Accelerate Accounting for Power Purchase Agreements

March 2022

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Executive Summary

In recent years, climate change has become one of the most important topics both politically and in the industry. In line with the requirements of investors and customers, as well as the sustainable finance taxonomy, European industrial companies have declared their willingness to align their business activities to achieve climate protection goals and reduce dependencies from fossil fuels. The motivation of the industrial sector becomes visible, for example, in the increasing use of green electricity, and the sustainability and ESG reporting that can already be found today. As sustainability takes strategic centre stage, Power Purchase Agreements (PPAs) offer a valuable tool for managing corporate green energy needs.

PPAs come in different shapes and forms, depending on the intentions of the parties which are involved. PPAs often also include provisions regarding the transfer of Guarantees of Origins (GoOs) or Renewables Certificates (RECs).

The accounting dimension of this type of transaction may be complex and delay the signing process of a PPA. Depending on how the agreement is structured, the impact on financial statements may be substantial.

The following whitepaper outlines the accounting implications under IFRS on virtual and physical PPAs from a developer´s and offtaker´s perspective. The paper is intended to provide guidance for users from various departments such as procurement and business development in order to prepare for a PPA signing process. For that purpose, we have developed exemplary businesses cases and outlined possible impacts on financial statements. We have also provided attention points for your CFO discussion and questions to consider with your accounting department. Given the complexity within PPAs, it cannot be assumed the discussion points outlined in this paper replace the analysis that would be required to determine the individual accounting under IFRS.

We hope there is much to discover while reading. If you have any questions or would like to discuss certain topics, feel free to contact us directly.

This paper on accelerating accounting for Power Purchase Agreements (PPAs) under IFRS was produced by Deloitte Germany. It is intended to assist various departments in off-taker and developer organizations to understand and assess the potential accounting implications of PPAs and prepare for discussions with the finance and accounting department.

Physical PPAs represent a direct relationship between consumer and generator, and they imply that the latter will physically deliver the energy volume specified. A range of pricing mechanisms can be employed to optimize the value of the contract.

Virtual PPAs offer options to consumers regardless of geographical distance. In these Virtual PPAs, no physical energy exchange is involved, and mostly includes a net cash settlement of the difference between spot and PPA price. VPPAs may be typically used as a hedge against future spot price fluctuations.

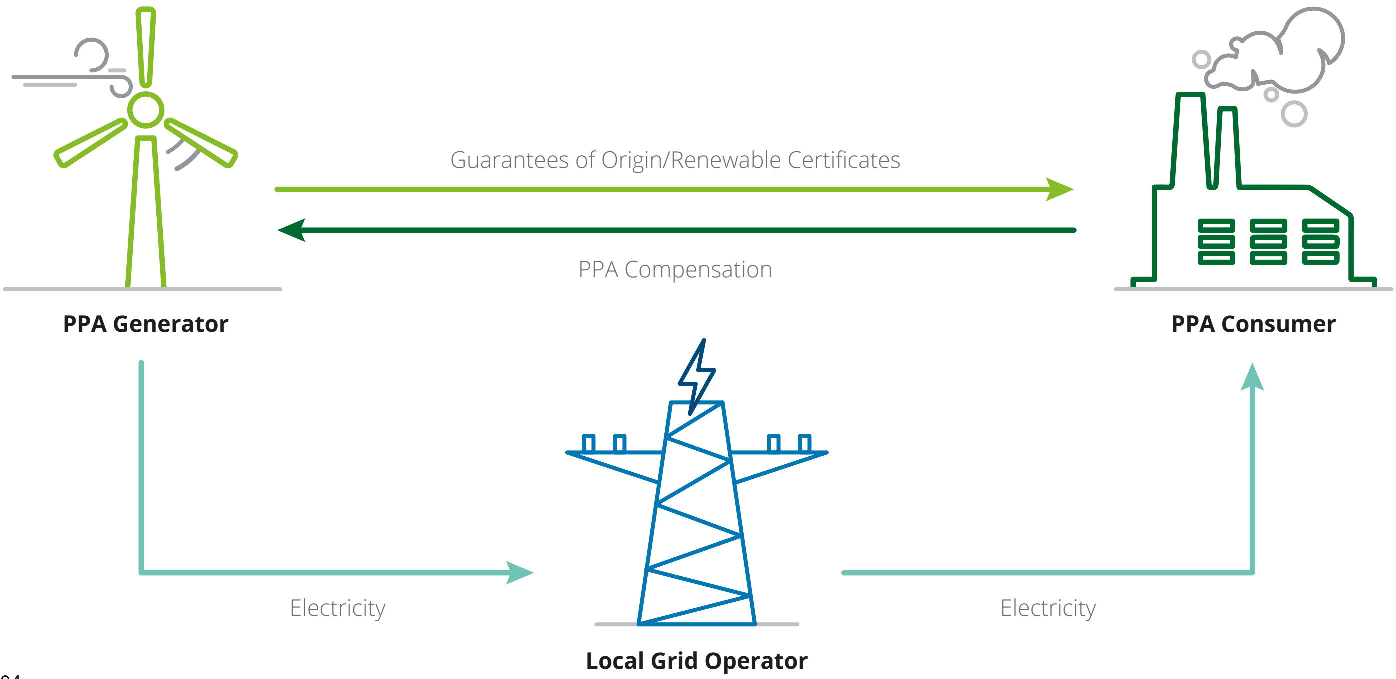
Power Purchase Agreements

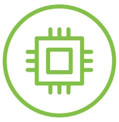
Definition and Types

Physical Power Purchase Agreements
Definition

- Power Purchase Agreements (PPAs) are electricity supply contracts that define the volumes and price for the delivery of renewable electricity in advance
- The volumes can either be fixed or variable (e.g., baseload, pay-as-produced or profile)
- Different pricing mechanisms (e.g., fixed or floor prices) can lead to varying levels of risk or opportunity
- Physical PPAs involve the actual delivery of energy from the generator (e.g., a wind farm) to the consumer (e.g., an industrial company)
- Physical PPAs are often concluded for the consumer's own consumption (to fulfill their renewable energy needs)
- Besides the PPA compensation for power, the supplier also transfers Guarantees of Origin or Renewable Certificates (GoOs/RECs) to guarantee that the electricity is being generated from renewable sources
- It might be necessary to treat the GoOs/RECs separately from the power purchase for accounting purposes

Fig. 1 – Physical PPA

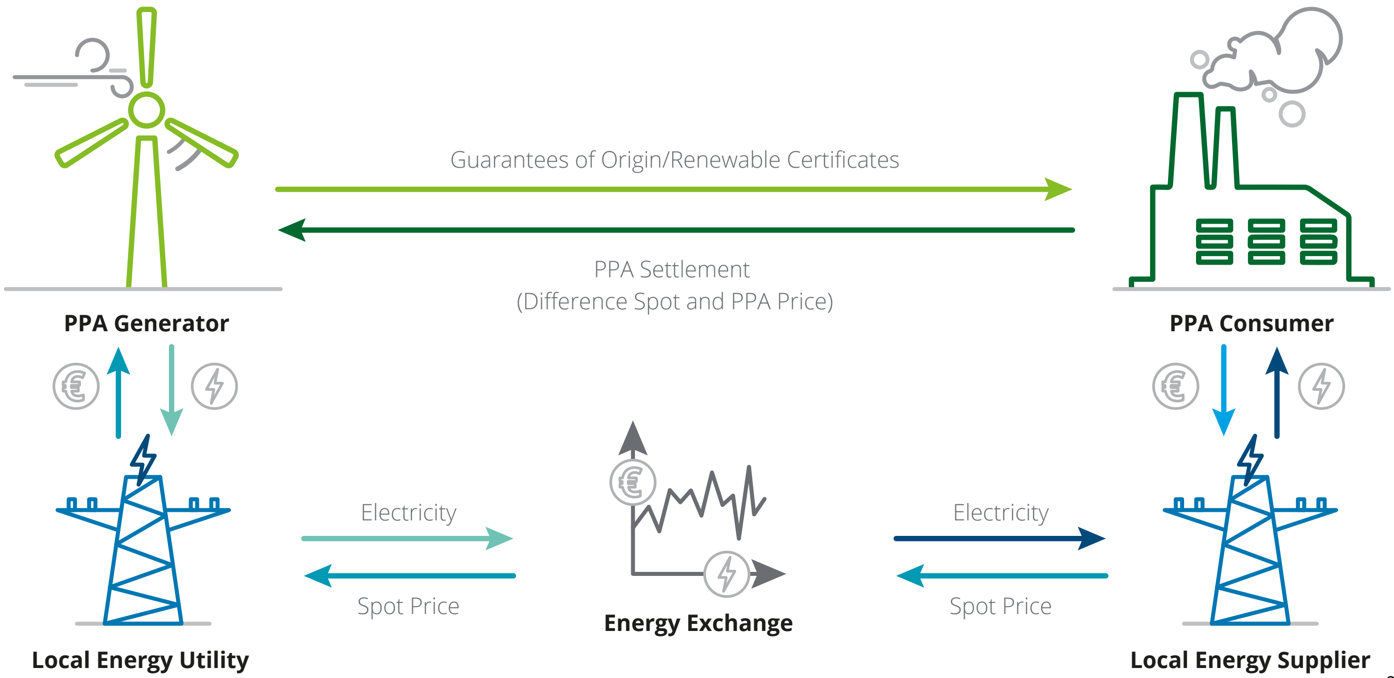




Virtual Power Purchase Agreement
Definition

- Virtual Power Purchase Agreements are enormously relevant in practice given geographical distances between generation of green electricity and its consumption and serve as a proxy hedge and supply of green certificates
- No physical exchange of energy occurs between the generator and the consumer (both trade their energy with local operators)
- The supplier and customer usually agree on a fixed price based on a difference mechanism and the delivery of RECs
- The intention of VPPAs is to hedge against volatile prices or to receive RECs rather than to physically receive green energy. The fixed price can lead to various levels of risk or opportunity for the VPPA (based on difference between spot and PPA price)
- Generator and customer often agree on a cash settlement (either pays a compensation (settlement) in the amount of the difference between the agreed PPA and the spot price)
- As virtual PPAs are often used as instruments to hedge against increasing (customer) / decreasing (generator) spot prices, they may also be designated as a hedging relationship for accounting purposes

Fig. 2 – Virtual PPA



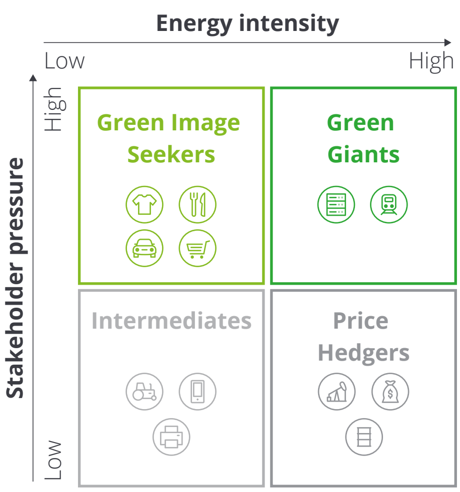
Drivers and reasons for concluding PPAs

Fig. 3 – Drivers for Power Purchase Agreements

Key driver: Energy intensity and stake-holder pressure

Significant increase in prices and growing volatility: German Future-Base (2021)

European and sociological changes



- Europe and Germany have set targets to reduce emissions by 2030
- Investors increasingly favor investment opportunities with a focus on sustainability
- Both investors and creditors require stable and predictable cash flows in order to contribute to the ambitious transition

Sources: EEX/Energate/Aurora Energy

The uncertainty regarding the development of electricity prices increases the need for products for price hedging – for example, green virtual PPAs

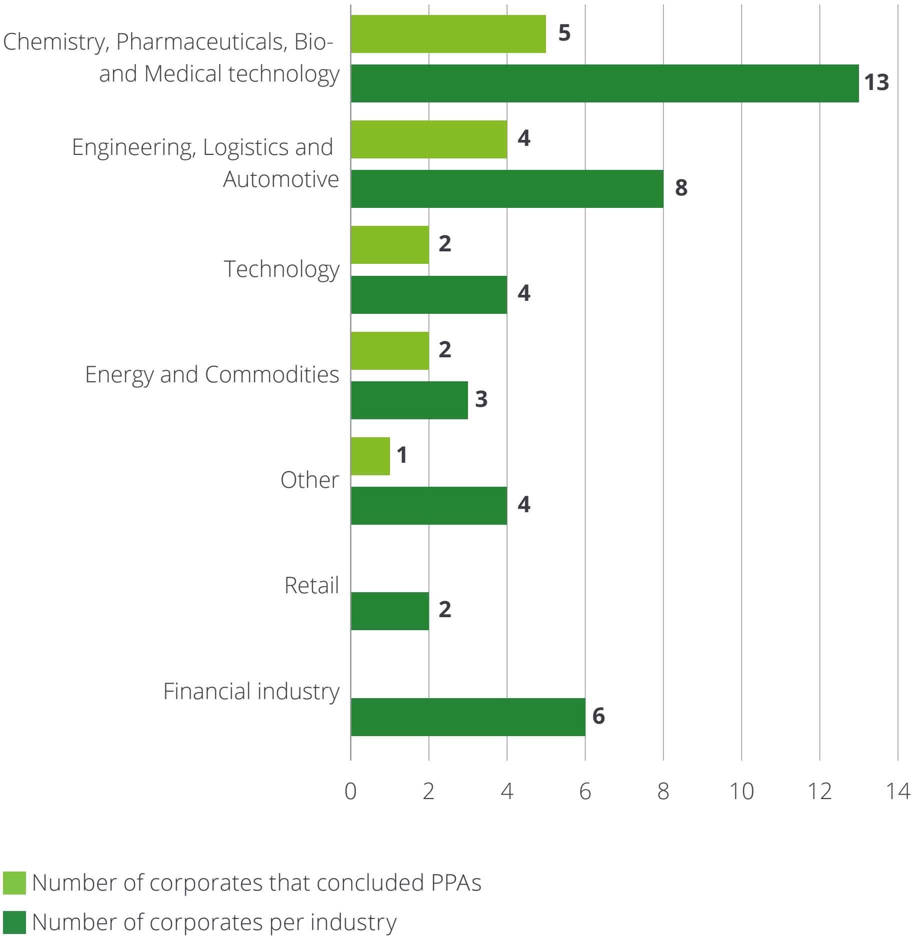
PPAs in DAX 40

PPA Contracts concluded per Sector in DAX 40

PPAs in DAX 40

- DAX 40 companies have a growing need for green PPAs
- The key industries for PPAs (e.g., chemical and automotive) have a high demand for energy
- Their intention is to:
  - Hedge against increasing energy prices
  - Achieve sustainability goals set by the government as well as internal and external stakeholders
- PPAs are rapidly becoming more and more relevant due to:
  - New laws and regulations from the government
  - Goals to reduce CO_2 emissions
  - Increasing prices for CO_2 certificates and energy
  - Increasing interest and relevance for customers and stakeholders of DAX 40 companies
- Increasing relevance becomes visible in context with the European Corporate Sustainability Reporting Directive

Fig. 4 – Corporates that concluded PPAs among different industries of the DAX 40



As of: January 15, 2022
Source: Deloitte internal analysis of publicly available information.

Accounting Implications

Introduction of accounting terms and implications of virtual and physical PPAs for Financial Statements according to IFRS.

Virtual Power Purchase Agreement

Major questions to be considered

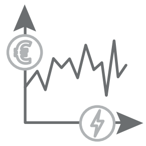
What is a derivative?

A derivative is a financial contract settled in the future whose value depends on an underlying asset, e.g Power.

Examples: Futures, Forwards, Options or Contractual Terms

Implications of PPA as a Derivative

- Need to perform detailed accounting analysis
- Most commonly Fair Value recognition
- Possible profit and loss volatility



Underlying
e.g., spot price/REC

Do I analyze an REC Purchase or a Power Purchase?

A PPA could contain an REC element (procurement) and a Power element (price hedging) which both need to be assessed

Implications of separate or combined obligations of REC and Power

Power price hedge: compensation payments in the amount of **value changes** (difference spot and fixed price) of derivative

Procurement of RECs (own use?)

Physical Power Purchase Agreement

Major questions to be considered

How could a PPA be a lease?

Check for the following criteria:

- Procurement from a specific facility (e.g. wind plant) or different ones (e.g. wind park)?
- Check if all benefits produced by the plant (e.g., power, RECs etc.) are received (i.e., pay as produced) or if a volume is agreed (i.e., Baseload, e.g. 80%)
- Control of the plant (e.g., right to shut down, design etc.)?

Implications of Treatment of leases

- If the PPA is considered a lease, recognize a Right of Use asset and lease liability (i.e., material balance sheet effects)

Financial Instrument? Derivative vs. Own Use?

Check for the following criteria:

Fixed Price → Derivative
Explicit Cash Settlement → Financial Instrument in scope of IFRS 9
Implicit Cash Settlement → Check for Own Use

- Readily convertible to cash (active market (e.g., EEX in Germany) required)

Intention to fulfill usage needs?
+
Volume Procured < = Volume Used

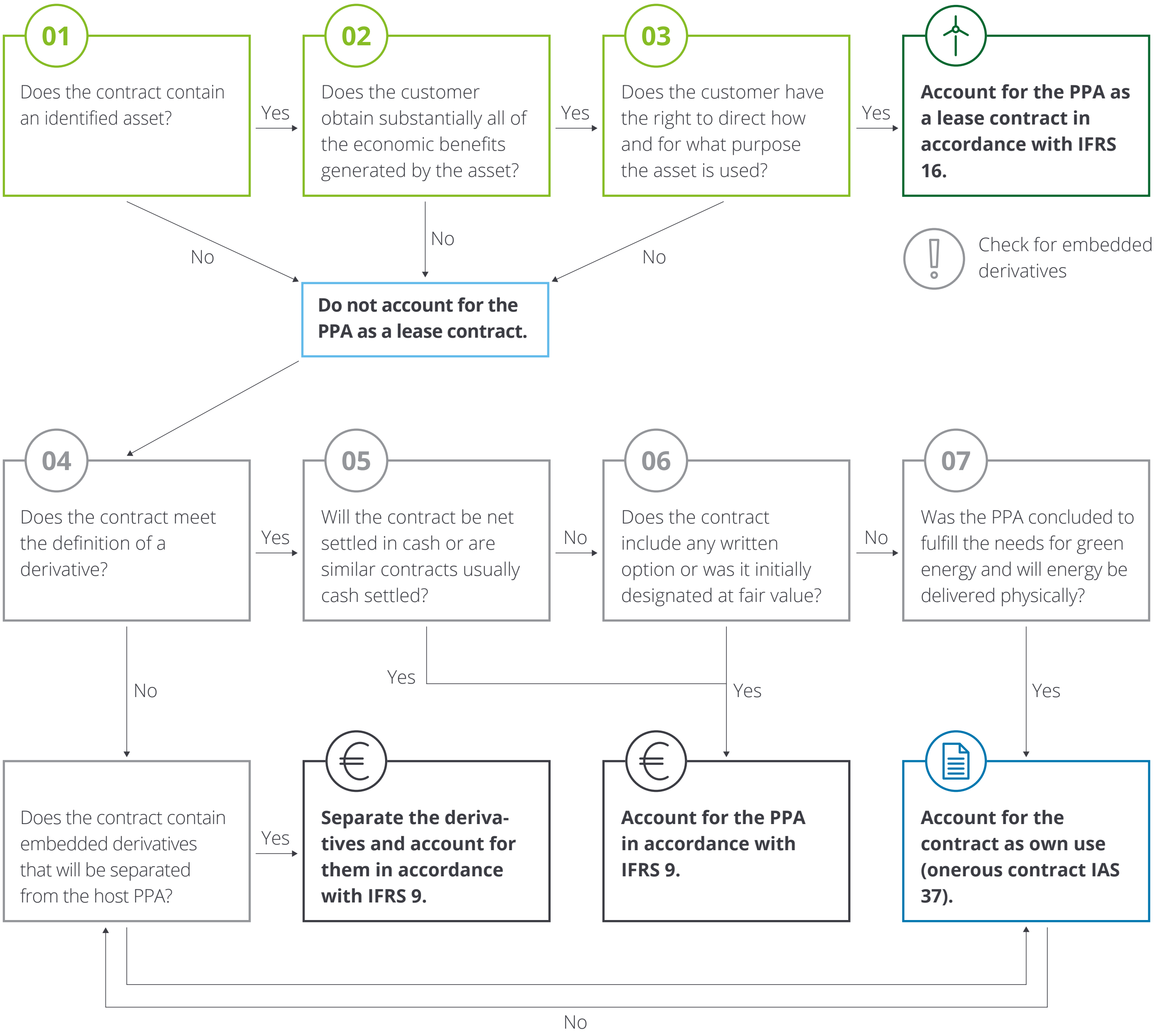
Own Use Contract

Implications of net cash settlement and the own use exemption

- PPA is settled net in cash: IFRS 9
- Own use exemption applies: Recognize expense in accordance with standard procurement contracts at delivery

In-depth analysis of the contract and the underlying business purpose is required to determine the scope of the IFRS.

Fig. 5 – Accounting for Power Purchase Agreements – Simplified Decision Tree



Flowchart Guidance: Please refer to the specific numbers in the business cases discussing the relevant questions.

1. Business Case

Exemplary virtual PPA for industrial companies

When preparing for a PPA, both the developer and offtaker (e.g., industrial company) consider the risks and implications around a PPA. In the following, we dive into an exemplary V-PPA and assess the possible implications on:

Financial Instruments, Fair Value Measurement, Hedge Accounting

The attention points naturally differ depending on the intention of each party involved.

Key Facts
Business Case

- As an example, an industrial company from the automotive sector concluded a virtual PPA contract on 1st January 2022 with an operator of a wind plant in Spain:
- Intention: price hedging and procurement of RECs
- No physical delivery of electricity

Term	10 years
Fixed price	50€/MWh
Volume	as produced; P90: 32.400 MWh per year (2.700 MWh monthly) (80% of capacity)
RECs	100% transferred (without specified price)
Net Cash Settlement	Difference between PPA and Spot Price

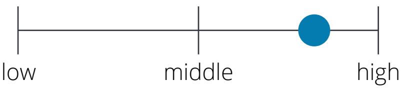
Risks within a Virtual PPA

Clause	Developer	Offtaker
Base Case (fixed price, pay as produced volume)	Production Risk of Renewable Energy	Full Price Risk Profile Risk
Alternative A Baseload or consumption profile	Profile Risk	
Alternative B Indexed prixing	Full Price Risk	

Deep dive 01: If a PPA contains fixed-price agreements or cash settlements, it might classify as a financial instrument.

Financial Instruments

Impact on financials



Balance Sheet

Profit & Loss

Complexity

Analysis

04 The definition of a derivative is met due to the **fixed price** that results in value changes in response to changes of the underlying (power market price)

05 The contract will be Net cash settled and no power is physically delivered. Since the RECs are not priced separately, the contractual cash settlement also includes the compensation for the REC

€ Due to the existing derivative and net cash settlement, the contract is considered as a Financial Instrument **in scope of IFRS 9**

Attention points for contract negotiation

Price mechanism	Price fixing leads to derivative
REC	Volume and separate price
Cash settlement	Related to PPA price

It is difficult to fulfill own use requirements.

CFO discussion

- Define target accounting and consider:
  - Intention of PPAs (Procurement of RECs and/or price hedging for power)
  - Target contractual settlement (cash settled?)
  - Target P&L presentation
  - Complexity of fair value measurement

Questions to accounting

- Is the contract in the scope of IFRS 9?
- Shall fixed price and procurement of RECs be separated and RECs accounted for as own use?
- How could fair value measurement be applied and P&L volatility reduced (hedge accounting)?

Lessons learned

A VPPA with a fixed price shall be classified as a derivative (either the contract in its entirety or separated)

- Even if RECs are physically delivered and are not priced separately, the contract in its entirety is classified as financial instrument
- Fair value measurement could be less complex if the contract is considered as an own use contract for the **procurement of RECs**. In this case, the embedded derivative (fixed price) would be separated from the REC contract and measured at FV

Deep dive 02: The fair value of a PPA depends on price expectations, the value of green benefits and the valuation of risk.

Fair Value Measurement

Impact on financials

low — middle — high

Balance Sheet ↗

Profit & Loss ↑ ↓

Complexity ↑

Analysis

Either the entire contract or the embedded derivative is within the scope of IFRS 9 and shall be measured at **fair value**.

Fair value
Price that would be received to sell an asset or paid to transfer a liability in an orderly market transaction.

Initially
Fair value often equals the transaction price (0 in our business case -> on market transaction). Otherwise, analyze Day 1 gains or losses with regard to additional risk and contract terms.

Subsequently
Measurement based on appropriate methods (e.g., DCF method) and inputs (observable and unobservable market inputs, such as volume, forward market prices, long-term price forecasts and quality factors).

Attention points for contract negotiation

- Analyze contract before it is concluded to identify relevant input factors (pricings, markets, volumes)
- Use observable market parameters where possible (e.g., value change of fixed price is easier to determine than fair value of RECs if they are not separated)

CFO discussion

- Define target accounting and consider:
  - Capacity to set up fair value measurement
  - Systems and market data to calculate the fair value subsequently

Questions to accounting

- Does the FV initially differ from the transaction price?
- Implement valuation techniques to measure the fair value and define input parameters and assumptions
- Recognize fair value changes in P&L and develop methods to account for Day 1 gain or loss

Lessons learned

- The fair value often equals the transaction price. However, it should be analyzed with regard to potential risks & benefits
- Subsequently, most changes are based on fluctuations in market prices, whereas other effects could result from changes in assumptions and input parameters (such as expected volumes, shape or quality factor)

Deep dive 03: Fluctuations in the Profit and Loss Statement could be mitigated by applying hedge accounting.

Hedge Accounting

Impact on financials

low middle high

Balance Sheet ↗

Profit & Loss → ←

Complexity ↗

Analysis

In general, measuring PPAs at Fair Value and recognizing changes in Fair Value through Profit and Loss (so called FVTPL) would result in increased volatility of profit & loss due to the derivative measurement

If certain qualifying criteria are fulfilled, the PPA can be designated in a Cash Flow **hedging relationship** that results in lower Profit and Loss volatility due to the recognition of effective Fair Value changes of the PPA in the Other Comprehensive Income (OCI).

Attention points for contract negotiation

- Ensure that the volume that is subject to price fixing is equal or lower than your actual power and RECs needs
- E.g., baseload VPPAs that settle in local load center markets could qualify for hedge accounting application
- Ensure pricing structures that follow the market

CFO discussion

- Define target accounting and consider:
  - Evaluate advantages (less P&L volatility) and complexity (e.g., notes disclosure, effectiveness measurement) of hedge accounting
  - Predefine processes for the implementation and subsequent application (incl. systems/tools)

Questions to accounting

- Are the requirements fulfilled to apply hedge accounting?
- Can we fulfill the subsequent requirements regarding the measurement and disclosure of effectiveness?

Lessons learned

- Hedge accounting helps to address the difference in measurement and recognition of the derivative and the procurement of electricity/RECs
- With hedge accounting an entity can reduce the fluctuations in the P&L of the hedging instrument (Fair Value of PPA) and the hedged item (demand or supply of electricity
- Consider the correlation and effectiveness of markets and products

2. Business Case

In our Second Deep Dive, we focus on the implications of physical PPAs:

1. Own Use Exemption
2. Leasing

The attention points naturally differ depending on the intention of each party involved.

Exemplary physical PPA for industrial companies

Key Facts

Business Case

- In an alternative example, an industrial company from the automotive sector concluded a physical PPA contract (base-load) with an operator of a wind plant in Germany:

Term	10 years
Fixed price	Fixed price (60€/MWh)
Volume	Expected consumption profile

- Intention: Fulfill usage needs of energy consumption
- 100 percent of consumption matched RECs are transferred
- No explicit Net Cash Settlement

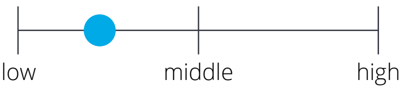
Risks within a Physical PPA

Clause	Developer	Offtaker
Base Case (fixed price, consumption profile)	Production Risk of Renewable Energy Profile Risk	Full Price Risk
Alternative A Pay as produced	**Profile Risk**	
Alternative B Indexed prixing	**Full Price Risk**	

Deep dive 01: Physical PPAs might classify as own use contracts, depending on the intention and energy consumption.

Own Use (best case for industrial companies)

Impact on financials



Balance Sheet →

Profit & Loss →

Complexity ↓

Analysis

06 The contract is not net cash settled but power can be sold at any time on an active market in Germany (readily convertible to cash)

However, if it is assumed that the volume procured under the PPA does not exceed the needs for electricity and the contract is concluded for the own usage requirements, it is outside the scope of IFRS 9 **(own use)**

In a last step, the embedded derivatives (e.g. price fixation, REC) need to be evaluated whether those are treated separated or are closely related to host contract

Attention points for contract negotiation

- Avoid cash settlement clauses (could also be given in penalty consideration payments)
- Ensure that the volume does not exceed your needs and the contract is concluded to fulfill your own usage requirements

CFO discussion

- Define target accounting and consider:
  - Apply own use exemption, if possible, to reduce complexity of FV measurement and P&L volatility
  - Be aware of embedded derivatives (may be separated and measured at FV)

Questions to accounting

- Can the contract be cash settled or is the underlying electricity readily convertible to cash?
- Does the contract qualify for own use (i.e., no IFRS 9)?
- Is a possible derivative closely related to the host contract?

Lessons learned

- A price fixation in a PPA will most likely meets the definition of a derivative
- However, the contract can still be outside the scope of IFRS 9 if it is not cash settled, power is physically procured and the volume is needed to fulfill the own usage requirements

Deep dive 02: If the structure changes to pay-as-produced, a PPA could classify as a lease.

Leasing

Impact on financials

low — middle — high

Balance Sheet ↑

Profit & Loss →

Complexity ↗

Analysis

01 An identified asset could be given if the plant (its type, address etc.) is defined in the contract

02 All economic benefits are transferred (pay-as-produced contract and 100 percent of RECs)

03 However, the customer does not have control over the plant and thus, the contract will not be considered a lease

€ Fixed price must be considered as a derivative – Check for own use

Attention points for contract negotiation

Identified assets	Plant defined in the contract
Economic benefits	E.g., pay-as-produced
Control	Rights to shut down/ design

CFO discussion

- Define target accounting and consider:
  - Tool implementation/system extension (to calculate leasing effects)
  - Target P&L presentation (e.g., operating or financial result)

Questions to accounting

- Is the contract within the scope of IFRS 16?
- Have we already implemented lease accounting?
- Calculate effects of leasing and recognize a Right of Use Asset and Lease Liability if required

Lessons learned

- To classify as a lease, the asset must be identified, controlled and substantially all economic benefits must be transferred
- Lease accounting could lead to increasing complexity and an increasing balance due to the calculation and measurement of lease assets and lease liabilities
- To avoid lease accounting for pay-as-produced contracts, be aware of who has the rights to control the asset

Our Team and Expertise

Our personal references from prior PPA projects

Fig. 8 – Our team has great experience and expertise in various IFRS accounting and PPA projects in the PU&R industry.

Cross-functional workshops

Contract analysis and discussion about drivers of the PPA

- Analysis and discussion of different types of contracts with clients
- Sharing of cross-functional expertise
- Collaboration with external providers for relevant market curves

Accounting Advisory

Analysis of possible application and impacts of IFRS 16 and IFRS 9

- Contract analysis and accounting assessments based on developed semi-automated decision trees
- Support in determining Fair Value measurement and applying hedge accounting
- Support on other IFRS or Local GAAP related accounting topics

Audit

Quality assurance through a PPA audit

- Application of professional skepticism due to significant risks of long-term PPAs (high degree of estimation)
- Review of input factors and valuation model
- Macro for contract analysis of complex PPAs for IFRS

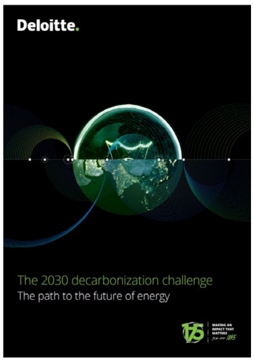
Risk Advisory

Development of risk analysis and valuation tools for PPA

- Development of a PPA Valuation tool
- Support in understanding the risks behind a PPA
- Expertise in Market Data and Pricing

Thought Leadership – Power, Utilities & Renewables

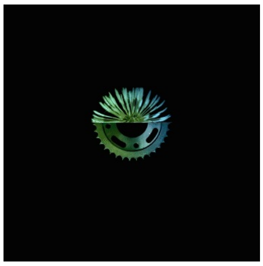
With our thought leadership, we keep you informed about important trends in your industry.



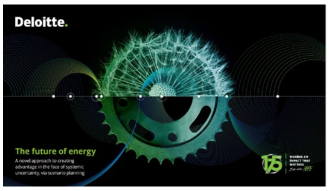
The 2030 decarbonization challenge – The path to the future of energy

Digital utility asset management

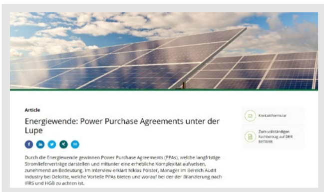
Sustainable manufacturing



Energy scenarios in focus



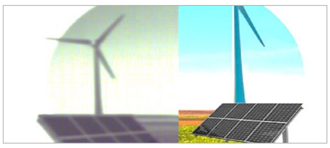
The future of energy



Accounting for Power Purchase Agreements (German)

Accounting for carbon certificates and GoO´s (German)

Smart energy management for industrials



Renewable transition

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Issue 03/2022