

P50 Risk Solutions



A formidable risk in the renewable energy sector is weather variability, especially for wind energy. Weather variability translates to revenue variability, which has a direct effect on the ability of projects to meet their debt obligations. Banks take a conservative approach to this risk, and this limits the availability and cost of capital for renewables.

P50 Risk Solutions is an insurance product that guarantees a minimum level of revenue generation against the payment of an upfront annual insurance premium. If the revenue during the year falls below this level, the insurer makes up for the difference (up to a maximum predetermined cap). The product is designed so that the customer has certainty of achieving a minimum revenue with 90% probability, increasing the level and reducing the volatilities in the projected revenues.

P50 Risk Solutions is an insurance product that would increase the amount and reduce the cost of long-term debt to the wind energy sector by offering a minimum revenue guarantee to wind farms.

Banks make their investment decisions on the projected levels of revenues. The increase in levels and reduction in volatility of the projected revenue has two hypothesized impacts:

- **Hypothesis 1:** Reducing the cost of financing via:
 - » Increase in the debt-equity ratio
 - » Reduction in cost of debt
 - » Reduction in cost of equity

- **Hypothesis 2:** Attracting new sources of equity and debt capital

This has a net effect of reducing the cost of capital and increasing the availability of new investment sources.

P50 Risk Solutions is not commercially viable purely from the perspective of reducing the cost of finance, but may be useful to attract new sources of capital.

To assess the possible impact of P50 Risk Solutions on the cost of finance, we conducted analysis using data from a case study project. Considering the possible reaction to the terms of debt by different categories of banks, we conducted a cost-benefit analysis assuming three possible hypothetical scenarios for two different product hedge levels – P50 and P75 levels of generation.¹ In each of the six scenarios, the reduction in the cost of financing vis-à-vis the business as usual scenario did not compensate for the cost of the insurance. Thus, P50 Risk Solutions is not commercially viable purely from the standpoint of the reduction of the cost of capital.

Thus, implementation would require some donor capital to support the product's implementation. The risk of default of off-taker payments is a major concern in the Indian renewables sector. The risk of wind variability is considered a second-order risk in comparison. Our analysis indicates that, even if implemented using

¹ Pxx is a level of energy generation such that the probability of the energy generation exceeding it is xx%. In the wind power industry, P50, P75 and P90 are commonly used metrics.

donor assistance, P50 Risk Solutions would not increase investor confidence enough to attract new institutional and bond market investors to the sector, in the current framework.

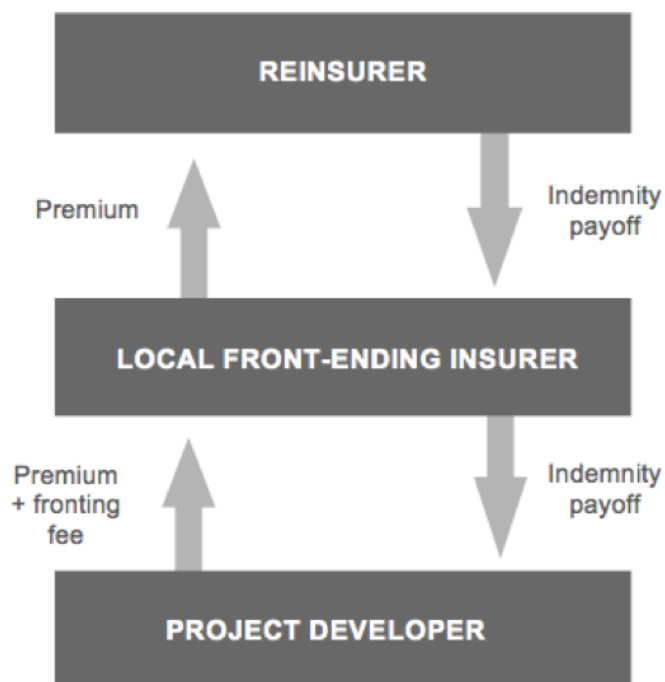
The key takeaways from the analysis of P50 Risk Solutions are:

- The expected benefits in the reduction in the cost of finance do not defray the cost of the insurance product, and thus the product is not purely commercially viable.
- Donor support would be needed to implement the product.
- Even with the aid of donor capital, the P50 Risk Solutions instrument does not demonstrate any significant impact in attracting additional capital.
- In the current risk climate, the risk of wind variability is perceived as being of secondary importance by investors.
- Owing to the above factors, the market demand for such an intervention is limited.

DESIGN

P50 Risk Solutions is structured so that, first, an insurance underwriter prices the insurance using the Wind Resource Assessment of the project as the main source of data. In keeping with IRDA regulatory requirements, a domestic insurer front-ends the insurance with the customer, and signs a reinsurance treaty with

Legal Structure



the underwriter. All payments flow through the conduit of this fronting agency, which charges a facilitation fee in the process.

The insurance hedges the ideal energy generating potential of the wind farm, defined as the wind speed applied to the power curve of the turbine, excluding any losses. If the hedged level exceeds the annual cumulative potential, the insurer makes an indemnity payoff to make up for the difference. There is a predetermined maximum cap on this indemnity payoff. There are two proposed hedge levels for the insurance – P50 and P75 levels of generation.

The India Innovation Lab for Green Finance is a public-private initiative in India that brings together experts from government, financial institutions, renewable energy, and infrastructure development to identify, develop, and accelerate innovative investment vehicles for green growth in India.

Analytical and secretariat work of the India Lab has been funded by [Shakti Sustainable Energy Foundation](#), the [David and Lucile Packard Foundation](#), and the [UK Government. Climate Policy Initiative's](#) team in Delhi serves as Lab Secretariat and analytical provider.