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De-risking renewable energy investments yields high economic value

Renewable energy projects require high upfront investments. To reduce exposure to fluctuations in electricity prices, governments frequently launch support schemes in the form of long-term public contracts, such as Contracts for Difference (CfDs). Beyond providing financial support, these contracts also serve as instruments to reduce investors' exposure to price risks. How different types of CfDs affect investor risk and the subsequent cost of renewables financing is the topic of a new analysis by the Kopernikus Project Ariadne.

Researchers from the Hertie School compare three types of contracts: one-sided CfDs, two-sided CfDs and a comparatively novel “financial CfD”. Using data covering the period from 2014 to 2023, they analyse hourly turbine-level electricity generation from 63 onshore wind parks in Germany. They then apply a project-finance model to quantify the effect of each contract type on the final cost of electricity.

They find that the largest benefit of CfDs lies in reducing investment risks, rather than in providing subsidies. The best-performing contract designs close 60 to 70 percent of the gap between market revenues and project costs through lower financing costs. The researchers estimate that each euro paid as a subsidy is accompanied by 2.4 euros in lowered financing costs, yielding a total economic value of 3.4 euros.

Overall, having a contract in place matters more than the type of contract, as long as it is well-designed. Such well-designed contracts lower the levelised cost of electricity per megawatt-hour by around 30 to 45 percent. Financial CfDs – which maintain producers' exposure to market prices – can match or outperform conventional two-sided CfDs in reducing risk. This suggests that stable revenues and market integration are not mutually exclusive, and protecting investors from price risks does not necessarily weaken their incentive to respond to market signals.

As the share of renewable generation rises, improving investment conditions and supporting the market integration of renewables becomes increasingly important. The analysis shows that, even when investors achieve the same level of profit, different contract designs can lead to differences of up to 22 euros per megawatt-hour in subsidies paid by the public. Improving contract design thus offers a more cost-effective alternative to raising subsidy levels.
