Risk implications of renewable support instruments: Comparative analysis of feed-in tariffs and premiums using a mean-variance approach

Different support instruments for renewable energy expose investors differently to market risks. This has implications on the attractiveness of investment. We use mean-variance portfolio analysis to identify the risk implications of two support instruments: feed-in tariffs and feed-in premiums. Using cash flow analysis, Monte Carlo simulations and mean-variance analysis, we quantify risk-return relationships for an exemplary offshore wind park in a simplified setting. We show that feed-in tariffs systematically require lower direct support levels than feed-in premiums while providing the same attractiveness for investment, because they expose investors to less market risk. These risk implications should be considered when designing policy schemes.