, p. 10).

Despite the fact that the cPPA phenomenon has become a significant factor in the Polish electricity market, this concept still raises doubts. In particular, this concerns the way in which it should be used to properly address the risks of the modern energy market, both in contracting and in the investment process in RES. Expectations and trust regarding cPPAs are certainly high, however, the answers are complex and not obvious.

2. Materials and Methods

The present study is theoretical and application-oriented, combining elements of legal analysis, market-based research, and conceptual modeling within the domain of project risk management. The aim was to identify regulatory risks associated with Corporate Power Purchase Agreements (cPPAs) in Poland and propose methods of mitigating these risks through appropriate contractual structuring.

The research was carried out in three main stages:

1. Legal and Regulatory Analysis – This stage involved an in-depth examination of Polish and EU legal frameworks relevant to the renewable energy sector. Key sources included Directive 2018/2001 (RED II), national legislation governing electricity trading and grid access, and relevant jurisprudence. Special attention was given to identifying regulatory gaps and the absence of legal facilitation for the conclusion and performance of cPPAs.

2. Market Data and Document Analysis – In this phase, secondary data from industry reports, public databases, and statistical summaries were analysed to determine the current state and dynamics of the cPPA market in Poland. The scope included the number of concluded contracts, installed RES capacity, and average contract durations. This enabled the contextualisation of legal analysis within actual market conditions.

3. Risk Typology and Response Strategies – Drawing from the previous two phases, the study identified key categories of regulatory risk, such as issues related to concessions, infrastructure access, public fees, and legislative volatility. In response, the article presents strategic approaches to mitigate these risks, focusing on the role of contract design.

The applied methodological framework corresponds to a qualitative research design, where analysis is based on systematic conceptual reasoning and interpretation of normative texts and empirical documents. This approach aligns with the research logic outlined by Jonker and Pennink, where conceptualisation and document-based reasoning form the foundation of qualitative inquiry (Jonker and Pennink, 2010, pp. 38-39, 77-81). The structure of the research process is also informed by methodological principles found in management science literature, particularly in the area of desk research, problem structuring, and legal document analysis (Apanowicz, 2000, pp. 43-60, 60-66, 86-101).

As a limitation, it should be noted that this study focuses solely on the Polish legal and regulatory environment and does not include comparative analysis with other jurisdictions or empirical validation through stakeholder interviews or quantitative modeling.

All materials and data referenced in this study are publicly available and have been appropriately cited. No empirical fieldwork, computer models, or proprietary datasets were employed. Consequently, ethical approval was not required.

3. Results

3.1 Key Elements of cPPA Contracts Used in RES investment Settlements

3.1.1 General remarks

Until recently, EU and Polish regulations did not define cPPA, nor the wider term its associated with, i.e., PPA ("Power Purchase Agreement"), it was not the subject of comprehensive analysis in the literature[6]. PPA served as a semantic umbrella under which various types of agreements were encompassed, sharing several common

[6] *In December 2023 the first broader business study on the cPPA market in Poland was published – [0].*

assumptions, hence, in practice, it remains a concept ambiguously understood (including cPPA).

The regulation of this issue began with Directive 2018/2001 [0], which led to the crystallization of this concept in Polish law. Both EU and national legislators regulated PPA in a narrower scope than it was commonly understood in trading practice. This will certainly strongly influence the understanding of practices that could be called PPA from a business perspective, but to which these regulations do not apply. Nevertheless, legislative intervention addresses the earlier need of market participants, which has been fairly precisely described in business literature. Therefore, industry sources are still relevant regarding the business aspects of PPA.

Previously, the term of PPA primarily functioned as a collective designation for a relatively established way of concluding agreements, the main purpose of which is the transfer of electricity ownership. Recent regulatory trends have made it profitable to enter into agreements directly with the producer.

Over time, practices of combining clauses in several specified ways were developed, and agreements for the sale of electricity, characterized by a certain set of clauses, began to be called cPPA. These practices have become entrenched to the extent that criteria can be identified to distinguish this type of agreement.

The understanding of cPPA should focus on the outcome that corporate buyers intended to achieve, namely, managing the main risks of the new energy industry model. Specifically, this involves stabilizing the costs of sourcing renewable electricity (Resource-platform.eu, March 2020, p.13; Bakermckenzie.com, 2015, p. 2; Resourcepoland.pl, 2023. p. 4; Twobirds.com, 2023, p. 4).

To achieve this, corporate buyers began to enter into long-term agreements for the sale of electricity with direct producers. Most commonly, along with electricity, contracts also include associated rights, usually in the form of GoO (Guarantees of Origin), which certify the production of energy using specific renewable or cogeneration technologies. It is widely believed that alongside price stabilization, the main reason for the popularization of cPPA among buyers is the desire to acquire green energy (e.g., to achieve a high ESG score and for marketing purposes).

The provisions of agreements concerning the above-mentioned issues can confidently be called the core provisions of cPPA. All other clauses have secondary importance. They merely serve to execute the main agreement of the parties. They are variable and occur in many variations.

It turns out that the core provisions of cPPA set a framework that fits well into the model of a professional electricity market, strongly influenced by significant fluctuations in prices (of energy and raw materials used for its production) and

climate policies strongly supporting RES. Due to the universality of these economic factors, the concept of cPPA has gained popularity in many jurisdictions.

Entering into agreements for the supply of renewable and non-renewable electricity directly from their producers by end consumers is not entirely unheard of. Agreements of this type are broadly called PPA. The relative novelty in the use of this solution lies in the fact that in recent years, there has been a rapid proliferation of this phenomenon in the renewable energy sector, driven by the influx of corporate buyers from various industries, often large multinational corporations (Bakermckenzie.com, 2015, p. 2; Advisory.eib.org, 2022, p. 3).

Within PPA, there is a distinction made for cPPA agreements. The term "corporate" or "commercial" (the "c" in cPPA) refers specifically to the fact that the purchaser and end consumer in a given PPA is a private corporation (Aquila-capital.de, 2019 p. 3). In both doctrine and practice, significant discrepancies still exist regarding the understanding of the term cPPA and how to distinguish between PPA and cPPA.

The abbreviation PPA is commonly used without specifying who the purchaser is, which can be misleading. To avoid any potential confusion, it is good practice to specify when referring to cPPA. In this sense, we use this abbreviation in this article.

At this stage, it is essential that the business understanding of cPPA focuses on two key provisions: the parties are the direct producer of electricity and its end consumer, and the subject of the agreement is a long term renewable electricity purchase.

Based on these assumptions, various constructions are built, which differ in the means to achieve the same economic goal. This is so significant that the introduced regulations at the EU level and in Polish law follow the needs of the business and are delayed in relation to them. Currently, they do not go beyond the scope of the key provisions of PPA and do not specify cPPA.

The provision from Article 2(17) of Directive 2018/2001 defines a "renewable electricity purchase agreement" (i.e., PPA) as an agreement under which a natural or legal person agrees to purchase renewable electricity directly from the electricity producer. In this regard, Directive 2018/2001 is transposed into Polish law by the very recent legislation (Dz. U. 2023. 1762, 2023) which entered into force on October 10, 2023.

Based on this, Article 5(2d) of the Energy Law (Dz. U. 2022. 1385, 2022) introduces into Polish law the concept of a contract on selling electricity generated from RES directly between its consumer and producer (i.e., PPA).

It is also worth mentioning that the Polish legislator additionally obligates the parties to PPA to specify in the agreement the type of RES[7] from which the contracted energy will originate, as well as the obligation of the producer to notify the President of the Energy Regulatory Office about the significant provisions of the agreement, including the volume, price, and duration for which it was concluded[8]. The remaining provisions of the amendments relate to specific barriers in the conclusion and execution of these agreements.

Article 15(8) of Directive 2018/2001 is of great importance, as it stipulates that Member States are obliged to remove unjustified barriers to the conclusion of PPAs, including disproportionate or discriminatory procedures and charges.

However, the current state of Polish law, remains inadequate for the widespread conclusion of PPA contracts because the introduced changes are insufficient. The actual manner of concluding agreements of this kind is of immense importance, as alongside significant potential benefits, there are serious regulatory risks that the legislator has not addressed.

A systemic interpretation of EU and Polish energy law leads to the conclusion that PPA (neither Polish nor EU legislation defines the specific concept of cPPA) represent only an exception to the rule, as its most important principles relate to the traditional functioning of the energy market, based on conventional energy sources and the intermediation of trading companies.

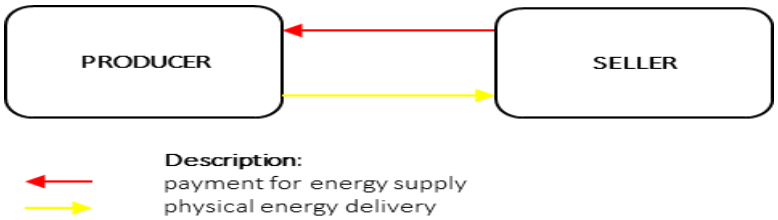
Achieving the intended goal of PPA depends on the skillful formulation of the contract's content. In this context, attention should be paid not only to strictly regulatory risks but also to obligations under contract law. Detailed issues related to this will be discussed further in the subsequent part of this article.

The key differences between traditional PSA (Power Sale Agreement), PPA, and cPPA (three options) are presented in the diagrams in Figures 3-7 below, while the subsequent part of the article focuses on describing cPPA.

It should be noted that in cPPA, the transaction is made directly between the producer and the end consumer, which distinguishes it from PPA, where the purchaser is a trading company that resells energy to other entities but is not a party to the agreement with the producer. PSA is a standard power sale agreement to the recipient.

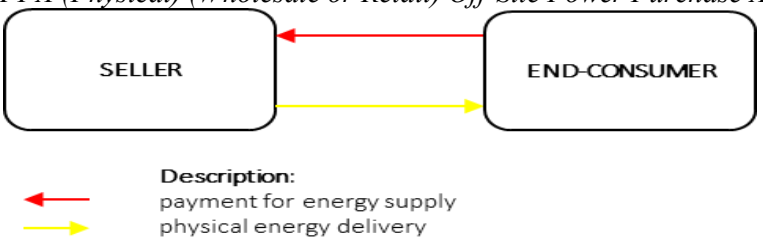
[7] *Art. 5(2e) Energy Law Act.*
[8] *Art. 5(11a) Energy Law Act.*

Figure 4. *PSA Model (Physical) (Wholesale or Retail) Off-Site Power Sale Agreement*



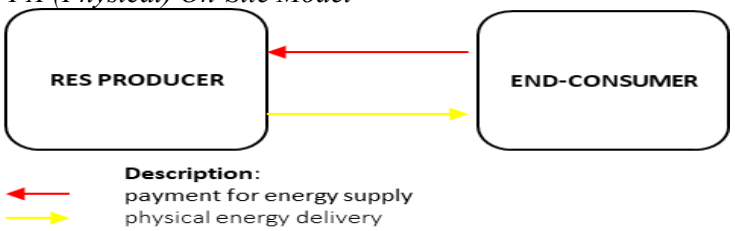
Source: *Own elaboration.*

Figure 5. *PPA (Physical) (Wholesale or Retail) Off-Site Power Purchase Agreement*



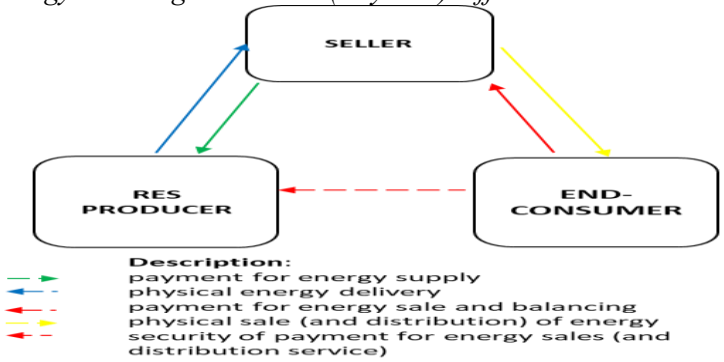
Source: *Own elaboration.*

Figure 6. *cPPA (Physical) On-Site Model*



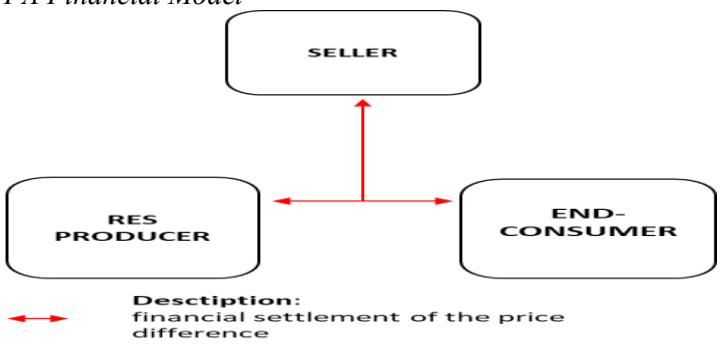
Source: *Own elaboration.*

Figure 7. *Energy 2023 Figure 6 cPPA (Physical) Off-Site Model*



Source: *Own elaboration.*

Figure 8. *cPPA Financial Model*



Source: *Own elaboration.*

Typically cPPA contracts are divided into on-site and off-site variants (see Figure 6 and 7). In the on-site variant, energy is generated at the consumer's location, whereas in the off-site variant, it is delivered to the consumer from another location. This commonly used division of cPPA based on the location of the generating source may raise questions in Polish law. A deeper analysis leads to the conclusion that in Polish law, a division based on the mode of energy transport rather than its location is more justified. Therefore, below we propose a different way of dividing cPPA contracts to which Polish law applies.

Due to the settlement method, cPPA contracts are distinguished as follows:

Execution by physical delivery/supply – This is based on the agreement that the buyer purchases energy that has actually been delivered to them. Depending on the mode of energy transport, we further distinguish between:

- On-site cPPA (Figure 6) – This applies when energy is delivered by the producer through a direct line,
- Off-site cPPA (Figure 7) – This applies when energy is delivered through transmission or distribution networks,

Execution by financial settlement (also known as "synthetic" or "virtual" cPPA) (Figure 8) (Resource-platform.eu, January 2020, p. 38) – In this variant, the parties' obligations are limited to financial settlement, with electric energy being the underlying commodity. There are no physical energy flows between them. Various financial instruments such as Contracts for Difference, SWAPs, options, or futures are utilized to achieve the state as if the parties were exchanging actual energy solely through monetary settlements.

The means to stabilize the energy procurement cost in this case is not the direct purchase of energy but rather ensuring funds for its purchase through financial instruments. This leads to a similar outcome, with the difference being that instead of managing the cost of energy purchase, the buyer secures funds to cover them in

case of price fluctuations. Regardless, the buyer must separately enter into a contract for the physical delivery of energy.

The location of the energy source depends on technical conditions. The supply to the buyer can occur in three ways: through the national power grid (KSE), a direct line (LB), or through self-consumption from an internal installation (II).

The traditional method of energy transportation involves using the distribution or transmission grid for this purpose. It is easy to distinguish when this occurs because the networks are managed by the appropriate operators. In this situation, it does not matter who owns the production installation.

Alternatively, energy can reach the buyer through II or LB, which are off-grid connections not managed by an operator. LB can be considered if it serves to transmit energy between at least two different entities. However, in practice, distinguishing between LB and self-consumption from II poses several problems. In Polish law, the determination of LB status is not based on its technical parameters or location but on ownership structure.

If the owner of the production installation and connection, as well as the energy recipient, is the same entity, the connection is not considered LB but rather self-consumption, meaning energy is generated for own use powered by II. In Polish law, II of a building can also be considered LB (Court of Appeals in Warsaw, 2015). Consequently, even if energy is transported to the recipient from photovoltaic panels located on the roof of their own factory, there is a risk of it being classified as LB[9].

Additionally, the issue of regulatory risks associated with self-consumption of energy within cPPA should be considered as a separate case. Self-consumption involving a second entity entails the investor building an installation that is made available to another entity based on a separate agreement (such as lease, rental, tooling, or other customized agreement tailored to the agreed-upon needs between the parties), under which this entity consumes the generated energy for self-consumption.

In this regard, there is a risk of such activity being recognized as circumvention of the law regarding production, trading, LB, or distribution[10]. In Polish law, such agreements entail significantly different risks compared to agreements based on

[9]*While the authors do not advocate this interpretation, we note the risks of a discretionary interpretation by a national regulator that may be challenged for consistency with EU regulations.*

[10]*While the authors do not advocate this interpretation, we note the risks of a discretionary interpretation by a national regulator that may be challenged for consistency with EU regulations.*

which the ownership of energy or other goods is transferred. Therefore, this issue falls outside the scope of this study.

The main objectives of cPPA contracts revolve around stabilizing the costs of procuring renewable electricity and establishing a long-term contract with a direct producer. However, for a contract to be functional, it needs to be tailored to the specific situation of the entities involved. Parties should also include numerous provisions in the contract, typically found in investment transactions or those transferring ownership of goods.

3.2 Contractual Parties

cPPA contracts involve two parties: the producer and the energy buyer[11] (Figure 6) with the option of involving a third-party (Figures 7 and 8). Already in the characterization of the parties to the contract, the legal imperfections of regulating cPPA in relation to business practice become apparent. According to Energy Law Act, the counterparty to cPPA should be the producer of renewable electrical energy.

However, it is not clarified at which point the energy seller should have the status of a renewable energy producer, and therefore, from which moment the contract is protected against discriminatory treatment. Does this apply to the common case when energy is contracted from an installation? Using a functional interpretation, we should assume that the protection also covers such contracts. Unfortunately, this opens the door to abuse by public authorities, as it does not directly follow from the wording of the provisions.

In general, the parties to cPPA will be entities or a group of entities with a higher demand for energy or entities that wish to use renewable energy. In theory, there are no obstacles for a large community or housing cooperative to be the buyer. However, in practice, this raises serious concerns because the energy selling prices for these consumers are subject to administrative approval by the President of the Energy Regulatory Office[12], which significantly limits the freedom to conduct complex negotiations necessary for cPPA agreements (Advisory.eib.org, 2022, p. 10).

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[11] *Pursuant to art. 32(1)(1)(c) in conjunction with art. 3(20)(c) of the Energy Law Act and art. 2(18) of the Act of 20 February 2015 - Renewable Energy Sources Act (Dz. U. 2015, 478), a license must be obtained for the generation of electricity in a RES installation with a total installed electrical capacity greater than 1 MW.*

[12] *The price of energy for a non-household end-user can be freely determined under the principle of freedom of contract, like a contract for the sale of any other commodity. The President of the Energy Regulatory Office has recognized that energy sales to a professional customer take place in a competitive environment, and therefore he does not exercise the authority granted to him to approve energy sales tariffs for this category of customers. However, this does not apply to households, which are thus protected from radical changes in energy prices.*

For individual small-scale producers and energy buyers, traditional energy procurement methods are preferred. cPPA is a relatively new and complex practice. It also entails the need to manage regulatory risks. Therefore, making additional efforts related to entering into cPPA agreements and overseeing their execution is justified mainly for more significant market participants.

For individual small-scale producers and energy buyers, traditional energy procurement methods are also preferred. cPPA is a relatively new and complex practice. It also entails the need to manage regulatory risks. Therefore, making additional efforts related to entering into cPPA agreements and overseeing their execution is justified mainly for more significant market participants[13]. Therefore, both cPPA and PPA fit into this category.

A cPPA involving an additional party is called a sleeved cPPA. The introduction of a third actor in a different capacity may introduce certain improvements and, in some situations, is necessary from a business perspective. This depends on the need to provide additional services in a given case, such as balancing, accessing external financing, insurance, transmission, distribution, or energy storage.

The participant in the cPPA relationship may therefore be, for example, an energy trading company, an entity responsible for balancing, a bank, an investment fund, an insurer, a transmission system operator, or a distribution system operator. Often, the third party is a trading company that purchases surplus energy from the producer during peak production periods and sells energy to the buyer when production at the facility is insufficient (Resource-platform.eu, January 2020, p. 35).

At this point, it also needs to be clarified that a cPPA involving a third-party trading company is still different from a PPA. In a PPA, the transactions related to the sale of energy from the trading company to the end consumer are not the subject of the agreement with the producer. Therefore, this type of agreement entails a different set of contractual risks for the corporate off-taker and is not the focus of this article.

3.3 Crucial Contractual Provisions: Price, Renewable Energy, Contract Term, and Volume Guarantee of Origin

Energy consumption is a fixed operational cost for most businesses. Procurement represents an ongoing need that will not change in the foreseeable future. We can predict the volume of consumed energy with relatively high accuracy. Taking into account the time of day and year, the consumption profile tends to be rather uniform. Although we can assess what, how much, and when we need, the issue of price remains to be determined. In this sense, optimizing energy purchases focuses on the price.

[13] *Art. 3(13) Energy Law Act.*

The significant volatility of energy market prices poses a significant challenge for large consumers. Procuring energy on a spot basis no longer yields satisfactory results because it does not allow for sufficient price negotiations. Singular purchases of energy for the future do not solve this issue either, as they overlook demand in the remaining period. On the other hand, building a purchase portfolio from many different future contracts depends too much on market assessment at the time of their conclusion. This applies similarly to producers.

Therefore, the optimal solution should come through entering into a long-term contract at an appropriate price. To avoid the drawbacks of the other mentioned options, the agreement should cover a long period and a significant volume of energy. Only a sufficiently large volume of energy allows for cost savings. Since energy consumption is a relatively uniform process, utilizing a large volume requires a long period. Knowing that the key unknown is the price, the detailed dimension of the volume and duration of the agreement should be subordinated to this criterion.

These principles apply equally to the energy market and guarantees of origin because their supply is inseparable. A suitable contract can therefore equally satisfy the demand for both of these goods.

Contracting renewable energy through cPPA is not only driven by the desire to support climate goals or improve the image of buyers. It also contributes to the independence of renewable energy sources from significant fluctuations in energy commodity prices, as they are not utilized in the production process of these technologies. This is of fundamental importance for the profitability of these agreements. As a result, parties can agree on an energy price that is profitable for them and will not become obsolete due to changes in market prices.

3.4 Specific Contractual Provision: Renewable Energy Investment Implementation

One of the most characteristic features of cPPAs is their frequent use for financing investments in renewable energy sources (whether for building new facilities, expanding existing ones, or modernizing them). The majority of these investments are funded through external financing (Michalski, 2021. p. 23). The availability of financing for a given investment depends on the project's "bankability," which refers to its credibility and valuation by the investor, typically a bank.

The high bankability of investments in renewable energy sources covered by cPPAs stems from the fact that at the time of contract signing, the future producer can demonstrate to the investor tangible revenue that will be generated by fulfilling the cPPA. With a reliable and significant source of income spread over time, the bank may provide the producer with a relatively large loan amount.

Bankability can also be enhanced if both the producer and the buyer are responsible for repaying the loan. This is particularly important because investments in renewable energy sources located in less developed economies within the EU require a high credit rating from the parties to the cPPA (Advisory.eib.org, 2022, p. 10).

In overall assessment, the bankability of cPPAs appears quite favorable compared to other available means of private financing for energy transformation. Parties may also finance the establishment of renewable energy installations using their own resources. This is because the agreement has the potential to generate significant savings, which can be allocated towards repaying external or internal investor costs.

Consequently, cPPAs are perceived as a way to enhance the bankability of investments in renewable energy sources (Resource-platform.eu, March 2020, p. 11; Bakermckenzie.com, 2015, p. 17-18). This type of contract is well suited for this purpose because, with proper risk management, it effectively secures the interests of all parties involved in an optimal manner.

3.5 Risk in Investment Projects Implemented Based on cPPA Contracts

3.5.1 Definition and examples of regulatory risk

The energy transformation is a process that profoundly impacts the energy sector, altering its character and operation. Climate risk is one of the key aspects of this transformation, stemming from actions taken at both the European Union and global levels in the context of combating climate change and striving for sustainable development. The materialization of climate risk leads to the emergence of various interrelated new types of risk, including financial, regulatory, and social risks. Addressing these risks involves promoting new project risk management solutions.

Project risk refers to potential events or conditions that can impact the achievement of project objectives, both positively and negatively. Risk is an inherent part of any project. Potential events can affect the project scope, costs, schedule, or the quality of delivered products or services. Risk analysis, and consequently, the implementation of risk management processes, are essential for securing the possibility of project success.

Project risk management is the process of identifying, assessing, monitoring, and managing potential threats and opportunities that may affect the achievement of project goals. The basic stages in the management proces are:

Risk identification involves analyzing all aspects of the project to identify potential threats and opportunities. This process is conducted in collaboration with the project team, stakeholders, and industry experts to obtain diverse perspectives.

Risk assessment entails determining the impact and probability of occurrence for each identified risk, resulting in a risk ranking to identify the most significant risks.

Risk management planning involves developing strategies to manage risk. Basic strategies include avoidance, minimization, transfer, and acceptance of risk. At this stage, a plan of corrective actions is prepared for the most important risks.

Risk monitoring involves regularly tracking the status of risk during the project and taking action in response to changing conditions and new information related to risk.

The authors have attempted to identify and assess risks in investment projects in RES, where solutions of the cPPA model were applied. Specifically, they focused on identifying regulatory risks as the most characteristic for the implementation of the cPPA model. Regulatory risk refers to potential threats and challenges associated with the introduction of new regulations, legal norms, or changes in existing regulations by regulatory authorities.

As noted earlier, the transformation of the energy market involving the widespread production of renewable energy stems from the inevitable climate risk, which is widely identified and understood as a global threat. On the other hand, investment projects launched based on a business model regulated legally by cPPA are precisely burdened with regulatory risk.

3.5.2 Identification of opportunities and regulatory threats of cPPA contracts in RES projects in Poland

The described new model of energy contracting based on cPPA agreements implemented within projects, which include the creation of effective cooperation in the exchange of electric energy between the producer, seller, and consumer, should also be analyzed from the perspective of project risk.

The issue of regulatory risk should begin with signalling the key conditions of Polish energy law from which they arise. Most relevant are the detailed aspects related to conducting activities in the field of energy generation, sale (trade), and transmission (transmission or distribution) of energy. The appropriate provisions of Polish laws regulating these issues are often a transposition of EU law provisions, which may be implemented incorrectly. In addition, general principles of contract law are also of significant importance.

The conditions for conducting business activities in Poland introduce stringent requirements regarding the generation, distribution, transmission, and trading of electricity. Below, we briefly outline the most significant categories of regulatory risk in Polish energy law concerning the conclusion and execution of cPPA:

- Risk of balancing cost changes – Due to the unstable production profile of RES, the buyer may be exposed to balancing costs and the need to purchase energy on the market when the producer is unable to supply enough,

- Investment risk associated with the construction of a generating unit in a RES and the execution of cPPA - the risk of delays or unfavourable course of proceedings regarding obtaining a license for energy production or connection to the grid (risks associated with the construction of a direct line (LB) and the transport (T) of energy through KSE networks),

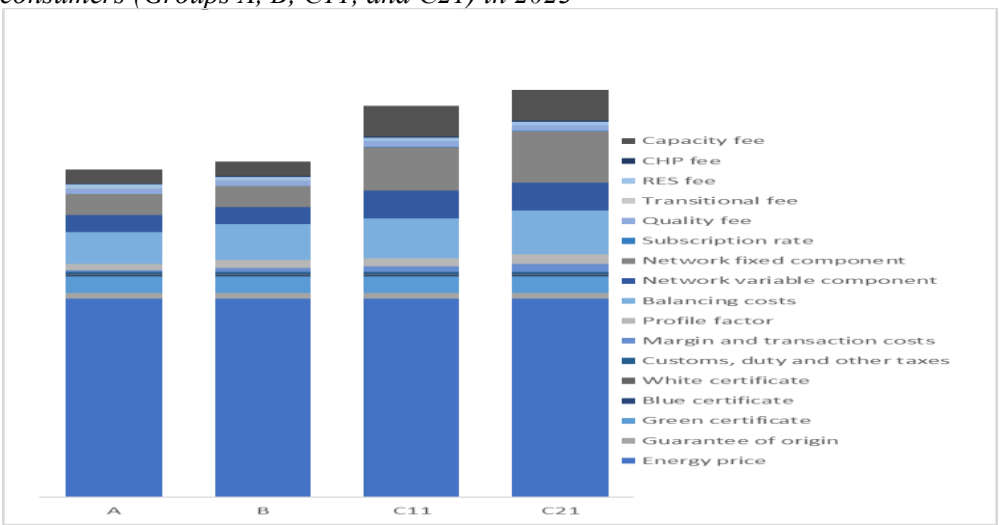
- Risks associated with other contractual clauses in the case of physically settled cPPA: increase in transportation costs and taxes and public law fees, including the introduction of state interventions (e.g., deductions and compensations),

- Risks associated with other contractual clauses in the case of financially settled cPPA: supervision by financial supervisory authorities (the need to meet additional and rigorous requirements for trading financial instruments).

For the indicated risks in the diagram below, we present an estimated risk assessment regarding the unit costs of purchasing energy divided into the following consumer groups: large industry (Group A), medium-small industry (Group B), large services (Group C11), medium-small services (Group C21). Due to confidentiality, the data is provided in percentage terms without specifying unit values, based on analyses of offers and tariffs from energy companies as well as real prices of supplying electricity to end consumers in the year 2023.

The purpose of the diagram is to present the quantity and compilation of the structure of energy supply settlement and the scale of participation of individual elements, which subsequently influence the value of specific risks.

Figure 9. *Structure of unit costs of energy purchase divided among selected end consumers (Groups A, B, C11, and C21) in 2023*



Source: *Own elaboration.*

3.5.2.1 Grid connection
A key risk for most investments in a generating unit (JW) is its connection to the grid, as without it, the generator would have to independently ensure the delivery of energy to the recipient via LB or II. Regulations stipulate that the provisions of the agreement should define fundamental issues for the investment process in RES, including the connection fee, schedule, and scope of technical work.

This is particularly important for RES installations. In their case, the connection agreement should additionally specify the deadline by which energy from this source will start to be delivered to the grid (generally no later than 48 months[14]). The Connection Agreement should also include a clause stating that failure to meet this deadline is grounds for imposing penalties or its termination.

Connection generally occurs if there are technical and economic conditions for connection, and the applicant meets the preliminary connection conditions specified by the operator. In many cases, the operator may prolong the connection process and set difficult-to-meet conditions that must be fulfilled before the connection is made. Regulatory constraints impose limitations on the operator regarding the capacity utilization of various RES within one point of connection, for instance, through cable pooling by wind and solar RES, further increasing network constraints.

3.5.2.2 Direct line (LB)
In Polish law, a direct line can be recognized as a line (including an internal installation within a building (Court of Appeals in Warsaw, 2015)) connecting a designated RES unit with a designated recipient. Recognition as a direct line entails regulatory risk associated with obtaining approval for the direct line and collecting public law charges from the recipient, as well as settling with public authorities[15], which increases the unit cost of purchasing energy by approximately 5-10 percent.

In the case of II or LB delivery models, there is a risk of a penalty of up to 50,000 PLN per day for breaching the regulations. This constitutes a regulatory barrier where the current market model conditions (Figure 9) hinder the development of cheaper energy delivery models within cPPA frameworks.

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[14] *For offshore wind farms it is 120 months (Art. 7(2a) Energy Law Act).*
[15] *Pursuant to art. 46(7) Energy Law Act, The amount of fees may not exceed the product of the amount of electricity supplied through a direct line and, respectively: 1) one-half of the amount of the variable component of the network rate in the case of connection to an electricity distribution network, and 2) the rate of the charge to cover the costs of maintaining system quality standards and reliability of current energy supply in the case of connection to an electricity distribution network or electricity transmission network - referred to in the regulations issued pursuant to paragraph 3 of art. 46 Energy Law Act, provided for in the tariff of the electricity system operator concerned, intended for the tariff group to which the unbundled customer or the energy enterprise engaged in the business of electricity generation referred to in art. 3(11f) Energy Law Act.*

3.5.2.3 Required licenses regarding cPPA
For the production of electricity in RES-JW with a total installed electrical capacity exceeding 1 MW, an appropriate electricity generation license (WEE) is required. WEE authorizes the supply (including sales) of the produced energy on a self-basis. For the resale (trade) of energy purchased from another entity or on the balancing market, the producer or consumer should have a license for electricity trading (OEE). In the absence of properly defined conditions for II, LB deliveries, or within the framework of self-consumption, there is also a risk of the necessity to obtain a license for energy distribution (DEE).

The concession procedure requires demonstrating that the enterprise has the necessary resources to conduct activities in a given area, including possessing adequate financial resources, technical capabilities, and employing appropriately qualified personnel. It should be noted that in practice, obtaining a concession is associated with a long waiting period, and the risks of not obtaining a concession have increased.

The obligation to hold WEE, DEE, and OEE concessions translates into the risk of increased energy purchase costs compared to other energy delivery models through cPPAs. For example, supplying energy through II allows for a reduction in costs of approximately 37-50 percent, or in the case of LB, approximately 19-30 percent of the unit cost of purchasing energy in comparison to KSE (Figure 9).

3.5.2.4 Transport of energy
The delivery of energy from the producer to the consumer can be done through various means: via II, LB or KSE. The owner or another entity managing those transportation means is obliged to ensure its proper functioning and provide the appropriate quality parameters of the supplied energy, respectively in accordance with the agreement, energy regulations (in the case of energy supply through LB and KSE), and instructions and tariffs (in the case of energy supply through KSE).

Supplying the same consumer simultaneously through II, LB is possible but requires meeting delivery conditions (these options have been described above). However, if recognized as a distribution network or if the obligation to transport energy through KSE is introduced, it increases the unit costs of energy delivery: distribution costs by approximately 19-30 percent and sales-related costs by approximately 20-22 percent.

3.5.2.5 Network balancing
Delivery and transportation of energy through the network, both on the producer and consumer side, entail the obligation of network balancing. The operator charges the Balancing Responsible Party (PoB) for the differences in energy quantity between the demand and supply to the grid, as per the plan (schedule) and actual execution. RES exhibit an unstable production profile, necessitating their balancing with other energy sources to cover demand fluctuations due to variable weather conditions.

The PoB must fulfill several conditions (hold a license for energy trading, conclude required agreements for participation in the balancing market (BM), meet specific IT and financial requirements), which entail cost risks estimated at 7–11 percent of the unit energy purchase cost (see Figure 9). A challenge for cPPAs is the significant increase in balancing costs, which are passed on to consumers.

3.5.2.6 Taxes and public fees
Over the past several decades, we have observed a trend of increasing tax burdens (e.g., excise and VAT) and extrabudgetary public law fees (related to energy sales: GC - green certificate, BC - blue certificate, WC - white certificate, GoO - Guarantee of Origin from RES, and others, related to energy distribution: QA - quality fee, TP - transitional fee, RES - RES fee, CHP - CHP fee, CM - capacity fee, and others).

A challenge for cPPAs is the regulatory excess, which complicates settlement conditions and leads to an increase in final costs, resulting in increased costs for consumers, posing a cost risk estimated at 15–17 percent of the unit energy purchase cost (see Figure 9). Unfortunately, market overregulation leads to double charging of selected taxes or fees, making cPPA contracting and settlement more challenging.

3.5.2.7 Lack of price stability
The significant volatility in energy and GoO price fluctuations poses a significant challenge for sellers and consumers consuming large amounts of energy. Price fluctuations have led to significant financial hedging and cash flow risks for trading companies in this model, prompting the concept of cPPA (or PPA) directly purchasing from the producer to reduce financial costs and attempt to stabilize prices (unfortunately, this still does not solve the problem of volatile price benchmarks). The optimal solution should involve entering into long-term cPPAs with appropriate price and quantity variability. Regulatory requirements increase demand for GoOs, leading to an increase in their prices due to insufficient supply (this trend has been observed for several years and may be comparable to emission allowances costs).

The costs of energy prices and GoOs can be estimated at 50-63 percent of the unit cost of purchasing energy (see Figure 9). Unfortunately, in extreme circumstances of the past 3 years, they have fluctuated in the range of 31-84 percent of the unit cost of purchasing energy, both before and during the peak price period during the war in Ukraine, allowing for an assessment of risk at 23-53 percent of the unit cost of purchasing energy (see Figure 9). Unfortunately, this illustrates the effectiveness of the aggressor's strategy, which deliberately delays the energy transition process (and it is not excluded that it will be frozen or postponed again).

3.5.2.8 Deductions, recompensations and other state intervention disrupting competition
Market conditions related to the war in Ukraine and disruptions in energy supply to Europe have led to uncontrolled price increases. Consequently, the EU and its

member states have implemented intervention mechanisms such as price limits/stabilizers, demand or supply restrictions/control, and solidarity settlement mechanisms (taxes, deductions, compensations, or fees – varying depending on the country or the scope of regulation) for various energy carriers, especially electricity, heat, and gas.

As a result, we observe competition distortions due to EU interventions or individual member states, posing a cost risk estimated at 5–20 percent of the unit energy purchase cost. For example, prices on the Next Day Market (RDN) in Poland in 2023 were higher than in Germany by 10 to 40 EUR/MWh. The biggest driver for cPPA is the lack of mechanisms introducing predictability and price stability, which leaves countries acting unprepared in the face of competition influenced by the interventionist advantage of larger countries.

3.5.2.9 Financial instruments

Due to the numerous risks associated with physically settled cPPAs (especially transportation and balancing of a specified volume of energy between the producer and the consumer), financial settlement (Contract for Difference, i.e., settling the difference between the agreed contract price and the market price of energy) is becoming more popular. Studies of the Polish cPPA market indicate that 80 percent of agreements concluded in Poland between 2018 and October 2023 were settled in this way. A key challenge for these instruments is regulatory requirements related to financial instruments, derivatives, commodity derivatives, and their long-term consequences in terms of managing price, quantity, and value risks in different trading periods.

Analyzing this risk warrants separate development, as the majority of stakeholders entering into cPPAs have not conducted risk analyses and legal consequences assessments, considering the lack of regulatory preparedness for their conclusion, as well as reporting and monitoring after their conclusion. The value of financial instrument risk can be assessed commensurate with the aforementioned price risk at a level of 23–53 percent of the unit energy purchase cost.

3.6 Regulatory Opportunities

Depending on the specific content, each cPPA agreement will entail a unique set of benefits. Therefore, below we briefly outline the potential opportunities associated with individual clauses.

Opportunities related to the stability of energy delivery costs under cPPA:

Stability – the terms of energy and/or GoO disposal are determined through individually negotiated agreements outside the exchange. Therefore, the parties have the greatest control over shaping its content and making changes during execution.

At the same time, regulations concerning energy disposal have the least impact on agreements of this kind.

The flexibility of cPPA primarily allows for significant independence from market energy prices and/or guarantees of origin, as the energy is purchased outside of it. Parties can specify the energy price or the basis for its determination in a way that stabilizes and enables predicting the price for delivered energy in the future.

On-site cPPA enables a reduction in delivery costs associated with distribution and public law fees (see description above). In this variant, there is no need to incur the full costs of energy transport and sales from the grid. Parties may also benefit from cheaper delivery costs via LB.

In the case of off-site cPPA, there is the possibility of diversification and participation in new markets, as the producer and buyer may be located in different countries, where physical delivery may not be profitable.

Opportunities associated with the cPPA, under which an investment in RES is made: Acquisition of financing for investment implementation – cPPA creates favorable conditions to enhance the bankability of the project or return on investment in RE sources.

Customization of technical installation conditions to meet buyer's needs – since the RE installation primarily serves the execution of cPPA, the buyer can tailor it to their own requirements and pre-negotiate detailed technical conditions with the producer, such as the type of generation technology, inclusion of energy storage, installed capacity of generation units.

Ability to resell surplus energy and GoOs by the producer – during peak periods when energy production from the installation exceeds the buyer's needs, the producer has surplus energy and can obtain GoOs, which can be resold to generate additional revenue.

3.7 Regulatory Risk Assessment and Risk Response Planning

The risk assessment allows for the identification of areas requiring particular attention, the development of risk management strategies, and the planning of remedial actions to minimize negative impacts or maximize benefits. The starting point for the assessment is the identification of risk, followed by the estimation of the likelihood and impact of individual factors or potential events on project execution.

Below is a proposed regulatory risk assessment in projects based on cPPA regulations. The proposed concept involves selecting the main cPPA risk and assessing it. For further analysis, the most significant risks, i.e., those with the

highest value, were chosen. They are marked in yellow on Figure 10. These risks may have the greatest impact on cPPA revenues or implementation costs and the feasibility of its execution. Both threats and opportunities were analyzed. The risk analysis was conducted using an expert assessment method based on three indicators:

a) The impact of the risk on cPPA was estimated (on a scale of 1-10), considering three criteria: impact on the value of cPPA revenues or costs, impact on cPPA implementation time, and impact on cPPA execution quality.

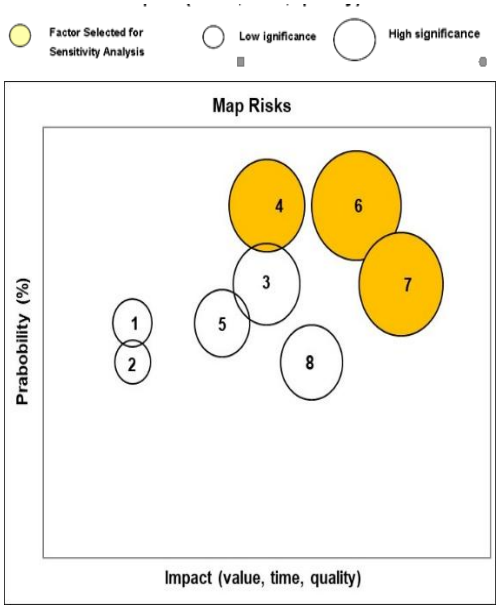
b) The likelihood of the risk occurring during cPPA execution was estimated (on a scale of 1-10).

c) The significance of the risk affecting the efficiency of cPPA execution was estimated (the product of a and b).

The presented method allowed for the mathematical calculation of cPPA sensitivity to individual risks, which have the greatest impact on the efficiency of cPPA execution.

Figure 10. *Map of cPPA risks*

	Description - Risks:
1	WP – connections to the KSE
2	LB – connections via direct line
3	T - transport (licenses and costs)
4	B – balancing
5	P – taxes and public fees
6	C – instability of energy and GoO prices
7	ZP – change in law regarding: SW - support systems, OiR - deductions and recompensation and IP - state intervention disrupting competition
8	IF – special requirements and formalities regarding financial instruments



Source: *Own elaboration.*

For further risk sensitivity analysis, 3 risks marked in yellow with the greatest impact on the effectiveness of cPPA implementation (negative or positive impact) were selected, i.e.: B - balancing (No. 4), C - energy price instability and GoO (No.

6), ZP - risks of changes in law: SW - support schemes, OiR - deductions and compensation, and IP - state interventions distorting competition (No. 7).

Balancing affects the ability to enter into and the costs of executing cPPA agreements (regulatory constraints on balancing and supply-demand mismatch increase cPPA servicing costs).

cPPA is perceived as a risk offering opportunities for price predictability and stability of energy and GoO, which impacts investment potential and business continuity, as fluctuations in prices increase the risk of OPEX cost changes in a manner that disrupts business profitability. Price stability risk can be hedged by linking it to an energy and GoO price benchmark to avoid jeopardizing investment bankability or market competitiveness (e.g., a significant decrease in energy prices below the cPPA price, which lowers OPEX costs below the market competitiveness threshold).

The most challenging area of risk lies in regulatory changes, particularly state interventions that disrupt competition in the form of support systems (individual states providing state aid disrupting the competitiveness of smaller economies or consumers) or mechanisms stabilizing prices in the market (e.g., in the form of deductions acting as a form of windfall tax on excess profits with significant increases in energy prices, as well as compensations for eligible entities covering the costs of uncontrolled energy price increases). In a market economy, interventions are not a perfect solution, often disrupting the bankability mechanisms of investment projects or failing to consider all entities or eligible cases for support, thereby posing a risk of disputes within the framework of protection of acquired rights.

Below is a proposal for responses to risks (numbers 4, 6, and 7). Responses include avoidance, mitigation, transfer, or acceptance. Risk avoidance is defined as a strategy to eliminate potential threats through conscious actions that may lead to avoiding the occurrence of risk. The effectiveness analysis of this strategy involves a comprehensive assessment of the costs associated with its implementation compared to potential losses.

Risk mitigation strategy focuses on minimizing both the probability of risk occurrence and its potential consequences. The analysis of the effectiveness of preventive measures and mitigation techniques involves a critical examination of their role in organizational operational and decision-making processes. Risk transfer involves transferring responsibility for risk to external entities such as insurers or service providers. The analysis includes the effectiveness of various forms of risk transfer, considering contract management and relationships with external partners.

The risk acceptance strategy is based on a conscious approach to the inevitable nature of certain threats. The analysis focuses on risk assessment and acceptance

processes, while also considering aspects of monitoring and potential adjustments to the organizational strategy.

Table 1 describes which of the responses described above is most commonly adopted for a given risk (M - mitigation, Av. - avoidance, T - transfer, or A - acceptance), while the last column determines the effectiveness of this response. The effectiveness of the adopted risk response is described using the following method: "++" significantly reduces the risk value, "+" effectively reduces the risk value, "-/+" moderately reduces the risk value, "-" does not reduce the risk value, "--" increases the risk value.

Table 1. *Description of possible ways to manage selected cPPA regulatory risks*

Risk	**Solution**	**Impact on cPPA**
4. B - balancing	M - The Energy producer obtains OEE and PoB status, therefore balances itself thus reducing costs	++
	T - The parties outsource / transfer balancing costs to the third party	+
6. C – instability of energy and GoO prices	Av. – Fixed price with price corridor is set	++
	M - Price benchmark with price corridor is set	-/+
7. ZP – change in law regarding: SW - support systems, OiR - deductions and recompensation and IP - state intervention disrupting competition	Av. – Inclusion of a price/quantity change clause in case of a change in the law	++
	M – Inclusion of renegotiation clause in case of change in law	+

Source: *Own elaboration*

Evaluation of the effects of risk management actions can be focused on three main elements: impact on profit, potential risk minimization, and the cost of resolving the cPPA (abandonment of projects related to cPPA implementation).

Below, in Table 2, we summarize the key criteria associated with the decision-making and implementation of projects based on the concept of cPPA in relation to the three aforementioned elements. Investment analysis in energy projects enables risk management if risks are properly and timely addressed.

Table 2. *Key criteria for managing major regulatory risks for cPPAs*

	Impact on cPPA
Profit	++
No negaive risk	+
Exit Cost	- / +

Source: *Own elaboration.*

Table 2 indicates that cPPA is an optimal form of energy procurement that is cost-effective and allows for more effective risk management during price fluctuations (due to lower OPEX, which enables the management of profit retention mechanisms at the appropriate level).

Thanks to the stability and flexibility of adjusting terms to the parties' needs, cPPA enables the reduction of a significant portion of risks in the current energy market, not only cost-related risks but also risks of energy supply disruptions, which secures the quantity and price of purchased energy, providing stability for business operations and development.

Criteria analysis enables the management of the risk value of loss or delay in implementing projects in RES. However, the costs of exiting such long-term investments can be the most challenging aspect of the presented business model, requiring detailed regulation in the cPPA.

4. Discussion

Project risk management is identifying, assessing, monitoring, and managing potential threats and opportunities that may affect the achievement of project objectives. The fundamental stages in the management process include:

Identifying Risk: i) A thorough analysis of all project aspects to identify potential threats and opportunities; ii) Collaboration with the project team, stakeholders, and industry experts to obtain diverse perspectives.

Risk Assessment: i) Assessing the significance of risk impact, e.g., by determining the impact and likelihood of each identified risk; ii) Establishing risk rankings to prioritise.

Risk Management Planning: i) Developing risk management strategies, such as avoidance, mitigation, transfer, or acceptance of risk; ii) Preparing a plan of corrective actions for key risks.

Risk Monitoring: i) Regularly tracking the risk status during the project duration; ii) Responding to changing conditions and new risk-related information.

In the case of cPPA projects in Poland, the key risks have been defined as follows:

balancing (no. 4), C - lack of price stability of energy and GoOs (no. 6), risks of legal changes: SW - support systems, OiR - deductions and recompensations, and IP

state interventions disrupting competition (no. 7). For each of the identified risks, there are possible actions enabling risk management through M - mitigation, Av. - avoidance, T - transfer, or A - acceptance.

cPPA provides the opportunity to manage profit maintenance mechanisms at the appropriate level and to limit a significant portion of risks in the current energy market. The most challenging area is managing the costs of exiting cPPA, which requires adaptation to the specific project and detailed regulation within the cPPA.

The gravity of the regulatory risks in question means that their acceptance (A - acceptance) is not the optimal strategy, as the costs of the risk materialising, as well as its probability, are relatively significant. For all identified risks, on the other hand, mitigation (M - mitigation) or avoidance (Av. - avoidance) measures give satisfactory results in managing them, although these are not the only solutions available.

Importantly, the necessary steps in the case of risks to that end can be achieved by means of appropriately shaped provisions in the cPPA that give the agreement sufficient flexibility and allow for change when this becomes necessary.
In respect of balancing risks, however, this can be ensured by the acquisition by a party to the cPPA of the relevant authorisation to balance or trade energy itself.

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