Market + policy

Financial Contracts for Differences

Work package 7

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1 Summary

- Governments often support renewables with subsidy contracts
- Contracts for differences (“gleitende Marktprämie” in Switzerland) are one option, which pay the gap between a set strike price and market prices to renewables
- However, conventional contracts for differences (CfDs) distort dispatch and investment decisions of generation assets
- Designing CfDs so that payments are decoupled from an asset’s output improves incentives
- We propose a “financial” CfD, a hybrid between a conventional CfD and a forward contract

2 Contribution to PATHFNDR

Flexibility, the focal point of PATHFNDR, can be seen from two sides, demand and supply. Here, we tackle flexibility on the supply side: How can we incentivize renewable power plants to react flexibility to power market signals.

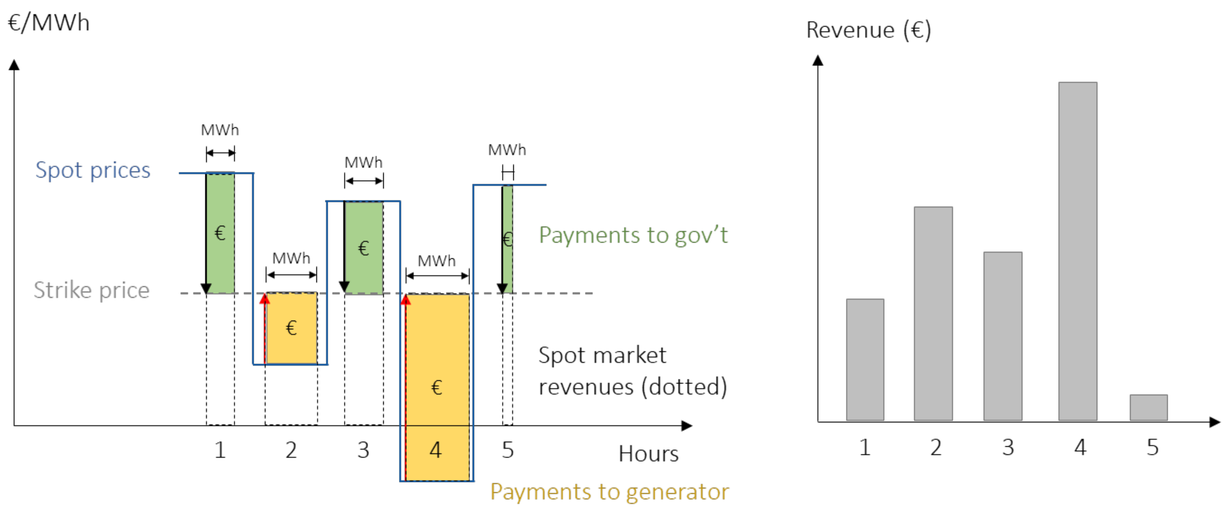
Role in WP7: Policies to incentivize renewables to offer their flexibility to power markets by improving support contract design.

Link to WP1: Modeling in WP1 shows that some degree of renewable curtailment is necessary. This paper shows how subsidies should be improved to incentivize such market-based reactions.

2 Problems with existing Contracts for Differences

Classic CfDs have three fundamental problems

- **Produce-and-forget incentives**: Producers lack motivation to turn off during negative prices or to build plants generating high-value electricity at peak times.
- **Intraday distortions**: CfDs distort behavior in short-term intraday and balancing markets.
- **Unhedged volume risks**: CfDs hedge price risks but not volume risks, leaving producers exposed to price fluctuations.



Payments (left) and revenues (right) under the conventional CfD

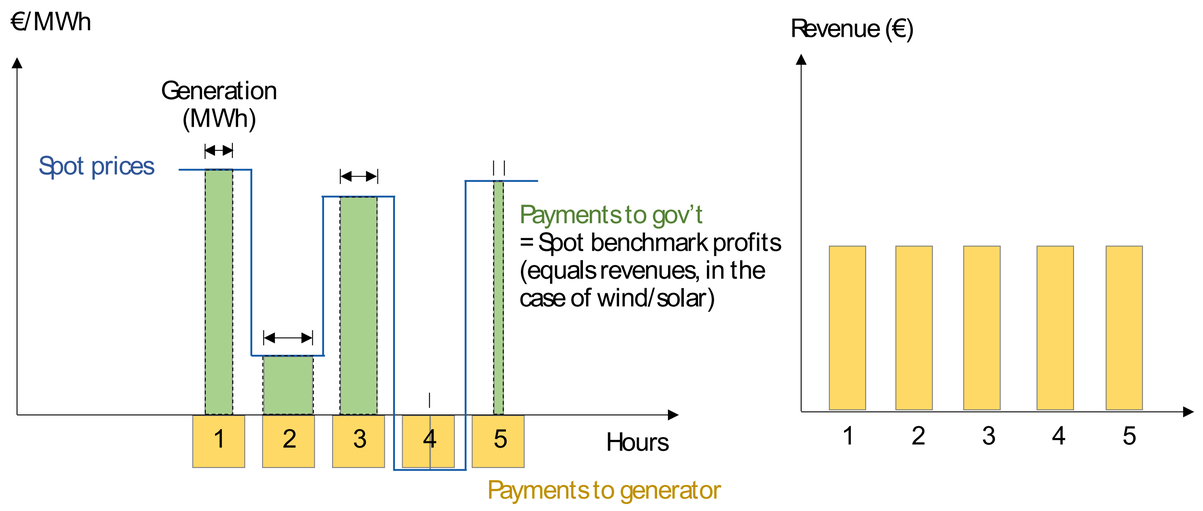
3 Financial Contracts for Differences

Objectives
- Hedging revenue risk (both price and volume risk).
- Full price structure exposure (for efficient dispatch, investment, and repowering incentives).

Auction
- The government sets up an auction to procure financial contracts called “financial CfDs.”
- The contract size is standardized for a 1 MW reference generator.
- Contracts run for e.g. 20 years.

The hourly net payment is the difference between
1. Payment to the generator: fixed hourly lump sum
2. Payment to the government: Hourly profit of a reference generator

Advantages
- Very good financial hedge for the investment
- No power market distortions



Revenue stream in a financial CfD for a wind or solar park

Generators receive a fixed hourly payment (yellow) but must pay the revenues of a reference generator (green) to the government. If a generator’s market revenues match the reference revenues to be paid to the government, then the remaining revenue for a generator is stable and equals the fixed payment from the government (right).

REFERENCES

1 Schlecht, I., Maurer, C., & Hirth, L. (2024). Financial contracts for differences: The problems with conventional CfDs in electricity markets and how forward contracts can help solve them. In Energy Policy (Vol. 186, p. 113981). https://doi.org/10.1016/j.enpol.2024.113981

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