

Photovoltaics (PV)

# Power the future

Innovative insurance solutions for the PV industry and investors in renewable energies



The international photovoltaics industry is facing challenges; but also tremendous opportunity. In this environment, investors and lenders value investment security.

While accustomed to growth and expansion, the sector is confronted with price erosion and optimistic ROIs which are exerting increasing pressure on all stakeholders. PV module manufacturers need liquidity to keep innovating and growing, and to survive challenging times.

Investors and banks are also keeping a close eye on the situation. While falling costs can result in substantial returns, long-term investment security in the form of stable performance and reliable warranties is becoming more important.

**Corporate Insurance Partner offers manufacturers and investors innovative, global risk management solutions to deliver greater planning security to the entire industry. This stability helps navigate uncertainty and promote the renewables industry.**

### A win-win situation for the industry

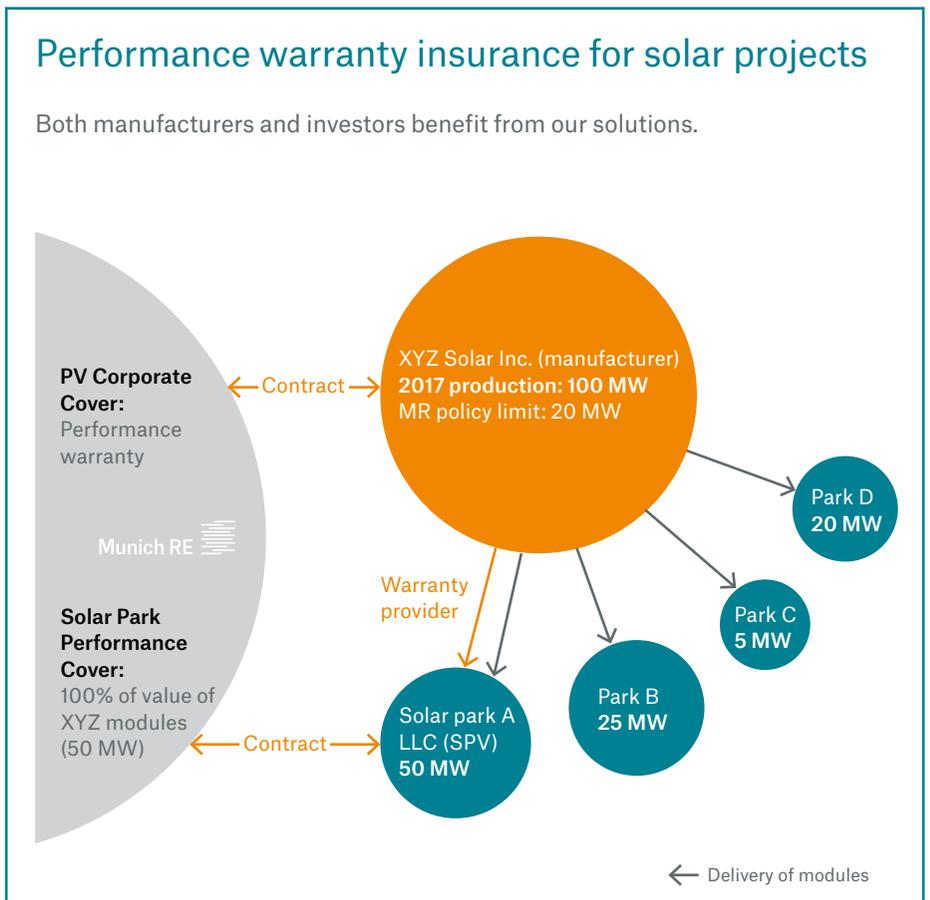
Corporate Insurance Partner offers innovative solutions tailored specifically to the requirements of market participants, thereby supporting the entire industry as it continues on the path to embracing new forms of energy.

### For PV manufacturers: more liquidity with the PV Corporate Cover

Our PV Corporate Cover insurance solution supports manufacturers in ensuring that module performance meets the guaranteed levels in the long term. The result: manufacturers have the liquidity they need to cope with unexpectedly high claims from performance warranties – for periods of up to 25 years.

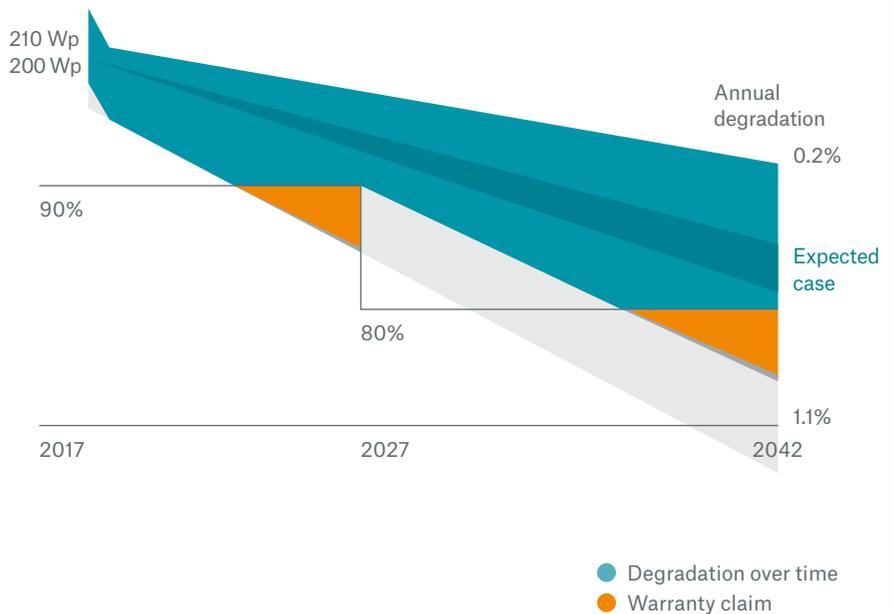
### For investors and project developers: investment protection with Solar Park Performance Cover and Lack of Sun Cover

Together with PV Corporate Cover, our Solar Park Performance Cover protects investors in PV plants against the insolvency of the manufacturer of the modules. With our Lack of Sun Cover, we offer an insurance solution that can counteract the volatility of the weather and the consequent fluctuations in the power output of PV parks.



## Example of performance-degradation claim scenario

Our solution covers all the modules produced within the insured production period and its associated long-term warranty liability period (up to 25 years). Even if you incur losses due to warranty obligations, you can still achieve a certain profit margin.



## PV Corporate Cover: Protect your balance sheet

**Greater stability and financial flexibility for PV module manufacturers: we offer long-term protection from performance deterioration in PV modules. Your warranties are credible; your balance sheet protected.**

PV module manufacturers offer 25-year performance warranties as a market standard, so they carry a significant financial burden on their balance sheets, along with credit-worthiness and industry reputation. Warranty issuers must honour their obligations and back them up with reserves.

Provisions in manufacturers' balance sheets for this sole purpose are a tight constraint on capital. However, these provisions often cover just a fraction of the liabilities that could actually arise. Just one series of losses could jeopardise a manufacturer's market position or, in the worst case, its very existence.

Corporate Insurance Partner's PV Corporate Cover mitigates this risk by covering the warranties of modules sold within the policy year. Despite a liability period of 25 years, the insurance is non-cancellable, to provide the planning and contract security needed for a manufacturer to build its business. Manufacturers optimise liquidity and financial stability, even with unexpectedly high warranty claims. This not only cultivates certainty in strategic planning, it also instils confidence among end-user customers and investors.

Where a manufacturer opts for PV Corporate Cover, its clients (owners, banks and investors) qualify for our specialist product for PV park stakeholders. Clients of manufacturers who do not require PV Corporate Cover also qualify for this product by means of the PV Framework Agreement. Under this non-insurance agreement we conduct our technical due-diligence that enables a lean underwriting process for PV parks.

### Your advantages at a glance:

- Protect your balance sheet
- Count on reliable security in difficult times
- Increase degree of business certainty
- Reduce risk provisions and capital costs and enhance shareholder value

## Your advantages at a glance:

- Protection against module underperformance
- Protection against insolvency of the modules' warranty provider
- Transfer of Munich Re's expertise and credit-worthiness directly to your Solar Park
- Preferential financing conditions
- Higher price on the secondary market
- Availability in financing phase (pre-construction)

# Solar Park Performance Cover: Protection for investors

More security for solar park owners, investors, contractors and operators. Corporate Insurance Partner protects you against underperformance and insolvency of the modules' warranty provider.

Security of investment is a major concern – and an even greater concern during industry developments that lead to many manufacturers disappearing. Insecurity threatens projected cash flows and can make a project uneconomical.

This has left many investors in a situation in which the technological risk of underperforming PV modules can no longer be transferred to the warranty provider and must be carried by the investors themselves.

Our tailor-made Solar Park Performance Cover can hedge that risk at the time of financing or during module procurement. If the manufacturer later becomes insolvent and the modules underperform, Munich Re

will pay financial compensation directly to the investors with dedicated capacity allocated to an individual PV park. Limit, triggers and indemnification can be customised to specific requirements. While the premium is a one-off payment, the insurance is in place for a period of time up to the debt period for new parks with capacities greater than 15 MW. Where multiple, smaller parks are to be insured, we can offer a combined portfolio solution.

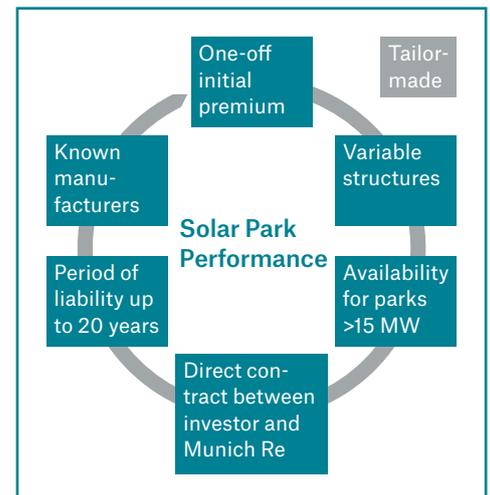
In addition, we are happy to introduce our new Solar Park All-Round Cover which goes beyond the insurance of modules by covering yield deviations and inverter failures. The yield section in particular, based on deviations of module performance, inverter availability and solar radiation, provides additional planning and revenue certainty for your projects.

## Comparison of performance warranty covers

Our covers compared. The Solar Park Performance Cover is adapted to the financing structure, but tracks the same technical triggers as the Corporate Cover.

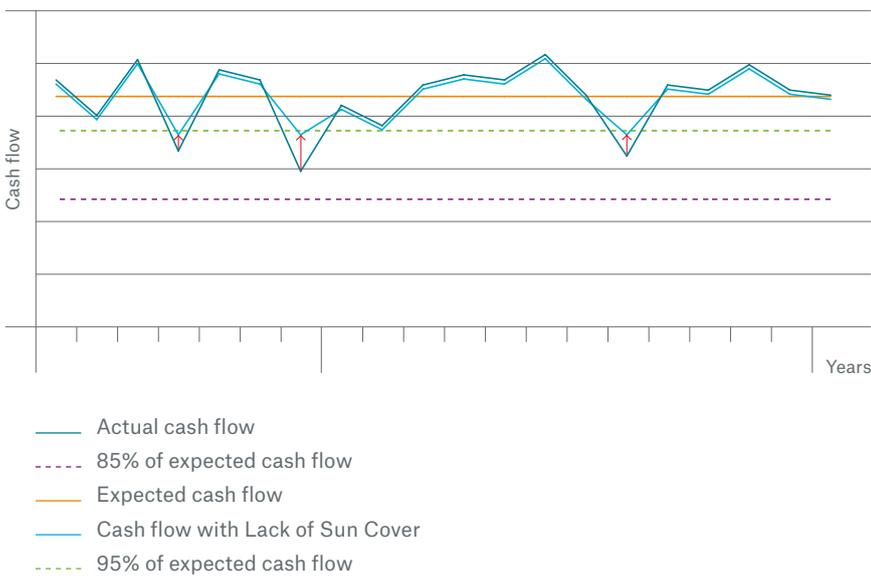
	PV Corporate Cover	Solar Park Performance Cover
Policyholder	Module manufacturer	Solar park SPV or equity holder with owner/lender as beneficiary
Deductible	2-5% requirement (annual)	No deductible, but insured's "skin in the game" is secured by additional trigger
Co-insurance	10-20% loss shared by manufacturer	No co-insurance/quota share (see above)
Policy limit	10-20% of module (revenue of insured production year)	Purchase price of all modules in the solar park
Policy term	Warranty period, non-cancellable, up to 25 years	Individual, non-cancellable, up to 20 years
Waiting ("black-out") period	Minimum 2 years	No blackout period, follows terms of debt/equity financing

Performance degradation triggers = faulty manufacturing/material defect/material ageing



## How our solution protects you in less sunny times

The chart illustrates how a Lack of Sun Cover can protect your cash flow in a 95% to 85% corridor.



## Your advantages at a glance:

- Rely on healthy returns, even in cloudy years
- Attract investors and buyers
- Provide a “yield guarantee”

## Lack of Sun Cover: When there is less sun than expected

While solar energy is considered the most abundant energy source on our planet, it is by no means a constant source. Our Lack of Sun Cover supports investors and operators in mitigating the risks of a reduced output and thus a reduced return on investment.

Many aspects influence the power output of a PV park: system losses caused by damaged solar modules, inverters or other technical problems can be detected and fixed easily. Weather volatility, however, makes planning much more difficult.

### Focus on irradiation

In many cases, business plans rely on solar irradiation maps for the location of a PV park and hope that, over a period, the calculated irradiance will be as projected. Fluctuations in irradiation caused by longer winters, more snow or other adverse weather situations, will influence the output of the PV park. Our solution focuses on the irradiation of PV parks.

### Mitigate risks with weather derivatives

Munich Re offers “traditional” weather-contingent financial instruments that can be used as part of an overall risk management strategy to reduce the risks associated with adverse or unexpected weather conditions.

# Munich Re – your strong and reliable partner

Our solutions provide you with greater certainty for your planning, giving you more scope to grow in a dynamic market.

With our innovative covers, we provide protection against financially threatening scenarios in such a way that you remain solvent and thus competitive, even in emergencies.

Munich Re provides valuable solutions across the entire value chain of the PV industry: an enterprise risk management tool to preserve manufacturers' going concern, and flexible covers that protect long-term investment in PV solar projects.

## About Green Tech Solutions

In Green Tech Solutions, Corporate Insurance Partner pools expert resources and know-how in the field of renewable energies. Numerous innovative insurance solutions for photovoltaic, concentrated solar power, wind and other green technologies such as LEDs are being offered by this team in its worldwide activities.

## About Munich Re

Munich Re's strong balance sheet, a solid AA- rating and extensive operations worldwide means we have the expertise and capacity to deal with a wide range of different risk events.

## Contacts

**Dr. Ulrich Bohnert**  
Green Tech Solutions  
Tel.: +49 89 3891-3829  
ubohnert@munichre.com



**Jascha Prosiegel**  
Green Tech Solutions  
Tel.: +49 89 3891-2033  
jprosiegel@munichre.com



**Álvaro Núñez (US)**  
Green Tech Solutions  
Tel.: +1 212 887 6067  
anunez@munichreamerica.com



**Dr. Ronald Sastrawan**  
(Hong Kong)  
Green Tech Solutions  
Tel.: +852 2536 6942  
rsastrawan@munichre.com



**Michio Matsuda (Japan)**  
Green Tech Solutions  
Tel.: +81 3 5251-6857  
mmatsuda@munichre.com



**Daniel Kopf**  
Lack of Sun Cover  
Tel.: +49 89 3891-9374  
dkopf@munichre.com



## Green Tech Solutions Business Suite

PV manufacturers who are insured with Munich Re: investors have an interest in manufacturers being better insured against risks that could threaten business. In our exclusive Green Tech Solutions online portal, GTS Business Suite, we offer access to valuable information for your investment decisions. Find PV manufacturers who are insured by Munich Re and rely on Munich Re's expertise and capacity.

Sign up to access our portal: [www.munichre.com/gts](http://www.munichre.com/gts)

The screenshot shows the Munich Re Corporate Insurance Partner website. At the top, there are navigation links for Contact, Terms and conditions of use, Privacy statement, Legal Notice, Imprint, and Deutsch. The main header features the Munich Re logo and the text 'Corporate Insurance Partner'. Below this, there is a 'MUNICH RE' dropdown menu and a 'Home' link. The central content area is titled 'Welcome' and contains a large image of a solar farm. The text on the page describes the GTS Business Suite, which provides exclusive information on business topics in renewable energies. It mentions that the suite includes an overview of module manufacturers, performance warranty covers, and case studies. A call to action at the bottom of the main text area says 'Simple, free of obligations and valuable. Register now for the GTS Business Suite!'. On the right side of the page, there is a 'Login for registered users' section with input fields for email and password, a 'Login' button, and links for 'Request password' and 'Registration'. The footer of the page includes the text '© 2014 Munich Re Group'.

## Legal notice

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Münchener Rückversicherungs-  
Gesellschaft  
Königinstrasse 107  
80802 München  
Germany  
www.munichre.com

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