



Introduction to Corporate PPA with SEE context

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November 2023



Key topics for today

Definition of Corporate PPA

Selected cPPA trends
& insights

Key cPPA
demand & supply drivers

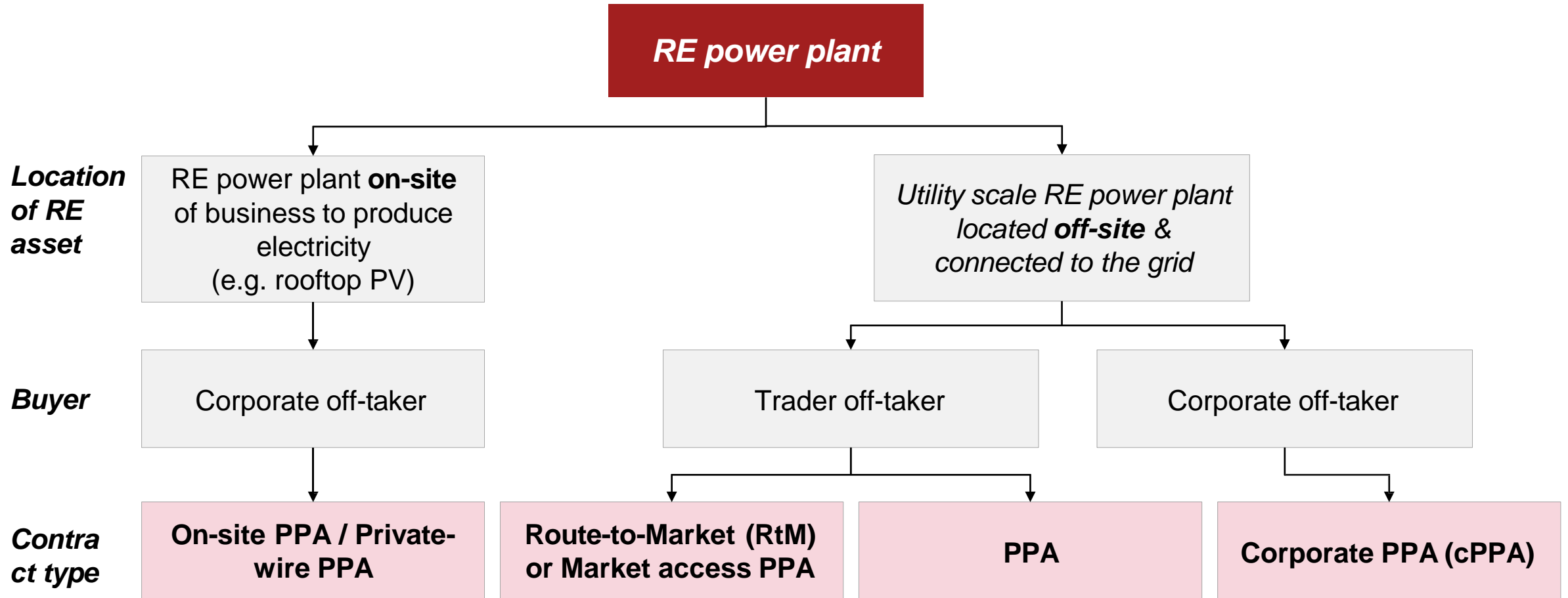
Key cPPA product features

Key cPPA contract/termsheet
elements

Key cPPA uptake challenges in
the region

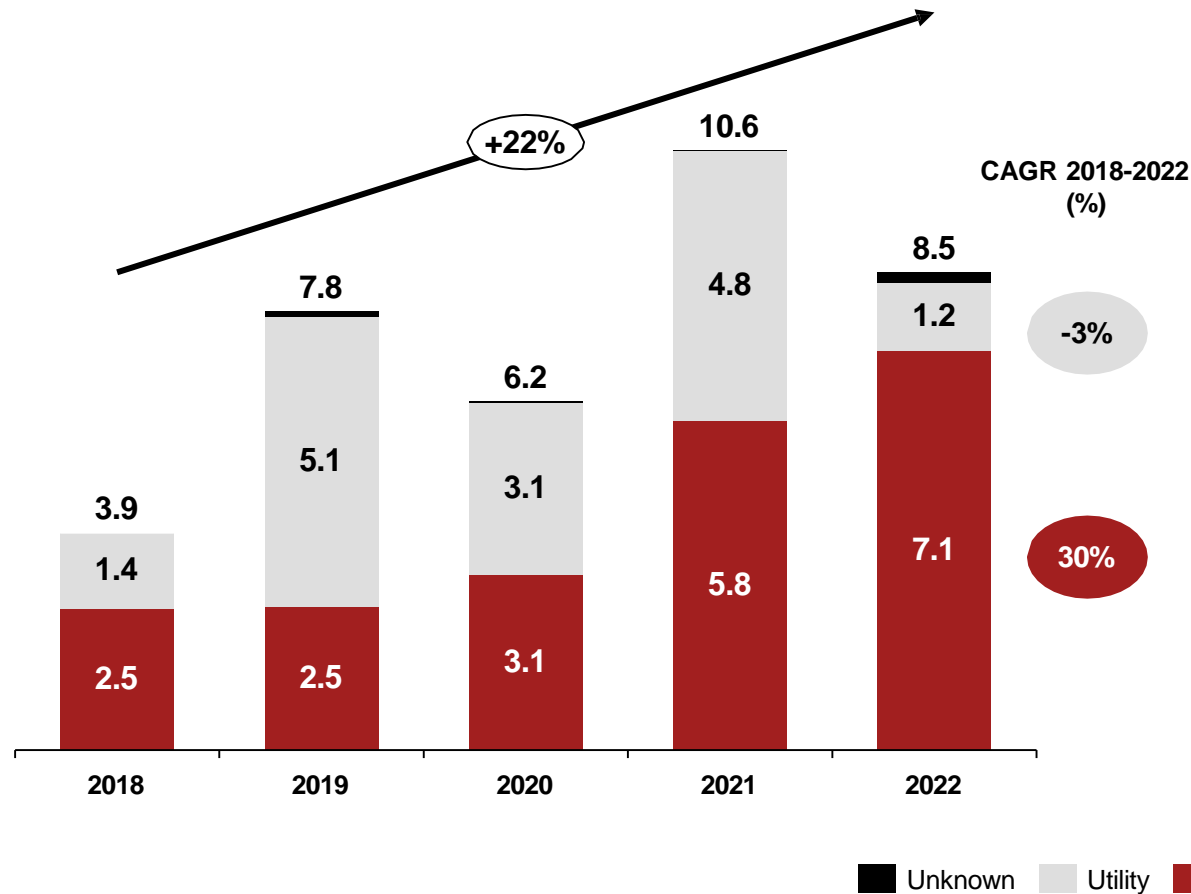
Let's understand which main „PPA” types exist

PPA types & common nomenclature

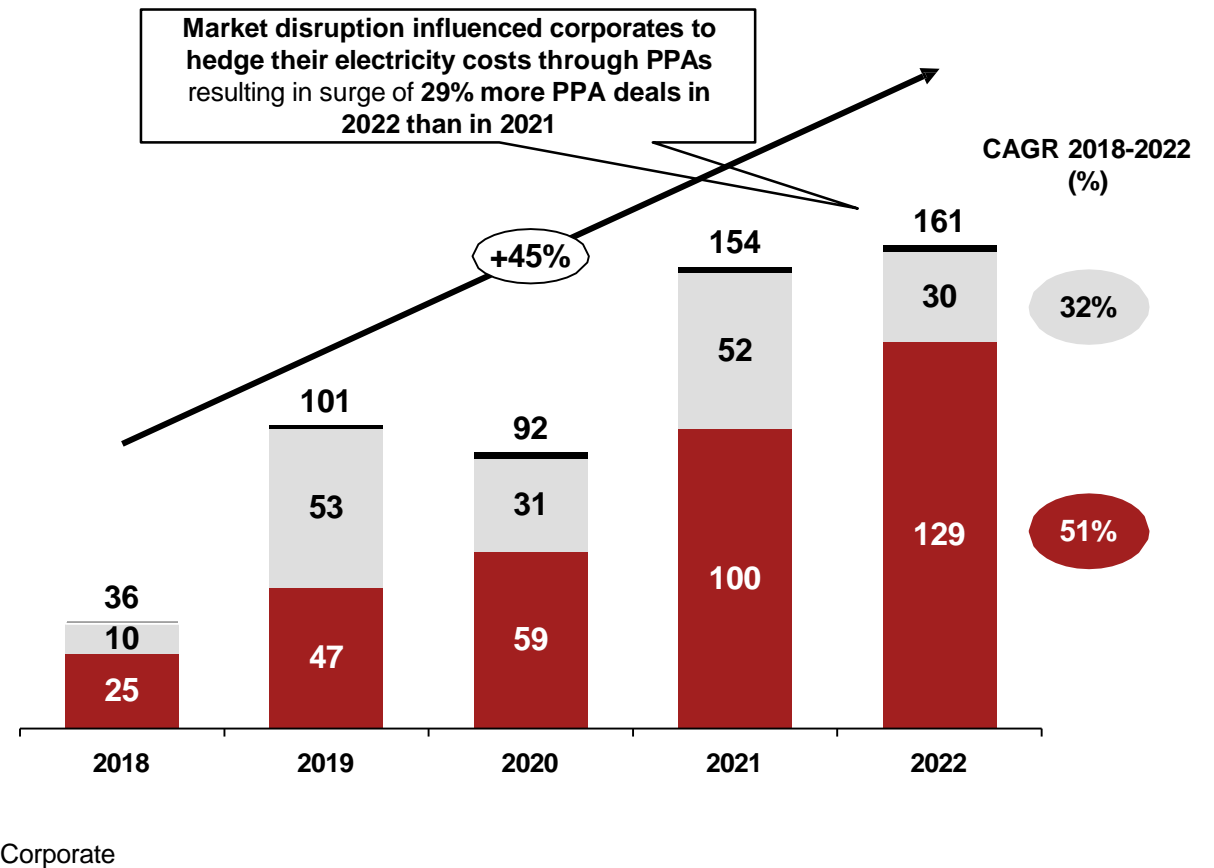


PPA market has experienced double digit growth of 22% CAGR and is mostly driven by corporate off-takers

PPA deal flow by contracted capacity in Europe
GW and %

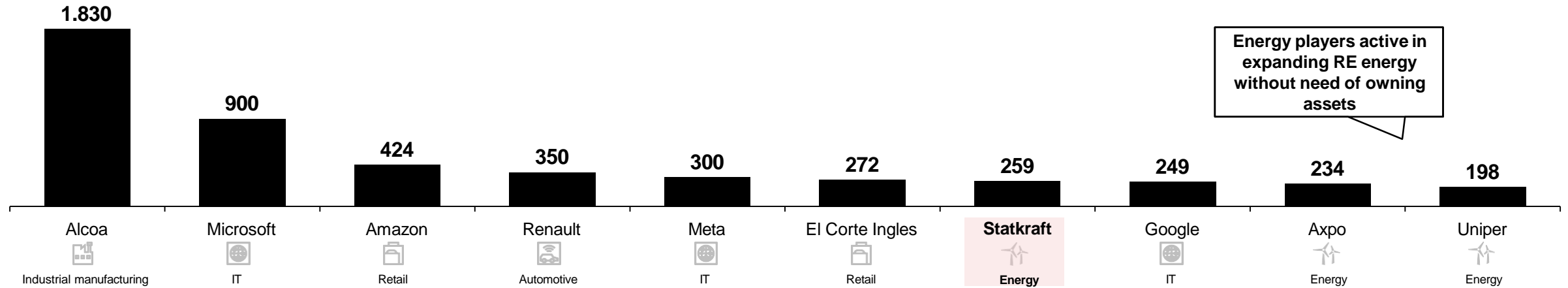


PPA deal flow by deal count in Europe
number of deals and %

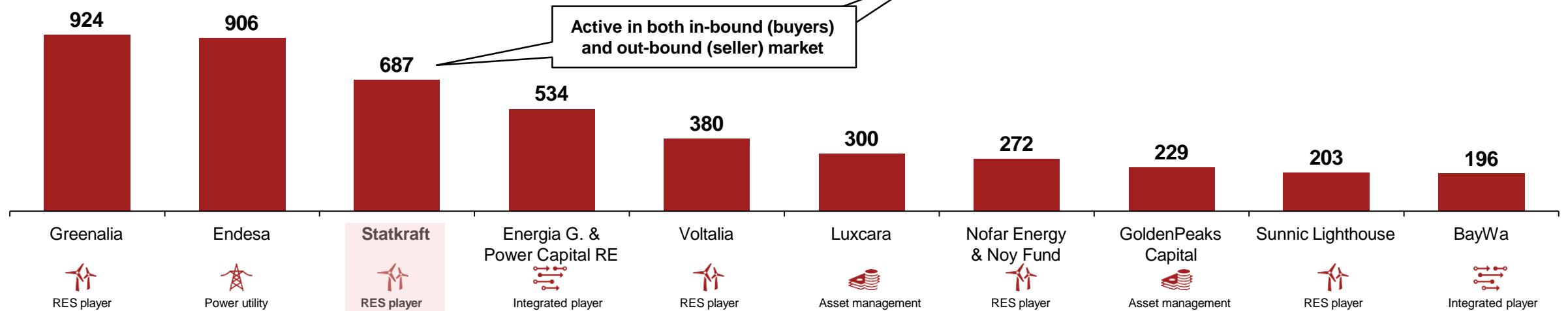


Besides large corporates, energy players are also active in PPA as buyers expanding their RE business without asset ownership

Top PPA buyers, by contracted volumes (MW)



Top PPA sellers, by contracted volumes (MW)



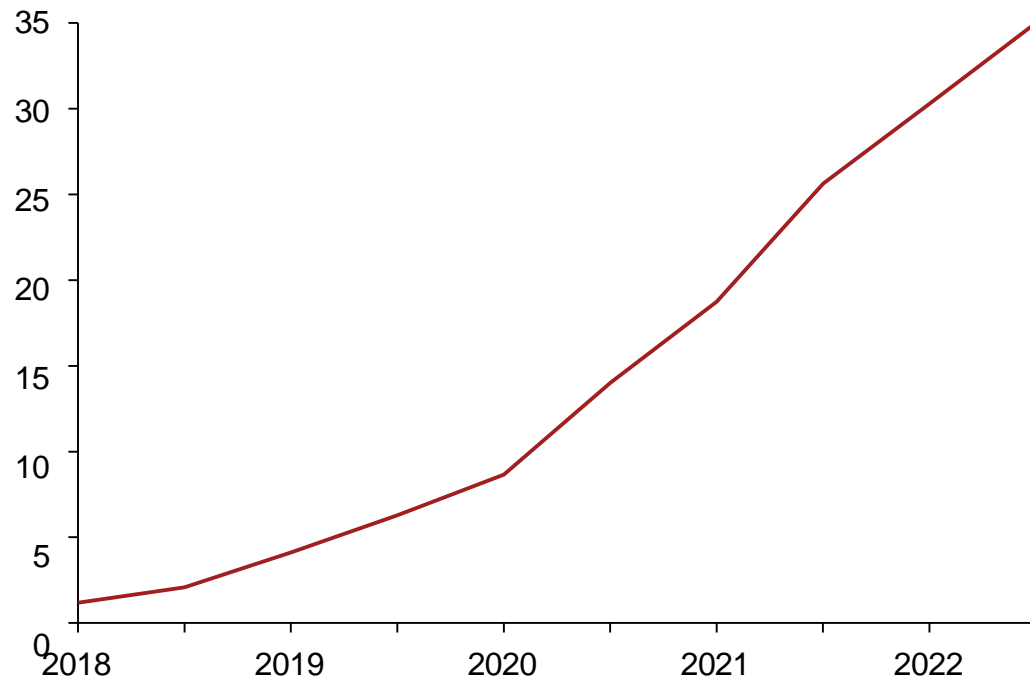
Source: Pexapark, PwC analysis
PricewaterhouseCoopers Savjetovanje d.o.o.

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PPA market in SEE has started to take off more concretely with expected new deals to come in the future (non exhaustive)

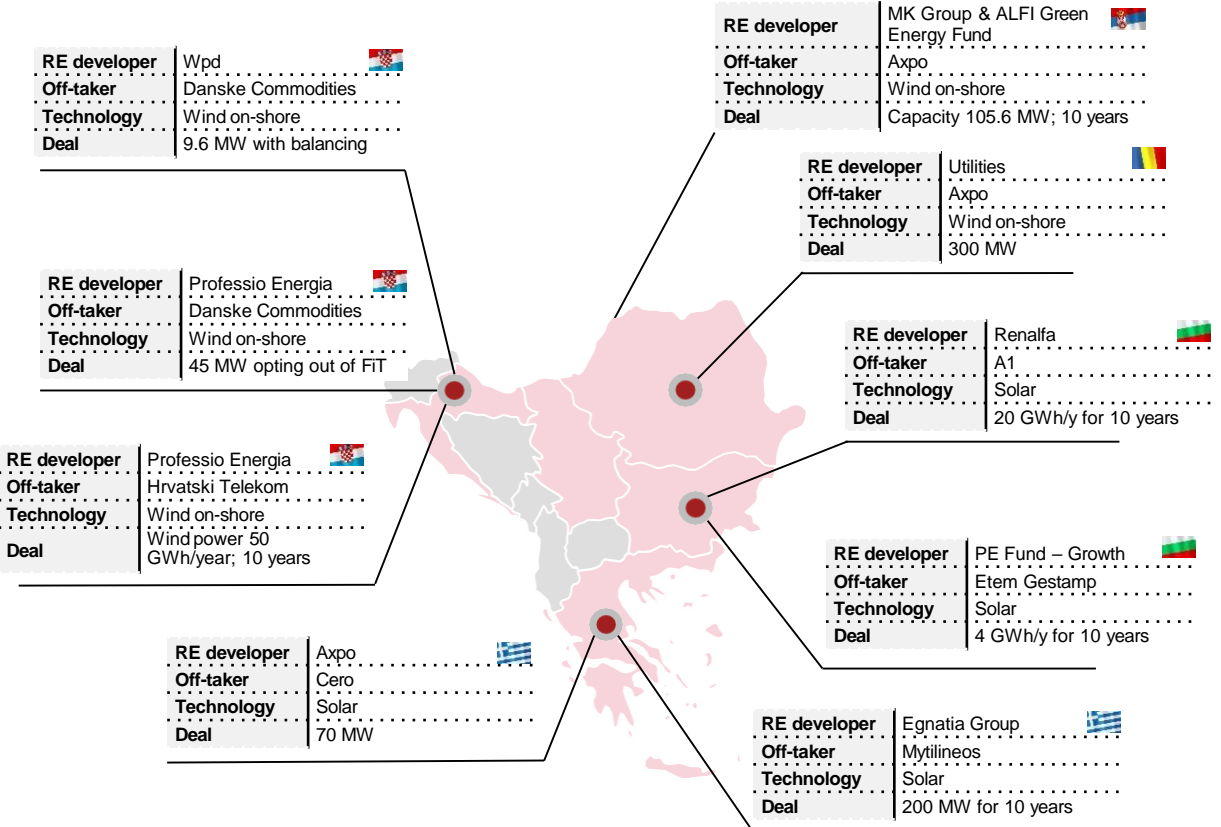
Emergence of Eastern Europe PPA market

of PPA deals signed



Eastern Europe has started to take off with 16 PPA signings announced, up from 10 in previous years & 5 the year before – Poland being the most active

Publicly disclosed PPA deals in region for 2021-23



PPA market is growing and currently dominantly driven by traders, however it corporate users are also expected to come as well

Selected cPPA demand and supply drivers

High electricity prices

(off-taker business case)

Hedging against electricity price volatility

*(off taker or off taker's ecosystem,
RE asset)*

ESG agenda

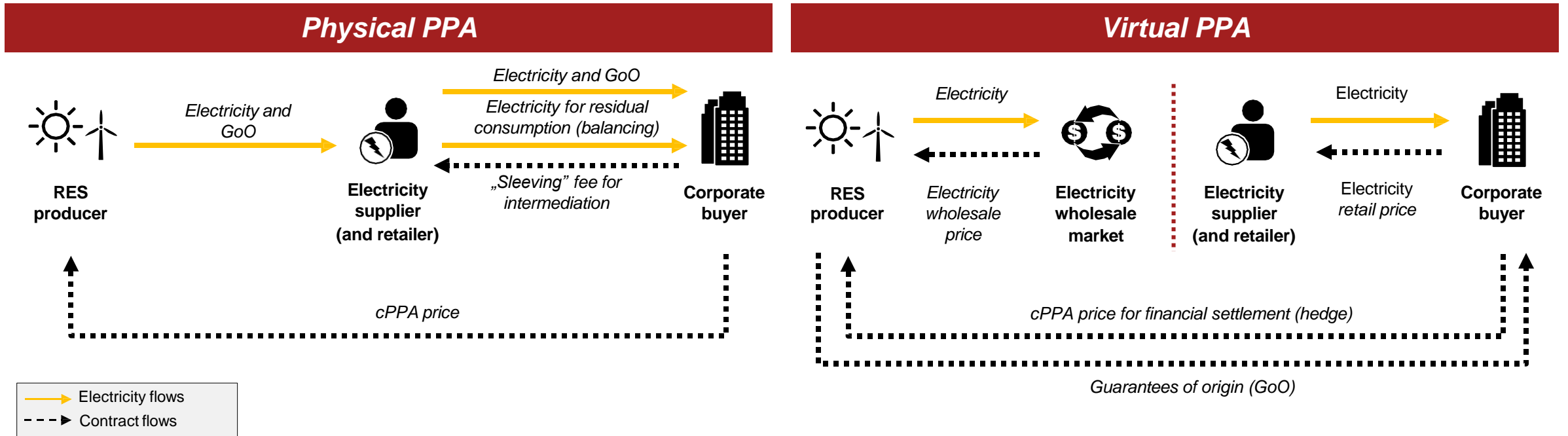
(off taker or off taker's ecosystem)

RE portfolio growth & risk strategy

(RE asset)

Two most common types of PPA are physical and virtual (financial)

Business models for PPA (cPPA)



- Agreement of the **physical delivery of electricity**, executed in cooperation with the supplier (and electricity trader) as a third party (so-called sleever) between the customer and the RES producer
- The physical cPPA **replaces the "standard"** electricity supply contract

- **Financial contract** for protection (hedging) of electricity price
- Virtual cPPA works **in parallel with the standard** electric energy supply contract (with the necessary adjustment of the spot/forward fixed price so that the hedging could work)

Real production vs. forecasted is one of key commercial & technical elements in PPAs impacting also the cPPA price

PaP and PaF characteristics

Pay-as-produced (PaP)


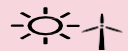







- **Market standard for physical PPA**
- Volume **based on real production** at a given time – typical done on hourly basis
- **RE producer puts the volume risk** (i.e. changes of RE actual production vs. planned) and **profile risk** (i.e. market price of RE asset vs. average market price) **on the off-taker**
- **Lower strike price** compared to PaF model

Pay-as-Forecasted (PaF) – baseload

- **Market standard for virtual PPA**
- Volume from RE asset is **fixed and agreed upon at the beginning of the agreement** – typical done as monthly baseload or annual baseload
- **RE producer takes the volume risk & profile risk**
- **Higher strike price** compared to PaP model









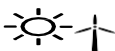
Various associated risks between seller and buyer need to be accounted when designing PPA product

PPA key risks between seller and buyer (off-taker) 1/3



Risk	Description	Possible options
Price 	Opportunity cost in case future electricity prices are different vs. projected ones	<div style="display: flex; justify-content: space-around;"> <div style="background-color: #f8d7da; padding: 5px; border: 1px solid #c3e6cb;">  <p>Fixed price</p> </div> <div style="background-color: #e2e3e5; padding: 5px; border: 1px solid #c3c6cb;"> <p>Price corridors</p> </div> <div style="background-color: #e2e3e5; padding: 5px; border: 1px solid #c3c6cb;"> <p>Market discount</p> </div> </div>
Basis 	The reference price in cPPA for settlement is different than one the buyer is exposed	<div style="display: flex; justify-content: space-around;"> <div style="background-color: #f8d7da; padding: 5px; border: 1px solid #c3e6cb;">  <p>Local Power exchange</p> </div> <div style="background-color: #f8d7da; padding: 5px; border: 1px solid #c3e6cb;">  <p>Near/coupled power exchange</p> </div> </div>
Volume 	Actual production of RE asset differs from planned one	<div style="display: flex; justify-content: space-around;"> <div style="background-color: #f8d7da; padding: 5px; border: 1px solid #c3e6cb;">  <p>Pay-as-produced (PaP)</p> </div> <div style="background-color: #f8d7da; padding: 5px; border: 1px solid #c3e6cb;"> <p>Pay-as-forecasted (PaF) monthly baseload</p> </div> <div style="background-color: #f8d7da; padding: 5px; border: 1px solid #c3e6cb;"> <p>Pay-as-forecasted (PaF) yearly baseload</p> </div> </div>
Profile 	Hourly market price of RE asset is different than market price of baseload product	<div style="display: flex; justify-content: space-around;"> <div style="background-color: #f8d7da; padding: 5px; border: 1px solid #c3e6cb;">  <p>Transferred to off-taker in PaP hourly</p> </div> <div style="background-color: #f8d7da; padding: 5px; border: 1px solid #c3e6cb;"> <p>Borne by RE developer in PaF monthly / annual baseload</p> </div> </div>

Various associated risks between seller and buyer need to be accounted when designing PPA product



PPA key risks between seller and buyer (off-taker) 2/3


Risk	Description	Possible options		
Balancing 	RE forecasting imperfection & matching gaps between forecast & actual profile	Borne by RE asset / seller	Borne by off-taker 	
Counterpart risk 	One party is not able to meet its obligations under the PPA contract (defaulting party)	Parent company guarantee 	Bank guarantee 	Asset collateral & other
Inflation 	Rising prices are impacting the net profitability	No inflation in price / embedded in pice	Inflation defined as formula 	Inflation defined only for part of price
Start date 	Risk of PPA start might be prolonged due to delays in COD of RE asset	Grace period 	Penalty for delays	Combo

Source: PwC analysis
PricewaterhouseCoopers Savjetovanje d.o.o.

 Lower risk impact
 Very high risk impact







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 Trader off-taker typical preference
 Corporate off-taker typical preference

 RE asset preference / easiest option

Various associated risks between seller and buyer need to be accounted when designing PPA product

PPA key risks between seller and buyer (off-taker) 3/3

Risk	Description	Possible options			
Tenor 	Change of market situation in the future vs. agreed terms today	< 5 years	5 – 7 years 	8 – 10 years 	> 10 years
Technology 	Technology specifics impacting PPA business case	Wind on-shore 		Solar 	

Several key cPPA contract/termsheet elements to be negotiated from technical, commercial and legal perspective

PPA Term Sheet structure outline

Element
Seller and buyer
RE asset
Product
Start date and guaranteed COD
Term
Volume
PPA price
GoO price
Invoicing & payments

Element
Balancing
Securities
Commitments
Events of default
Termination payment
Change in law
Assignment & pledge
Force majeure
Change of control
Governing law & dispute resolution

SEE and EnC CPs have additional room to improve PPA environment therefore boost cPPA uptake

Selected key roadblocks (non exhaustive)

Heavily regulated
(below market
reality) retail
prices

Off-takers credit
rating relatively
lower

*Financing
institutions lacking
local experience*

*Power exchange
existence/liquidity*

*Alternative
subsidy and
incentive models
lucrative*

Demand driven road blocks

Supply driven road blocks

Cost agenda still
beats ESG agenda

Corporates not
educated or
familiar with the
model

*Suppliers do not
have cPPA ready
products/incentive*

*Slower uptake of
new RE projects
(eg. permitting, grid
connections, etc.)*

*Traders as off-
takers are less
complex model
for RE developers*

Additional room to improve legal and regulatory framework to eliminate cPPA hindrance (country specific)

Thank you

A row of white wind turbines stands on a grassy hill under a clear blue sky. The turbines are arranged in a line, receding into the distance. The foreground shows dry grass and a dirt path leading towards the turbines. The background features rolling hills and a clear horizon.

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