



PF in renewables: what's next after FITs

Conference Dauphine – Sustainable finance for European electricity investments

September 2019

Clément Weber

PF in renewables: what's next after FITs

Table of contents

1. Green Giraffe
2. Offtake solutions
3. The impact of regulation
4. Recent changes and new trends
5. Conclusion



1. Green Giraffe – The renewable energy finance specialist

We get deals done

Deep roots in renewable energy finance

- Launched in 2010 by experienced finance specialists with a **strong and proven track record** in renewable energy
- 85+ professionals with offices in Boston (USA), Cape Town (South Africa), Hamburg (Germany), London (UK), Paris (France), and Utrecht (the Netherlands)
- Multi-disciplinary skillset including **project & corporate finance, M&A, tendering, contracting, and legal** expertise



Close to **EUR 25 billion** funding raised for renewable energy projects in **9 years**



85+ professionals in **6 countries** on 3 continents

High-quality, specialised advisory services

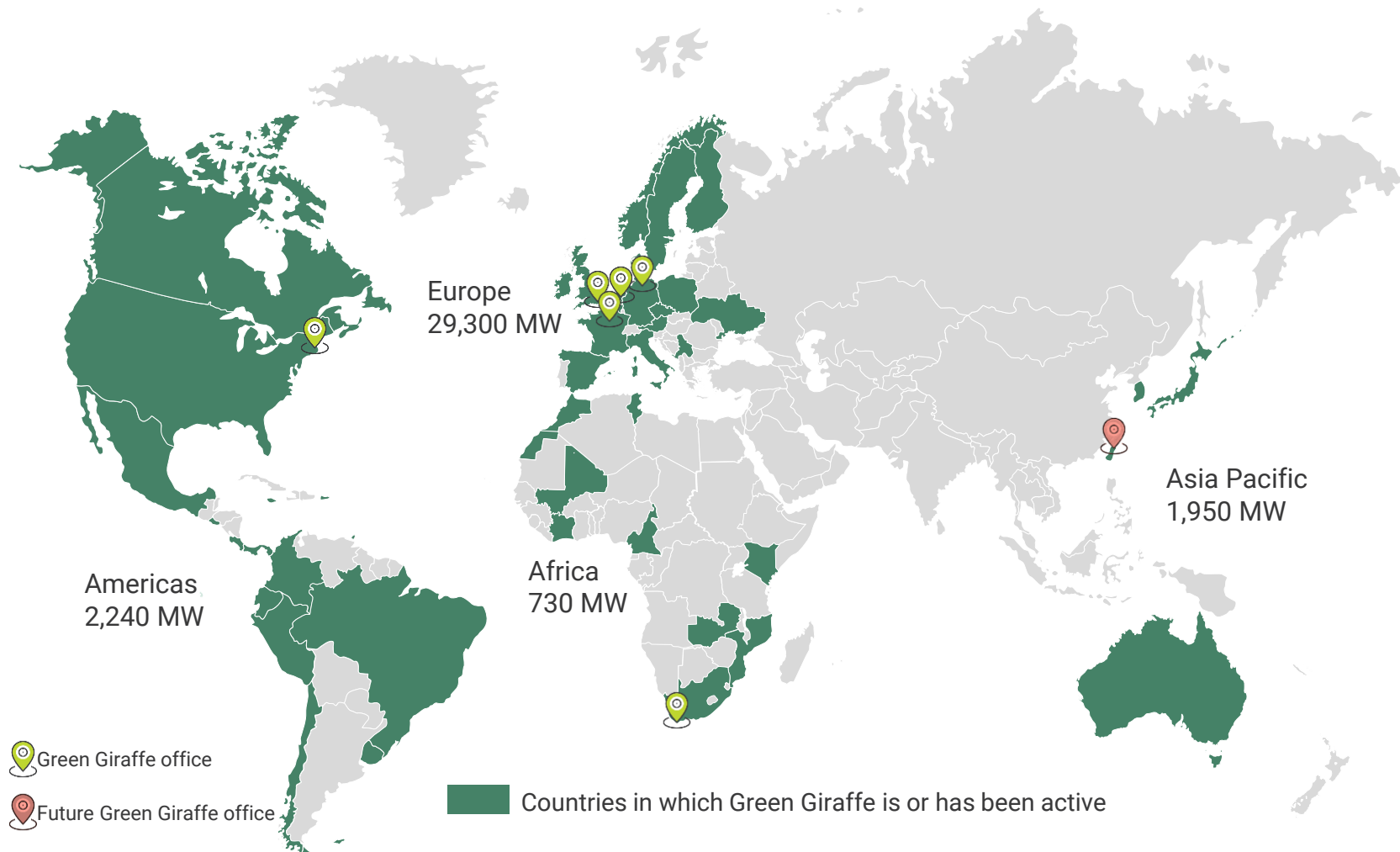
- Focus on projects where we can actually add value
- We can provide a holistic approach and are able to include sector-specific tasks in addition to traditional debt or M&A advisory (such as contracting, tender advice, strategic advisory, and development services)
- Widening geographical reach beyond Europe, with a growing presence in the Americas, Africa, and Asia
- Priority given to **getting the deal done!**



Involved in over **150 renewable energy transactions** or **projects** with a total capacity of circa **35 GW**

1. Green Giraffe – We have a worldwide presence

Green Giraffe has been involved in circa 35 GW of renewable energy projects globally



Capacity shown corresponds to renewable energy projects we have worked on, as of Q1 2019

PF in renewables: what's next after FITs

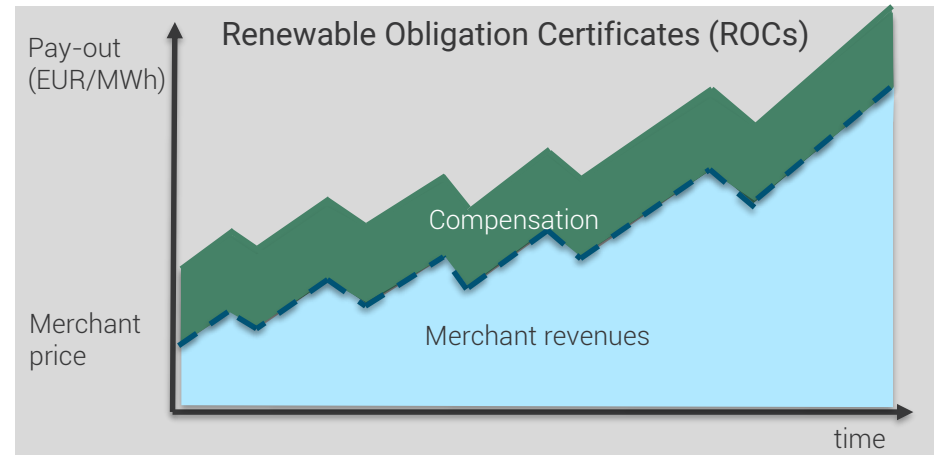
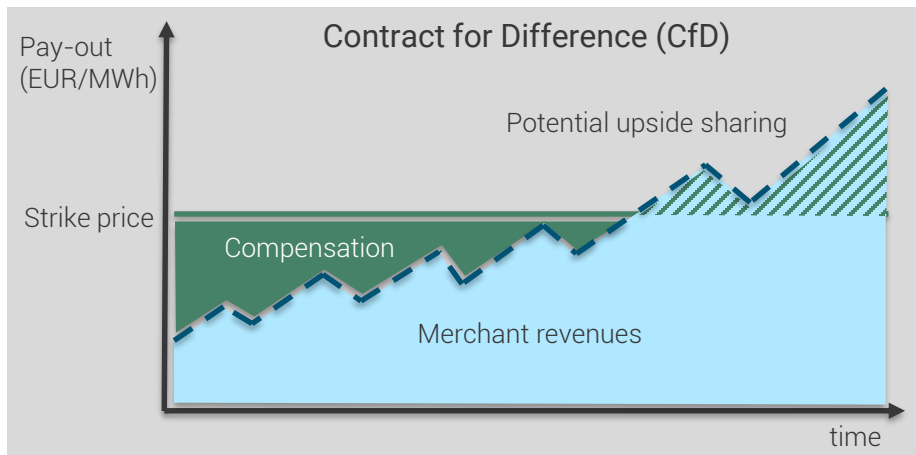
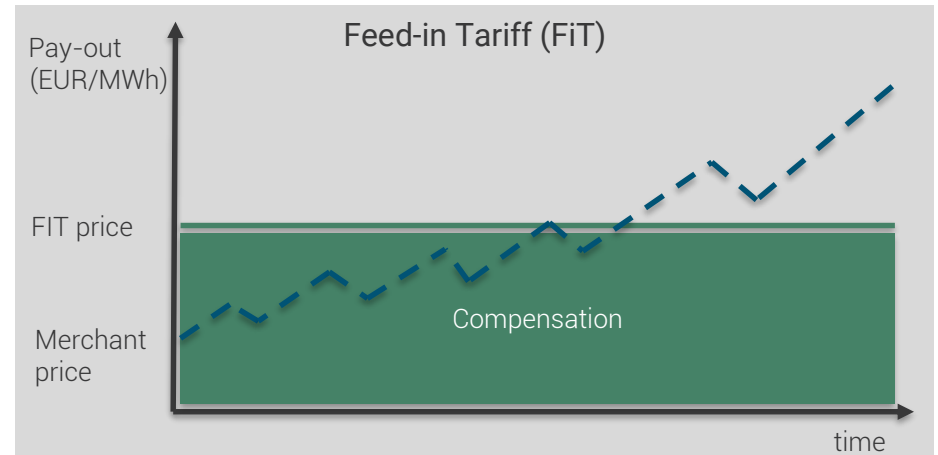
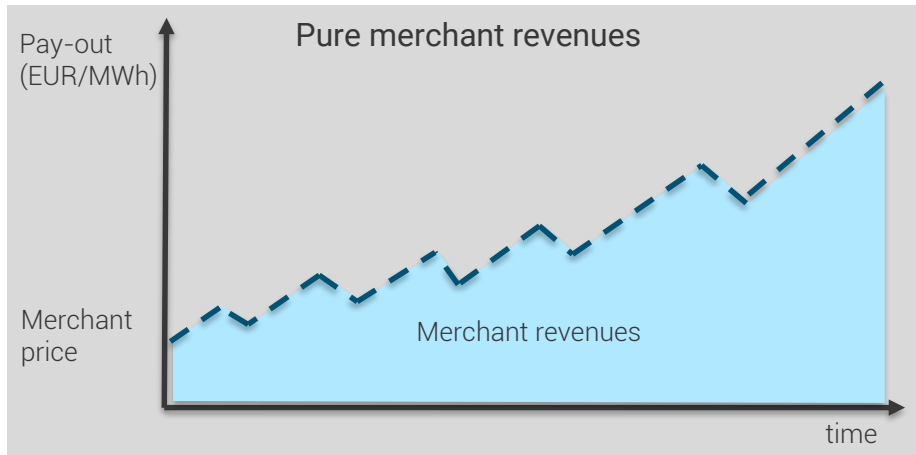
Table of contents

1. Green Giraffe
2. **Offtake solutions**
3. The impact of regulation
4. Recent changes and new trends
5. Conclusion



2. Offtake solutions

Revenue generation and route to market – merchant revenues and support mechanisms



Support mechanisms also include grants and loans to reduce construction equity at risk

2. Offtake solutions

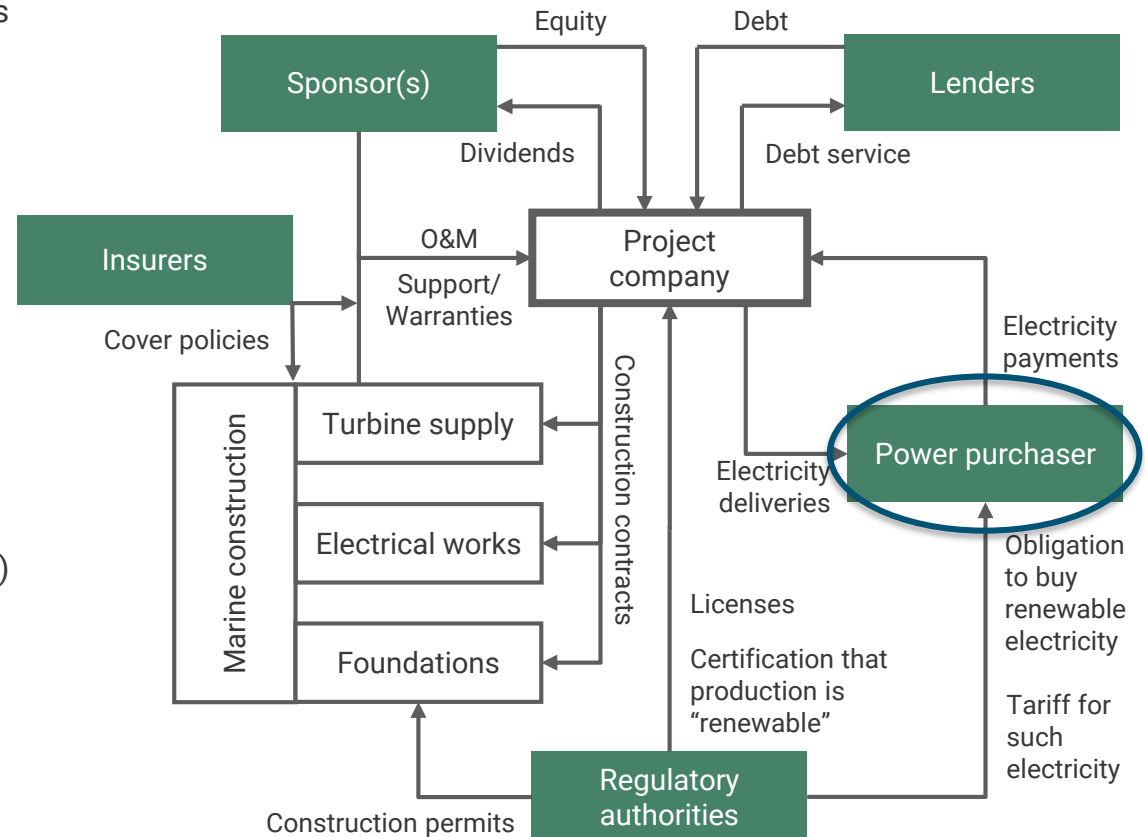
Always a key contract in renewables

...and a power purchase agreement (PPA) is always an important aspect of the contractual package

- The PPA provides a route to the market for the project's produced electricity
- Together with revenues from the applicable support regime, PPAs typically provide the bulk of a project's income
- As such, lenders will have specific demands on the structure of a PPA and will scrutinise the actual contract in great detail

Even under contract for difference (CfD) mechanisms, lenders scrutinise the PPA

- Management of sales on the wholesale power market with no volume or balancing risk
- Price index to match with CfD



PPAs are crucial elements in the contractual structure of wind projects

2. Offtake solutions

Delivery of power needs to be organised and contracted

In any limited or full recourse project, lenders and investors alike focus on expected cash flows. Therefore, revenue stability is a key criterion for investment decisions. In most markets revenues are a function of production volumes and price

Financing parties analyse both parts of the function carefully

- Volume risk – does the asset produce the right quantity of electricity? Can the entire quantity of electricity produced be sold?
- Price risk – what price per unit produced can the asset obtain?
- Balancing risk – is the asset's forecasted production different from its actual output?

A tool to mitigate risk exposure of market revenues is the conclusion of power purchase agreements

- A PPA is often concluded for many years to secure long-term payment streams for an independent power producer (IPP)
- The offtaker buys all or part of the electricity produced to mitigate volume risk
- A defined price per unit is paid to mitigate the price risk
- Contractual regulations on the quantity delivered, the price of electricity and further clauses dealing with risk division can be very flexibly tailored

PPAs define projects' (certainty of) cash flows and are thus key for the financing structure

PF in renewables: what's next after FITs

Table of contents

1. Green Giraffe
2. Offtake solutions
3. The impact of regulation
4. Recent changes and new trends
5. Conclusion



3. The impact of regulation

Appetite for private PPAs depends on the regulatory framework

Support scheme	Examples	Existing corporate PPAs	Corporate PPA potential	Comments
No tariff support	UK (onshore/PV), Ireland Italy (more and more) Spain (limited support)	UK Spain US	High	PPAs needed
Green certificates	Norway Sweden Belgium (old)	Norway Sweden	High	PPAs needed (including the green certificates or not depending on the jurisdiction)
CfD with floor	Netherlands Finland (transitioning) Denmark	Netherlands Finland Denmark	Medium – High	PPA valuable for (i) Cap and floor structure (ii) Auction won at EUR 0 CfD
CfD no floor	Germany UK (offshore) France (offshore)	Germany (on-site only)	Low – Medium	Limited interest for structured PPA, but rather for long-term routes to market
Feed-in tariff	Luxemburg Ireland (closing) France	No	Low	PPAs de facto negotiated with public entity or grid operator

3. The impact of regulation

The impact of market regulation and structure on PPAs

Historically, electricity sectors were regulated monopolies

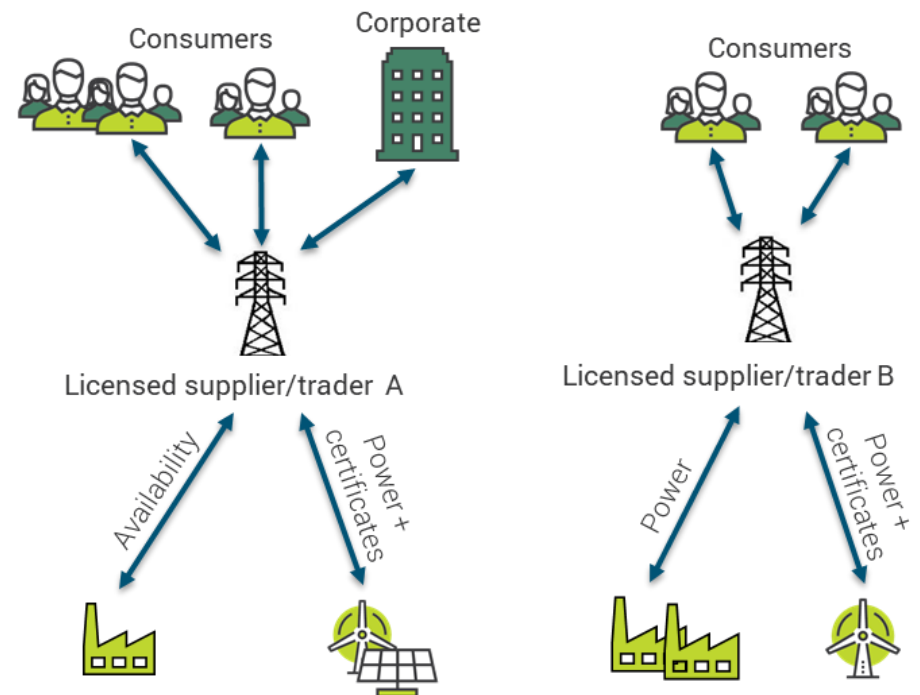
- Authorities regulated generation, transport & distribution
- Results of the electricity sector liberalisation: unbundling and competition increase, as well as the creation of wholesale and retail power markets
- Smaller players and particularly renewables, which until recently benefitted from special rules (priority dispatch, feed-in tariffs etc.) need to enter into PPAs to sell their power on wholesale markets via route to market (RTM) or direct-market-access (DMA) agreements

Market regulation constrains or furthers the use of PPAs

- Ⓐ In monopoly generator markets, no PPAs are used or only between branches of the same organisation
- Ⓑ In a single buyer market, multiple IPPs sell to a single buyer (usually the grid operator)
- Ⓒ In a multi buyer & multi seller market, a generator's route to market is through licensed suppliers/balancing traders to multiple buyers which can include corporates

PPAs in a deregulated market

Ⓒ



3. The impact of regulation

Comparison of the main existing tender regimes – DE, FR, NL, UK

	DE	FR	NL	UK
Allocation	Tender	Tender	Tender	Accreditation
Tenor (years)	20	20	15	15
Price regime	Floor	Fixed	Floor	Fixed
Inflated/indexed	No	Yes, for 60% of the tariff	No	Yes
Negative prices	No support for periods of > 6 consecutive hours	No risk	No support for periods of > 6 consecutive hours	Support cap = strike price
Grid connection	TSO	TSO (via separate tariff)	TSO	Project
Permits	With tariff	No	With tariff	Condition to auction
Devex support	Pre-development by BSH	No	Soil studies & EIA	No

PF in renewables: what's next after FITs

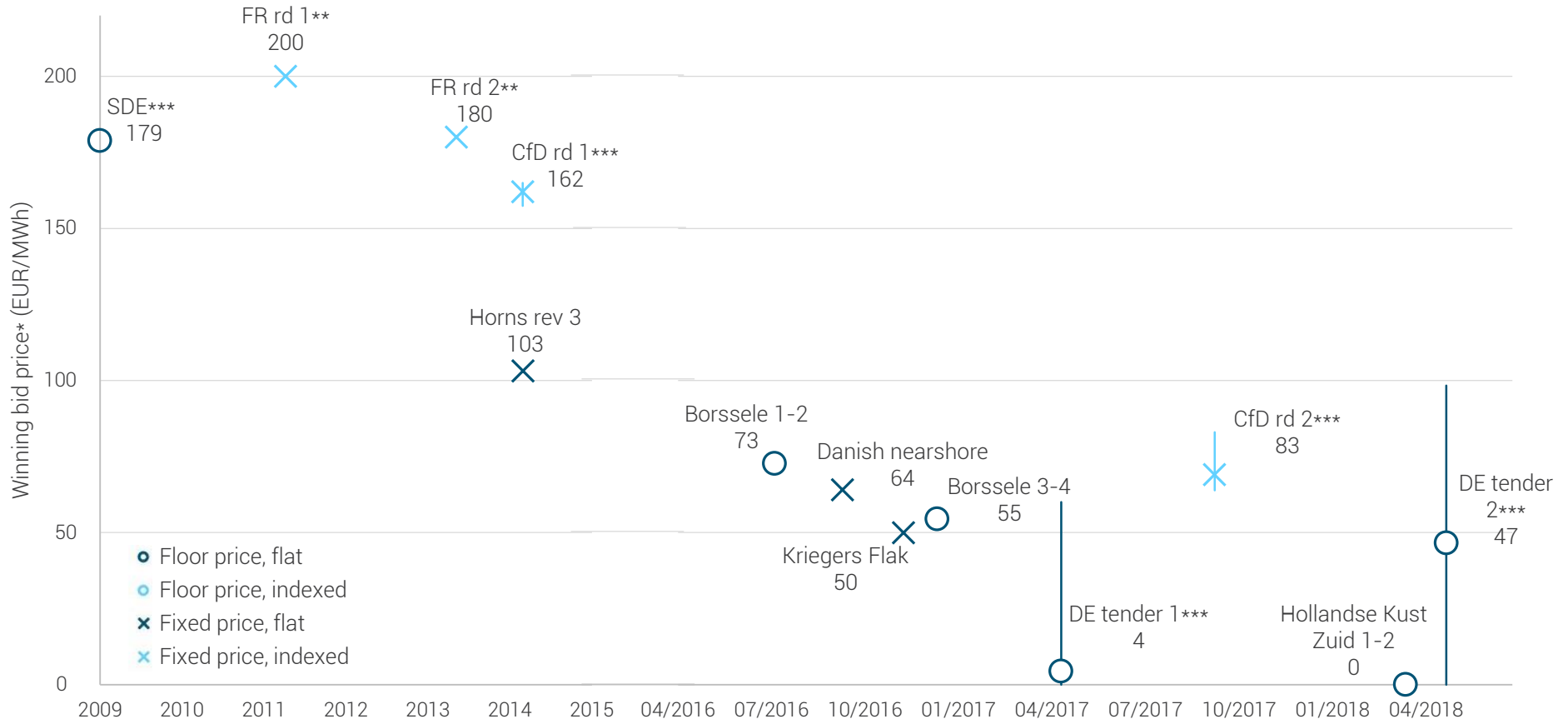
Table of contents

1. Green Giraffe
2. Offtake solutions
3. The impact of regulation
4. Recent changes and new trends
5. Conclusion



4. Recent changes and new trends

Rapid decrease in price across all jurisdictions – the offshore wind example



The vertical line corresponds to the range of prices allocated in a given auction

* Bid prices exclude interconnection costs

** Based on estimates made in public statements (bid results confidential - Green Giraffe)

*** Based on weighted MW-average for all projects awarded

4. Recent changes and new trends

Different scenarios are possible, each having its own challenges

Combining a PPA and CfD

- A PPA could come as a complement to the CfD to protect the project from downside scenarios
- Potential upside scenarios
- Optimised structure with both CfD and a PPA can decrease risks and increase the project's valuation

Relying solely on a corporate PPA

- Corporate PPAs allow both generators and corporates to address their individual circumstances and risks
- Corporates having a significant energy consumption are able to commit to long-term PPAs
- Having the offtaker bear a slice of the price, volume and balancing risk reduces the volatility of the project's cashflows and thus attracts cheaper capital
- Without a CfD, valuation can be enhanced by having a corporate PPA

Relying on a standard PPA

- PPAs are available for all technology types, renewables and conventional alike
- PPAs vary according to the power plant technology, regulatory frameworks, physical infrastructure as well as offtaker's and generator's needs
- The power plant can provide generated electricity, availability depending on technology (e.g. pump storage facilities, gas power) and other outputs such as carbon credits or renewable energy certificates
- Offtakers are usually utilities but sometimes traders, or financial parties. These are unlikely to commit to long-term agreements, which makes it more difficult to raise cheap capital
- Although more difficult for securing the financing, they are nothing new – more than 95% of newly built power plants are in fact financed on the back of a PPA

Choosing the best offtake solution is key to maximise the value of a project

4. Recent changes and new trends

Offtakers in Europe

Three types of offtakers could be interested in RE portfolio

Offtakers	Characteristics
Utilities	<ul style="list-style-type: none">• Utilities are the best equipped parties to take the long-term offtake risks as they have direct access to the end-users• However, PPAs beyond 10-12 years are difficult to strike due to uncertainty on the long-term electricity prices
Aggregators	<ul style="list-style-type: none">• Aggregators are entering the market• They offer a new solution to balancing by combining storage, production from local sources and demand-side response
Corporate offtakers	<ul style="list-style-type: none">• Have goals to reduce carbon emissions as part of their sustainable strategy• Corporates are more inclined to long-term PPAs• More and more companies are becoming active in the sector (e.g. Google)• There are various recent examples in the US and the first ones are now seen in Europe, mainly in the Nordics

PPAs are essential for bankability

Defining a PPA strategy is a balancing act between maximising shareholder value while creating an acceptable risk profile for both banks and shareholders of the project

- Allocating risks to other parties through the contractual structure can be costly but still have a positive impact on the sponsor's return when it allows cheap financing from the banking market
- For the offtake risk, banks used to require full fixed price PPAs in order to mitigate price risk
- Some start to test more flexibility on the offtake contract

Merchant risk can be taken by banks

- They don't like it, but can tolerate a slice of merchant risk
- The risk is dealt with through conservative assumptions (typically low/central scenarios) and higher debt service coverage ratios
- Banks will prefer to have a portion of the revenues at a fixed price, and/or some form of hedging in the early years at least

4. Recent changes and new trends

Sharp increase in the volume of corporate PPAs globally

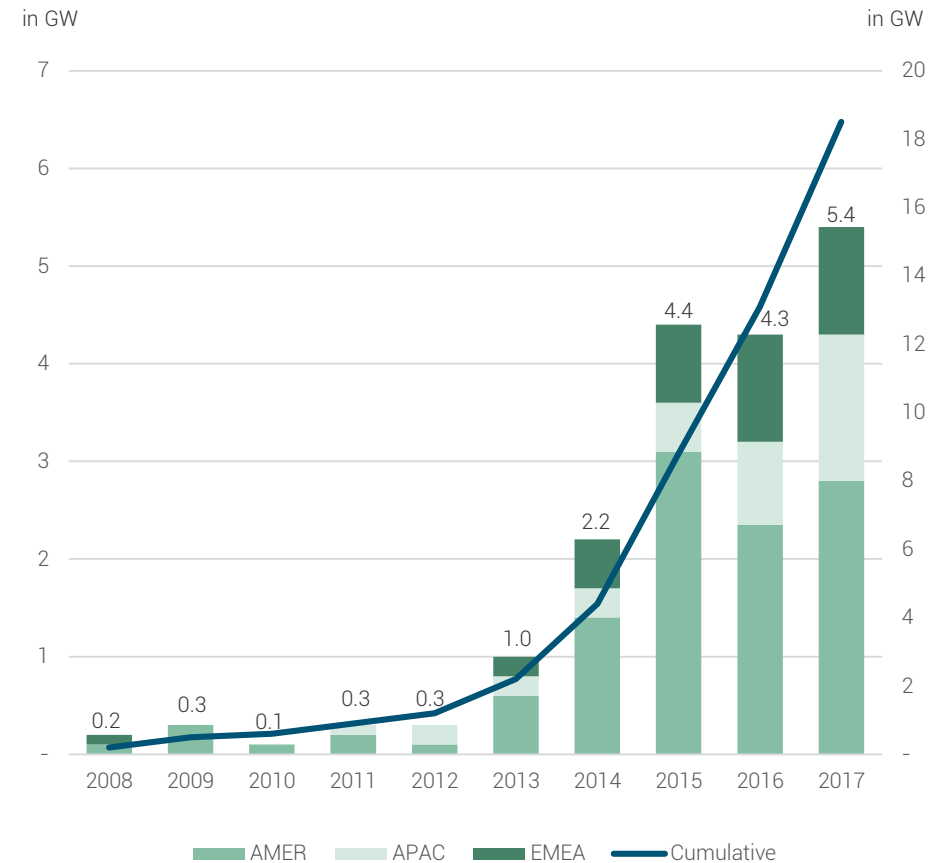
Corporate PPAs are not a new phenomenon,

- First deals occurring ten years ago
- Corporations have signed contracts to purchase the output of nearly 19 GW of renewable generation since 2008 with 76% of this activity coming since 2015
- Deals are concentrated in three main geographies: the US, the UK and mainland Europe

But recent acceleration

- New corporate PPAs for renewable energy totalled 5.4 GW in 2017. This represented a 27% increase over 2016, and was the highest annual figure yet
- In total 43 corporations across 10 countries signed clean energy contracts (excluding onsite PPAs) last year
- Onshore wind accounted for 87% of power bought by the world's top ten corporate offtakers

Global corporate PPA volumes, by region



Source: BNEF, 2018; Note: Onsite PPAs not included

4. Recent changes and new trends

Corporate PPA – matching the expectations of interested parties

Generator goals

- Long-term and predictable offtake price and volume
- New market development & diversification

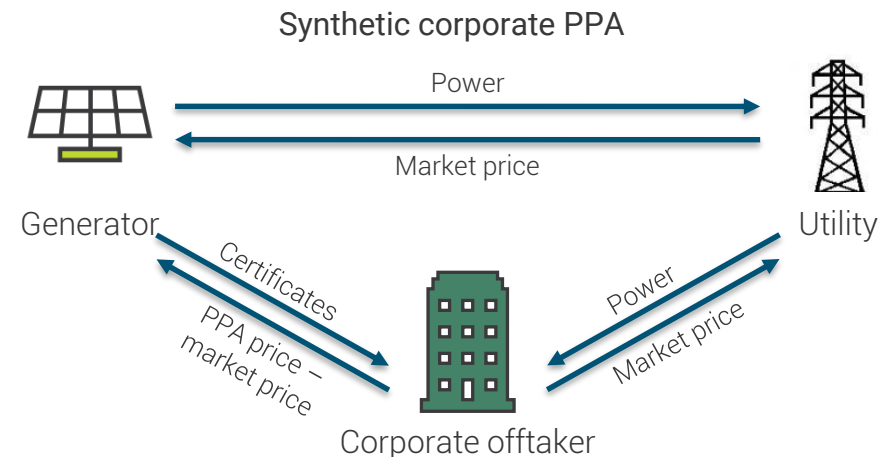
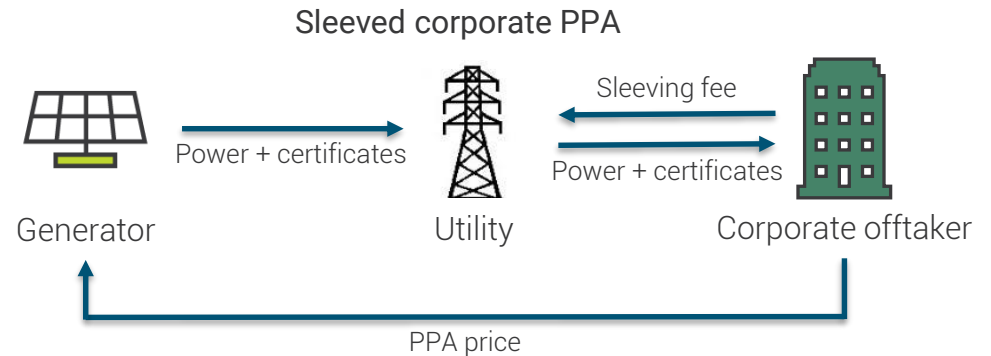
Corporate offtaker goals

- Environmental: reduce carbon emissions as part of a sustainability strategy
- Economic: long-term hedging

Utility/licensed party involvement

- Required to meet regulatory constraints
- Able to take on some risks

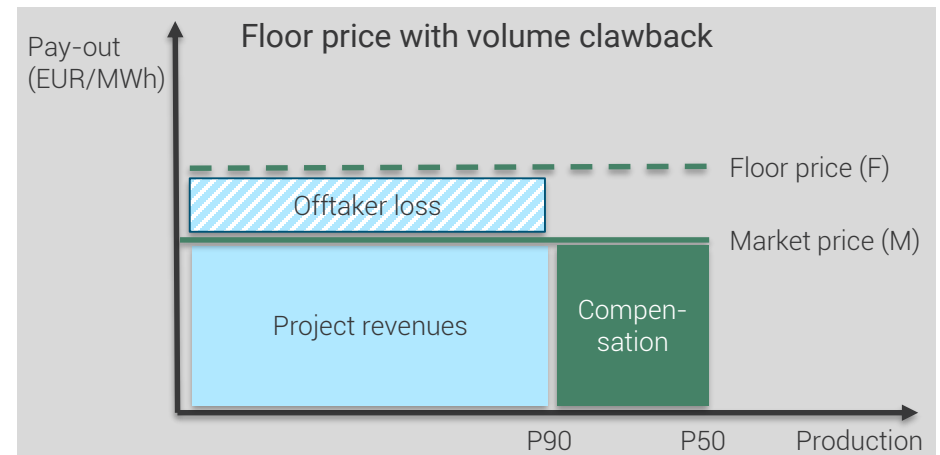
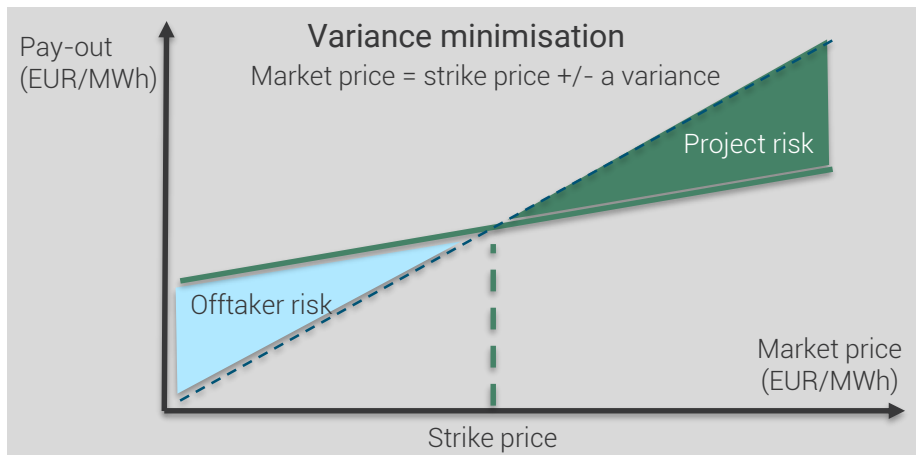
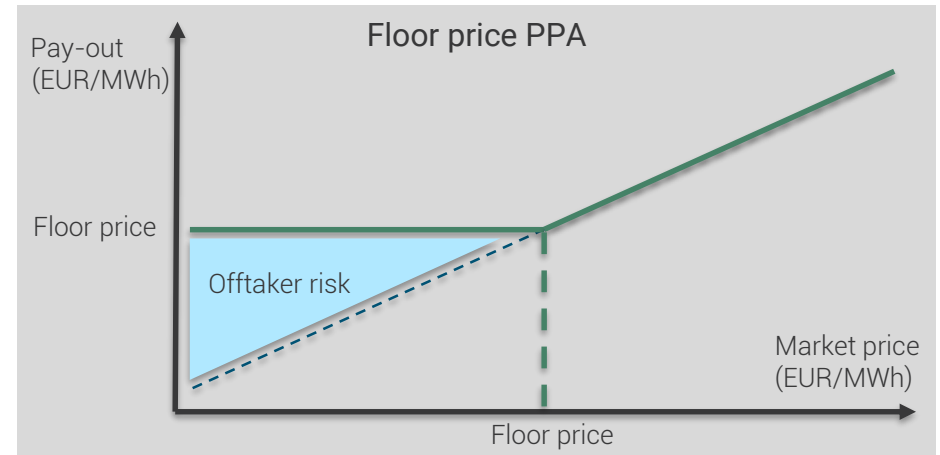
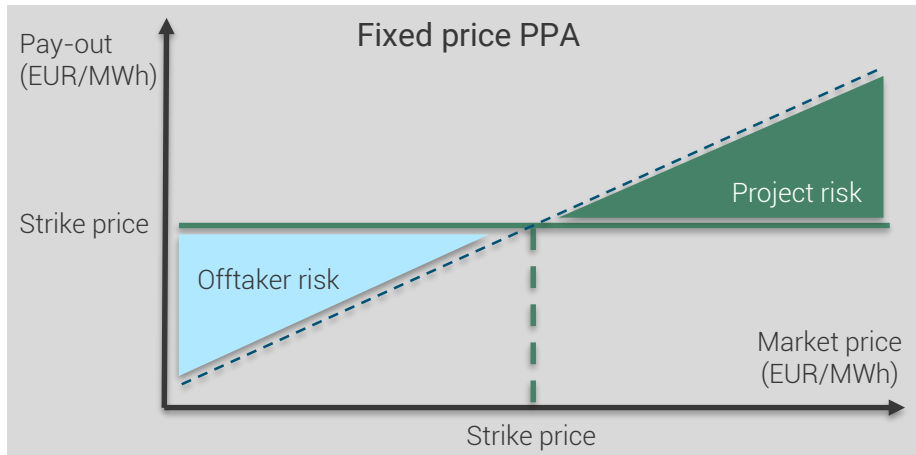
Two types of contractual structures can be used to reach these goals



No standardisation of corporate PPAs yet but several options tested

4. Recent changes and new trends

Corporate PPA – possible pricing structures



We can structure the right pricing mechanism out of a range of possibilities

PF in renewables: what's next after FITs

Table of contents

1. Green Giraffe
2. Offtake solutions
3. The impact of regulation
4. Recent changes and new trends
5. **Conclusion**



5. Conclusion

Corporate PPAs offer a new option in a dynamic offtake universe

PPAs are not new in the renewable energy sector

- Offtake agreements have been crucial for many years, in particular in the countries using green certificate mechanisms
- Large European utilities have led this market in Europe
- Corporates have been very active in the US, contracting directly offtake agreements with the developers

A changing context puts a new focus to structured PPAs

- Old feed-in tariff schemes have moved to CfDs framework
- Renewable energy projects are becoming cost competitive in several countries
- Large corporates want to source their electricity needs from renewable energy sources for ethical reasons

Several offtake structures are available

- The European market will still be dominated by utilities in the coming years
- Other players, aggregators and traders are making the electricity market more fluid
- Corporate PPAs offer a new option, which can be closer to a utility PPA (sleeved PPA) or to a finance hedge (synthetic PPA)

Optimising the offtake and the finance structures together is advisable to go beyond the zero-sum game

Discussion opened to the panel to dive into these key concepts

5. Conclusion

Finding a new balance between offtaker, generator and financiers

In the past lenders have been comfortable with taking a certain level of merchant risk

- Independent of the revenue regime, PPAs have long been contracted with consistent bankability conditions
- Merchant risks have been taken by banks for a long time (ROCs in the UK, previous regulation in Belgium, "sprinter tariffs" in Germany)
- Target remains to find the optimum between allocating the risk to a third party (at a cost in exchange for better financial conditions) or internalising the risk at the generator/project side leading to more conservative financing conditions
- Revolving facilities can be implemented to enable purchase of top-up electricity by the generator if needed to fulfil contracted volume obligations
- Reintroduction of mezzanine debt with more risk appetite for merchant or counterparty risk

Full merchant structures require more conservative financing conditions, such as

- Applying higher DSCR for merchant revenues, the level depends on the source of income and its price structure (e.g. a corporate PPA well above the natural price floor with high counterparty risk, requires a higher DSCR)
- Lower gearing levels (even around 50%)
- Using conservative electricity price assumptions in the bank base case (typically low or mid-low)
- Setting up cash sweeps for what goes beyond the fixed price (see Germany) or using mini-perm structures
- Higher margins from debt funds enable to take more risks on the electricity price for a higher remuneration
- Use of more stringent lock-up criteria or reserve accounts linked to a credit downgrade of the corporate offtaker (if no or insufficient security is provided)
- A combination of all points above

There is no reason to treat corporate PPAs fundamentally differently from regular PPAs



Debt



M&A



Strategic



Contracting

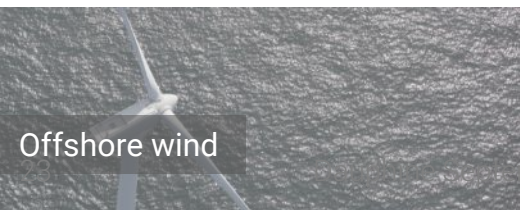


Green Giraffe

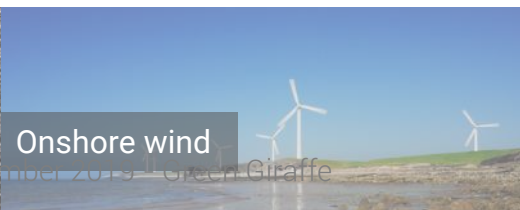
The renewable energy financial advisors

BOSTON • CAPE TOWN • HAMBURG • LONDON • PARIS • UTRECHT

green-giraffe.eu



Offshore wind



Onshore wind



Solar power



Other renewables