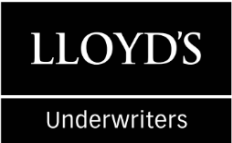
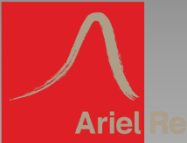




# CC-SOLA 2023 Performance Insurance

Photovoltaic Long-Term Performance Warranty Insurance



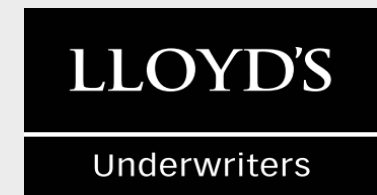
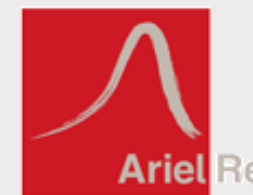
# Who are we?

**From** those beginnings in a coffee house in 1688, Lloyd's is founded on over 332 years of unrivalled underwriting experience and innovation as pioneer to become the world's leading market for specialty insurance. Led by expert underwriters, covering more than 200 territories, the Lloyd's market develops the essential, complex and critical insurance to enable markets and advance progress.

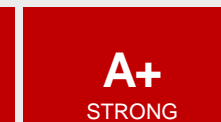
**Ariel Re** Syndicate 1910, a Lloyd's of London Syndicate, rated A/A+/AA- (A.M. Best, S&P, Fitch) with offices in London, USA, Bermuda, Dubai, Singapore, Shanghai and Hong Kong; the oldest (re)insurance platform of Lloyd's that provides strong credit ratings and a global license network.

**Ariel Re** has a dedicated team of underwriters who since 2009 support the product development and distribution of Clean Energy / Solar technology performance risks with over 50GW of underwriting experience .

The latest financial strength ratings are available to view at [www.lloyds.com/lloyds/Investor-Relations/Ratings](http://www.lloyds.com/lloyds/Investor-Relations/Ratings)



A.M. BEST



S&P



FITCH

# Who are we?

## Team Experience in Solar Industry:

- Maintain relationships with key stakeholders across entire value chain, including commercial lenders, private equity, development banks, project developers, scientific institutions, research bodies and policymakers.
- Industry wide experts in technology and financing of solar projects, valued thought leaders at global conferences. Select contributor invited to closed-door workshops for development of solar energy in China by NDRC (National Development and Reform Commission).
- Audited over 130 manufacturers globally across all solar technologies

## Clean Energy Risk Solutions Team:

Jan Napiorkowski – Global Head Clean Energy, based in Hong Kong

Christine Sun – Lead China, based in Shanghai

Kit Chu - Solar Lead, Based in Singapore

Fraser Blunt, Lead Europe, Based in United Kingdom

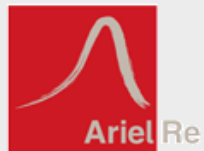
Frank Petrocelli, PhD – Senior Risk Analyst, based in United States

Jamie Daggett - Energy Storage & fuel cell Lead, based in United States

Tad Dritz - Bioconversion & Hydrogen Lead, Based in United States

Moche Ning – based in Beijing

Clean Energy team members are located in China, Hong Kong, Tokyo, New York, London. We deliver to our clients customized services and local support all over the world.



*\* Combined over 50 years industrial, financial services and corporate insurance experience; launched first solar warranty insurance program in 2009.*

LLOYD'S

Underwriters

# Industry Leader and Partner to Clean Tech Community

## Product A PV Module Replacement Cover

2009 first insured module manufacturer warranty backstop  
2016 first insured module warranty stand alone project in Japan

## Product B PV System Loss of Revenue

2016 first MWh Output Guarantee policy for distributed C&I systems across Europe

## Product C Biotechnology Long Term Performance Cover

2016 launched long term performance guarantee program in US

## Product D Biotechnology Repair Cover

2017 issued first bioenergy commissioning risk repair policy in US

## Product E Fuel Cell Performance Cover

2017 first Fuel Cell long term performance policy in US

## Product F Battery Performance Guarantee

2018 first battery program underwritten in Europe and China

### Volume Underwritten

70GW

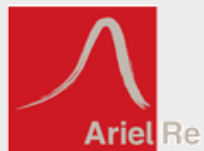
2GW

800MW

300MW

150MW

1GWh



LLOYD'S

Underwriters

# SOLAR: Replacement vs. Loss of Revenue Protection



## Component Replacement Cover

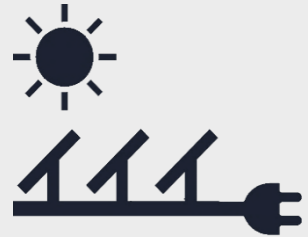
- backstop of supplier's original performance warranty
- **Apply Lloyd's Financial Rating instead of supplier's non-investment grade**
- For single utility or portfolios of commercial / residential projects
- Underwritten on a project/portfolio basis or for manufacturer's liability

## PV System Output Guarantee

### MWh Guarantee

### PR Guarantee

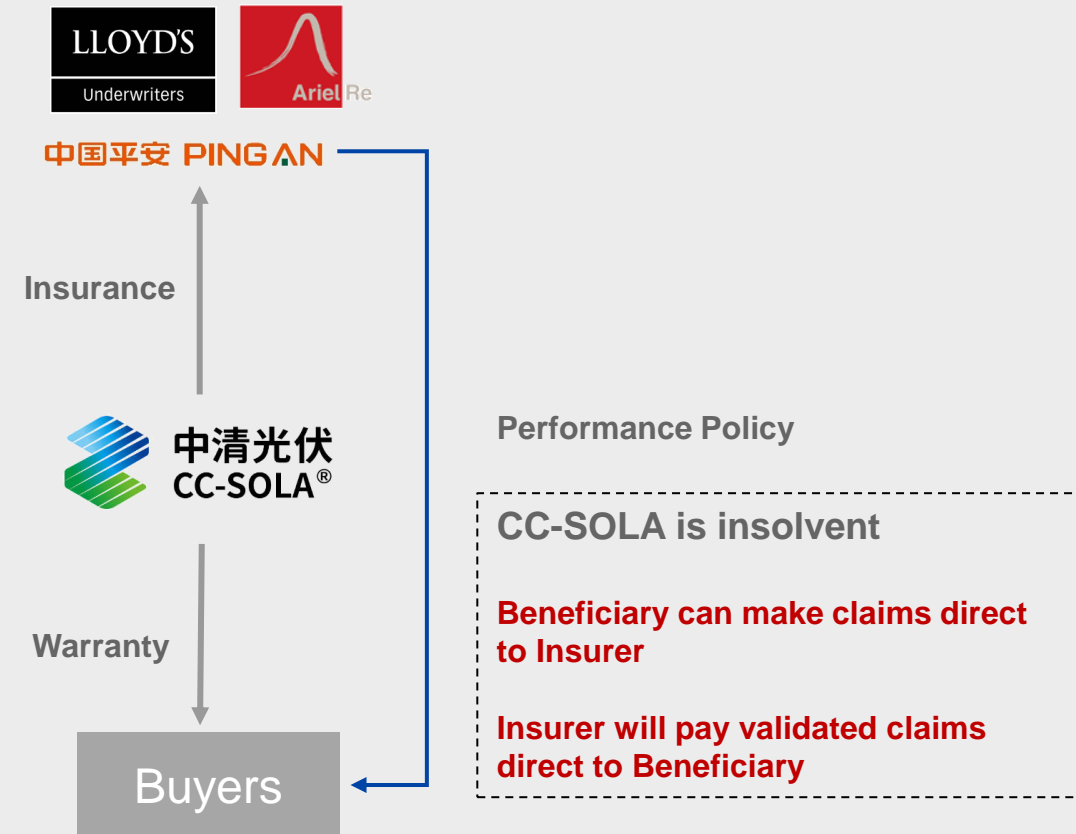
- Guarantees floor-MWh on energy production or Performance ratio
- **Apply Lloyd's Financial Rating instead of Module & Inverter supplier and EPC or O&M provider non-investment grade guarantees**
- An investment grade production guarantee when combined with an investment grade off-taker, secures Return-on-Investment with improved financial risk profile
- For single utility or portfolios of projects



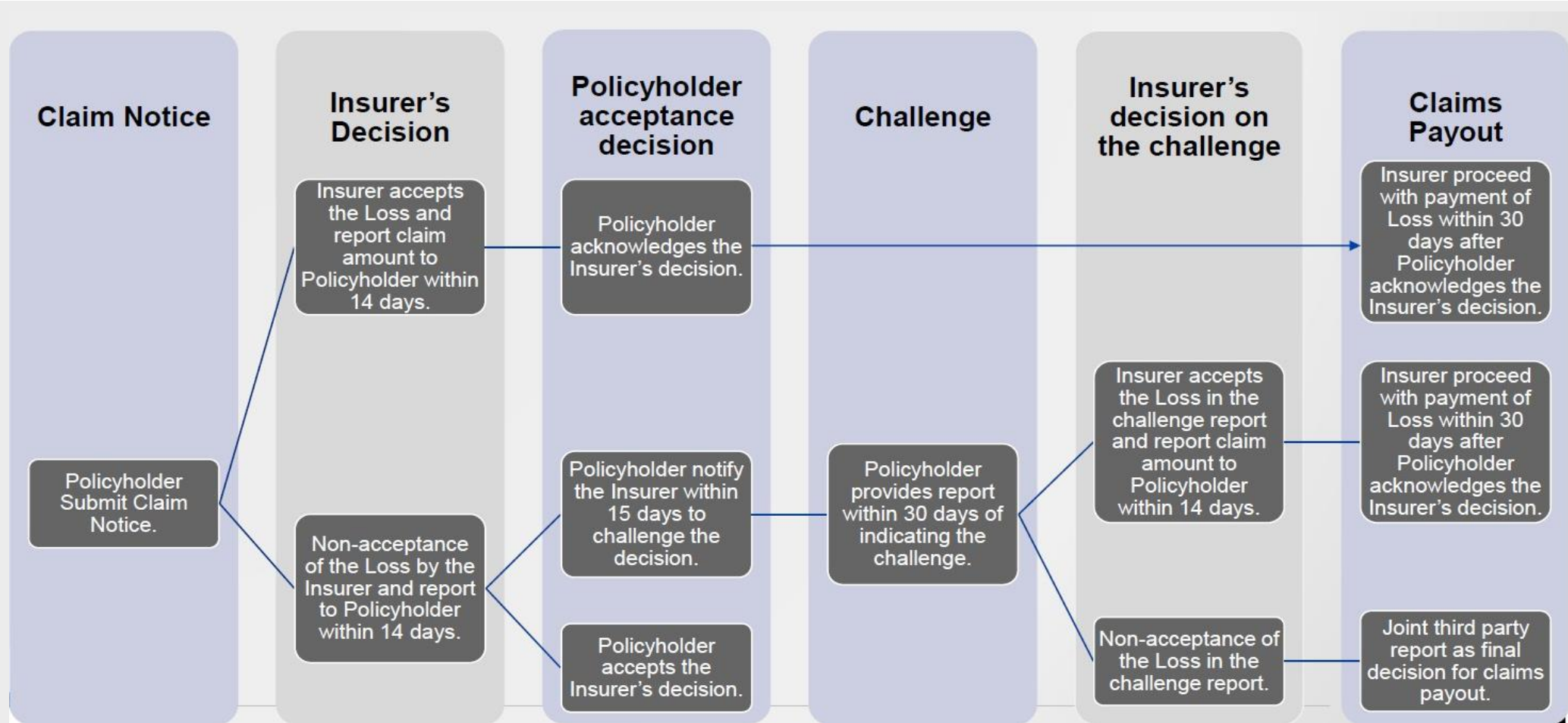
# Buyers' Right in case of declared Insolvency

## Insurance Structure

- ✓ Insurance coverage for 25 years or 30 years, including 10 years Product defect and 25 years or 30 years Performance output.
- ✓ In the event of Insolvency of CC-SOLA, those customers of CC-SOLA that are registered under the Policy will become Beneficiaries according to the terms and conditions of the Policy .
- ✓ Reinsurance support to the Project Cover and Yield Cover, customized insurance structure is available to Projects with CC-SOLA's Photovoltaic modules covered under this Policy and qualified for coverage by the Insurer.



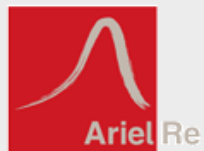
# Claim Process



# Market Comparison

Our full line of insurance solutions provide clients with the most comprehensive coverage and customer service

		Other Insurance Company	Other Insurance Agent	Argo/ Ariel Syndicate of Lloyd's
PV Module Performance Guarantee	Manufacturer Cover 25 Years	YES	YES	YES
	Single Project Cover	Only with Manufacturer Cover	NO	YES
	Project Portfolio Cover	Only with Manufacturer Cover	NO	YES
PV System Loss of Revenue	Single Project Production(MWh) Guarantee	NO	NO	YES up to 18 years
	Project Portfolio Production (MWh) Guarantee	NO	NO	YES up to 18 years
	Performance Ratio (PR) Guarantee	NO	NO	YES up to 18 years
	Stand-alone Lack of Sun Cover	NO	NO	YES up to 18 years





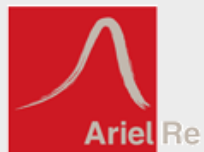
# Project Module Replacement Cover

Comparison of policy requirements in different markets for a 30MW project



Financial institutions have distinct lending and investing requirements across different markets.

- *Our flexible, customized Project Cover risk product satisfies individual lenders' requirement to deliver a more **bankable module**.*



## Project Cover Features

### Suitable for all stakeholders

Flexible application to projects, portfolios, orders, markets, distributors or manufacturers.

### Choose your coverage duration

Coverage duration from one year up to 20 years. Longer duration on special acceptance basis.

### Choose your risk structure

Flexible structure in terms of deductibles, limits, amortization rate of module value to meet individual requirements.

### Insolvency terms

Park Owners / Financial institutions can be the Insured

### Oversea Policy

Policy can be issued wherever the project located

### New Policy/Add-ons policy

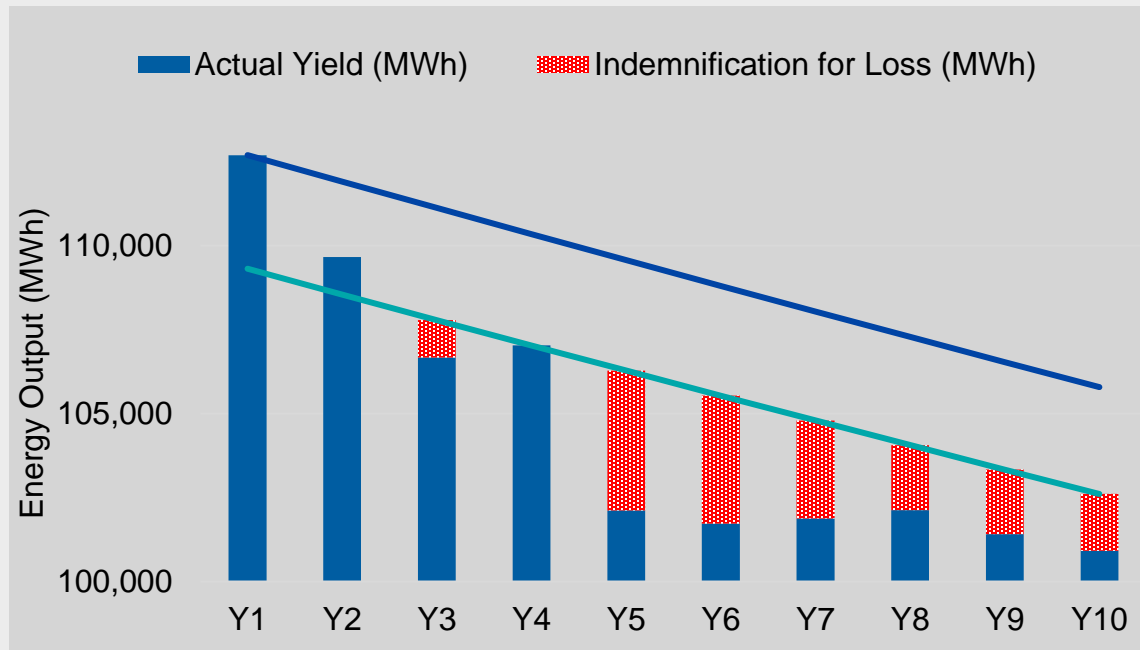
Can add additional shipment and labor cost, Loss in revenue due to module failure, Irradiation etc

LLOYD'S

Underwriters

# System Loss of Revenue Cover

In each year (Event Period) where the actual energy yield is below the Insured Level caused by any of the Insured Perils, an indemnification for the loss shall be payable.



## Insured perils: Weather

- Solar Irradiance volatility
- Excessive clouding



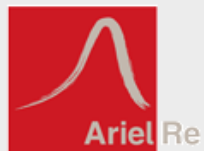
## Insured perils: Performance Ratio

- Component Performance
- Component Availability
- System design losses
- Specific and defined O&M related losses
- **We can insure all “PVsyst” failure modes and include an automated and fully transparent claim handling process**

# Case Studies

## Case Study

Buyer	Developer	Installer	Asset Manager
<b>Policy Period</b>	20 years	15 Years	15 Years
<b>Project Size</b>	170MW	30MW Distributed Rooftop	100MW Ground Mounted
<b>Project Location</b>	Globally	Netherlands	Japan
<b>Limit</b>	30% of the contract value	92% of the guaranteed MWh	20% of the contract value
<b>Policy Issuing Country</b>	USA	Netherlands	Japan
<b>Additional Requirement</b>	<ul style="list-style-type: none"> <li>Policy must be issued locally</li> <li>Insurance company must be A-rated and international</li> </ul>	<ul style="list-style-type: none"> <li>Financial institution is Insured</li> <li>Loss in revenue matching installers liabilities from its kWh Guarantees</li> </ul>	<ul style="list-style-type: none"> <li>Full MWh Guarantee</li> <li>To the benefit of Lender financing project to protect pre-defined DSCR levels</li> </ul>





**Thank You !**

**Contact :**

**Christine Sun**

**[Christine.sun@arielre.com](mailto:Christine.sun@arielre.com)**

