



Webinar Risk management in renewable energy - FAQ

During our webinar on Hedging price risks in renewable energy and PPAs we got a lot of questions. In this document we answer them.

Questions about the development of capture rates and the cannibalisation effect

- What is your view on the renewable cannibalisation (trend, impact on capture price)?
- Cannibalization of prices due to wind. How will this change into the future? What will storage do to the market?

It is clear that there is a cannibalisation effect of renewable power in many markets and many technologies. We assess the impact of this using fundamental power market analysis, taking into account the growth of the different renewable energy capacities, the growth in energy storage and demand response, the development of other (flexible) assets, and the expansions of interconnection capacities. Our methodology is described in article 8 and 9 of our PPA Insights series (<https://www.kyos.com/ppa-insights-overview-articles/>).

You can also see our capture rate forecasts on [power.kyos.com](https://www.kyos.com/power).

Questions about hedging of capture rate risk

- Hedging of cannibalisation: what are the routes of hedging? Insurance? Trading?
- Can you consider physical hedges, such as partnering with battery storage?

There is not a generally optimal way of hedging the capture price risk, unless with very structured contracts (insurance or PPAs). For example, if you estimated the rate to be 80%, whereas it turns out to be 60%, there is not much you could have done to hedge.

Nevertheless, there are general principles to hedge most effectively the overall price-volume risk:

- Solar projects may be more effectively hedged with peak load products (PPA or market) and with an appropriate shaping of the hedge volumes in the months with most solar output (PPA or market).
- For wind, baseload hedging is generally fine, though seasonal shaping could also reduce the risk. It is also important to take the capture rate into account when determining the total hedge volume.

As we showed in the presentation, it is better to hedge the value of an exposure than the volume. In practice, with a capture rate below 100%, this means the optimal hedge volume is smaller than the expected generation (or P50). With a value hedge (smaller volume), there is less exposure to a situation where the market prices are high and the generation is low.

Furthermore, by evaluating various scenarios in a fundamental model, one can get a good insight in the possible range of future capture rates, and the (cannibalization) factors driving these developments.

Questions about the KYOS software and methodologies

- Does the MC engine simulate daily, even for long term PPA?
- How do you assess long term volatility after 5 years?
- Can you please explain your approach to modelling joint/price volume risk and how do you account for negative correlation between price and volume (e.g., low wind/high price)?
- You mentioned using fundamental model with multiple scenarios to model capture rate to take account of structural changes vs. simulation approach. Can you please comment on the pros and cons of each?

We have published quite many articles about our statistical (Monte Carlo) and fundamental modelling approach. We have published academic and practitioner articles, all of which you can find in the archive on our website (<https://www.kyos.com/knowledge-center/> , then choose Publications).

The most recent publications are the PPA Insights series. They explain in quite some detail our approach to modelling renewable generation assets and PPAs. (<https://www.kyos.com/ppa-insights-overview-articles/>).

We can share more in a personal conversation or demo, so feel free to contact us: info@kyos.com

