



Application of Parametric Insurance in the Power market: a review

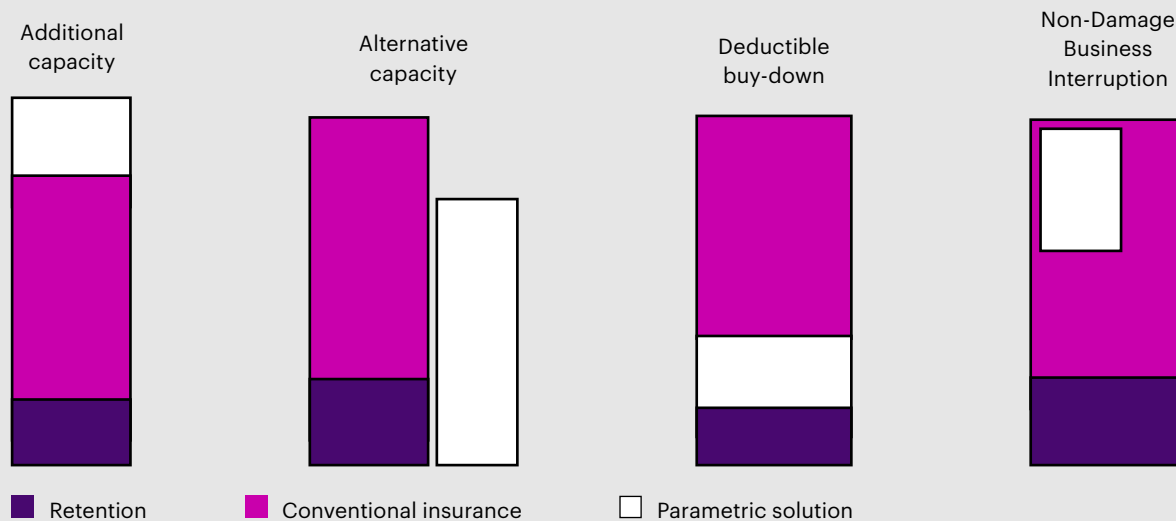
Introduction: a reminder — what are parametric solutions?

Parametric (or index-based) solutions are far from new. Previously, were seldom used, but the concept has been applied as an alternative to insurance for decades. Although not necessarily a derivative, their function is based in the same way that a derivative operates. An index is selected that best represents the risk to be hedged, and if the value of that index moves to a point above (or below) a selected threshold at an agreed point in time, then a payment becomes due according to an agreed pay-out formula. It's as simple as that.

Simplicity is, in fact, probably the greatest benefit of the parametric contract: there is no need for any loss adjustment, and indeed no provision is made for the evaluation of the actual loss in any way. As a result, the speed of contract settlement can be reduced to a practical minimum, usually constrained by the time it takes to report the value of the index, which is almost always tasked to a trusted third-party provider. This may only be a matter of hours in the case of some automated systems or weeks for more manual setups, especially those in which careful verification of potentially anomalous readings are required.

But this very simplicity potentially masks a pitfall: basis risk, which is the risk that the chosen index does not reflect the underlying physical or financial loss very well. Of course, the worst instance of this is when a major loss occurs but little or no payment falls due under the terms of the contract. The reverse is possible and a payment may fall due under the contract, yet little or no loss has actually been incurred. While the latter may seem like a windfall — albeit one for which a premium was properly payable — these mismatches represent an unacceptable lack of precision for the original risk management purpose. Indeed, such insurances in some jurisdictions require an element of proof of loss for these contracts to be recognised as true contracts of insurance. In these cases, 'proof' may often be adequately satisfied by self-certification that 'a' loss has occurred or, perhaps, a loss (financial impact from all sources) that is at least as large as the pay-out. To require a high standard of loss evaluation would undermine the key benefit of a parametric contract.

Figure 1: Examples of parametric solution deployment



Source: WTW

Why use parametric coverage for power risks?

A facetious answer might well be: why not? The idea of a transparent policy and speedy pay-outs is attractive in and of itself. Furthermore, a decision need not be all or nothing, as parametric solutions may be considered not as an alternative to indemnity-based insurance but as a complement, or perhaps as a supplement to the existing conventional insurance programme.

WTW views parametric components as sitting within an existing insurance programme rather than somehow displacing tried-and tested coverages. Such integration may take the form of the examples shown in Figure 1 below.

Indeed, viewing parametric coverage as a means of addressing differing needs from traditional coverage may ultimately offer a broader perspective on risk management than covering the costs of Physical Damage, Business Interruption or Liabilities. In particular, the prospect of rapid liquidity in the immediate period following an event, where funds can be deployed (as is the case with a parametric pay-out) for whatever purpose is most pressing can confer genuine value.

This may especially be the case in the aftermath of a severe natural catastrophe, in which the physical and financial consequences may be quite unpredictable and unexpected. A rapid infusion of cash to respond, mobilise, repair, and assist could literally be a matter of life or death.

When extreme events impact the physical assets of an installation, it may be tempting to consider only the issue of whether sufficient insurance has been taken out to cover the physical and financial consequential losses to the impacted assets. But what about the immediate and subsequent wellbeing of staff and their families? Timely financial support and intervention for members of staff

whose families may have been displaced, or worse, can provide an economic lifeline. Such support is good for individuals and for the company in terms of its resilience and from an ESG perspective.

Insurance where cover may be unavailable

It has been pointed out that parametric insurance solutions may provide effective and flexible enhancements to existing, traditional insurances that are routinely taken out by power and energy businesses — where they can. But what about circumstances in which the existing insurance offerings leave gaps in the risk register?

Parametric solutions may be able to offer protection where none is otherwise available in any conventional form. There's a straightforward reason for this — and it's not that parametric underwriters somehow have special powers that others do not. It comes down to the fact that a parametric policy seeks to convert the intricacies and challenges of an indemnity-style policy into an indexed metric. Underwriting the index is a relatively simpler matter of analytics, whereas underwriting a complex risk — with all its specifics and uncertainties — requires expertise and experience.

An industry example of this might be the circumstance in which traditional natural catastrophe capacity may be all but exhausted, but re-thinking the risk in terms of a parametric structure in the relevant region or catchment may offer a solution.

In catastrophe-exposed areas — say for earthquake or cyclone — it is likely that such events will cause collateral loss, not just to generation assets but also on a wider area basis, including access and associated infrastructure. A well-structured pay-out from a parametric programme may therefore provide a much needed contribution to extra expenses resulting from the event and non-damage business interruption (NDBI).



Similar benefits have been achieved by implementing parametric cyclone cover to protect against the extra expense incurred by the occurrence — or even the threat of the occurrence — of a powerful cyclone. As assets may be located remotely with limited access, the need to take early preventative action to evacuate personnel can become critical and costly. A parametric cyclone contract can cover this obligation in a way that a conventional policy cannot and may help to reduce provisioning costs for the project as a whole.

Protection against low levels natural resource

Insurance solutions against physical loss or damage are well developed for the power industry. Such contracts are highly effective and form the mainstay of traditional insurance protection for the sector. But what about the situation when there is no insurable event — nothing happens — and no power is generated? This eventuality is well illustrated in the renewable sector, where low wind, low solar, and low hydro resource results in low (even no) energy production.

For as much as a parametric may provide valuable coverage in the event of too much of a given element, it is equally applicable in the event of there being too little. The approach and methodology are entirely the same, if turned on its head.

Lack of supply of demand

It is worth harking back to the origins of the parametric market, at least to that early period when the market took off from being a rather small, niche ‘weather derivative’ offering to the more developed place it is today. At that time, at or before the turn of the century, the unsolved challenge was less about a lack of power production but more about demand.

Price hedging was already a sophisticated activity using appropriate financial instruments, but volume was another matter; so the concept of using a temperature index as a proxy for demand found its place. An unusually warm winter, or indeed mild summer, results in a reduction in power and energy consumption; indeed, that relationship can be observed with a high degree of correlation. So, whilst demand per se cannot be hedged, a weather index can be. Temperature data are usually widely and reliably available and these can be associated with demand for key hubs or nodes.

Now the concept of a Heating Degree Day (HDD) or Cooling Degree Day (CDD) Index is widely recognised and can be used by either buyer or seller of power to manage their exposure to low demand.

This cross-over between insurance and derivative methodology was really the starting gun for a new way of thinking which we now refer to as parametrics. Since those early days, the scope of application for such solutions has widened out of all recognition and now include financial exposure to the effects of (in no particular order): precipitation, wind, hail, snow, wildfire, pandemic and footfall, to name but a few.

The ability to deploy parametric solutions has also been greatly facilitated by the expansion and ease the availability of data, which is the currency of any parametric product. In the early days of index-based insurances, there was an almost total reliance on finding a local ground station for rainfall measurement; today, there are alternative sources of data available, including modelled, so-called gridded, data sets, which can provide daily estimates of rainfall at any point on the planet at a resolution of 5km by 5km. This is sufficient precision for use in the power market.

Climate: don't look back!

Parametric solutions are often appropriately associated with solutions for intractable weather and natural catastrophe perils. Climate risks are understood to act over a longer time period and are therefore not per se insurable, whether by parametric or other means. However, the impact of climate change is not an abstract construct of a future which is yet to come; it is with us now and is manifested in the increased frequency and volatility of weather events. Parametric solutions that are available today therefore play an important part in managing these heightened exposures.

For power businesses, as for so many others, the climatology of the past is no longer a reliable indicator of the near future. Now is the time to review — or re-review — how extreme weather events may impact critical assets and operations, as parametric insurance can offer cost-effective and targeted solutions.

Conclusion

Power companies must manage a complex and dynamic set of risks to ensure the long-term sustainability of their operations. This requires a comprehensive risk management strategy that considers the unique risks faced by the company and the industry, as well as the potential impact of these risks on the company's operations and financial performance.

Tried and trusted indemnity-based insurance solutions provide the bedrock of a power risk management strategy; however, there are gaps in coverage and a change in insurance market appetite for some of the more challenging hazards that risk managers face. Here innovative parametric solutions are a valuable additional tool for companies to manage and transfer such risk, offering tailored designs, simplicity of operation and predictability of outcome.



Julian Roberts is Managing Director, Risk & Analytics (Alternative Risk Transfer Solutions), WTW.

julian.roberts@wtwco.com

