



Renewable Energy Insurance and Reinsurance

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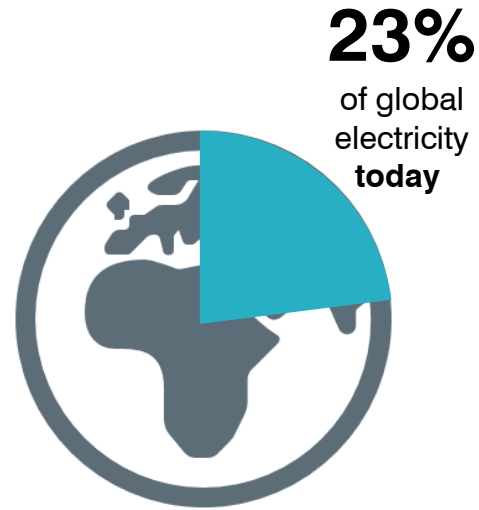


What Is Renewable Energy?

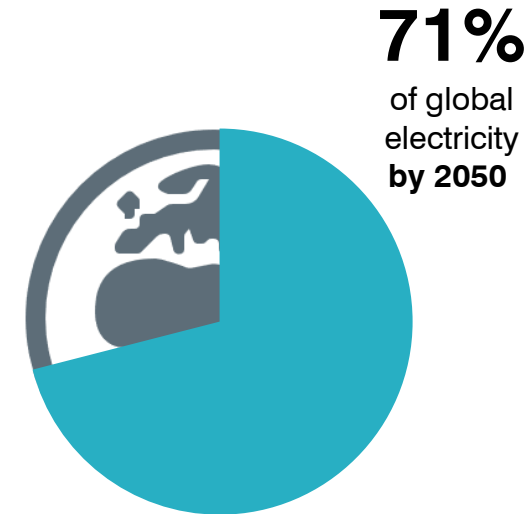


Next 30 Years: Substantial Growth Expected

- Renewable energy generation now accounts for 23% of the world's global electricity supply
- By the year 2050 Bloomberg New Energy Finance estimates that generation from green electricity sources will rise to 71%...
- ...wind and solar technology alone accounting for almost 50% of this generation.
- Expected investment of USD 8.4 trillion in wind and solar generation between 2018 and 2050.
- The battery storage market is supporting the growth of renewable energy generation as it replaces ageing fossil fuel generation sources.



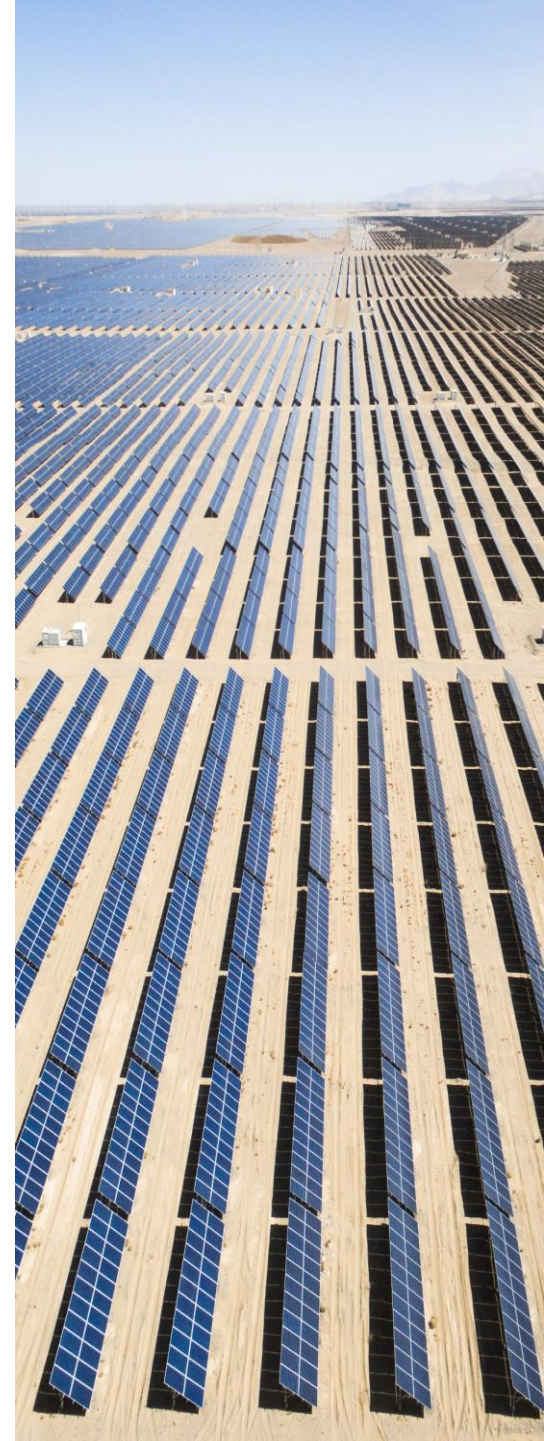
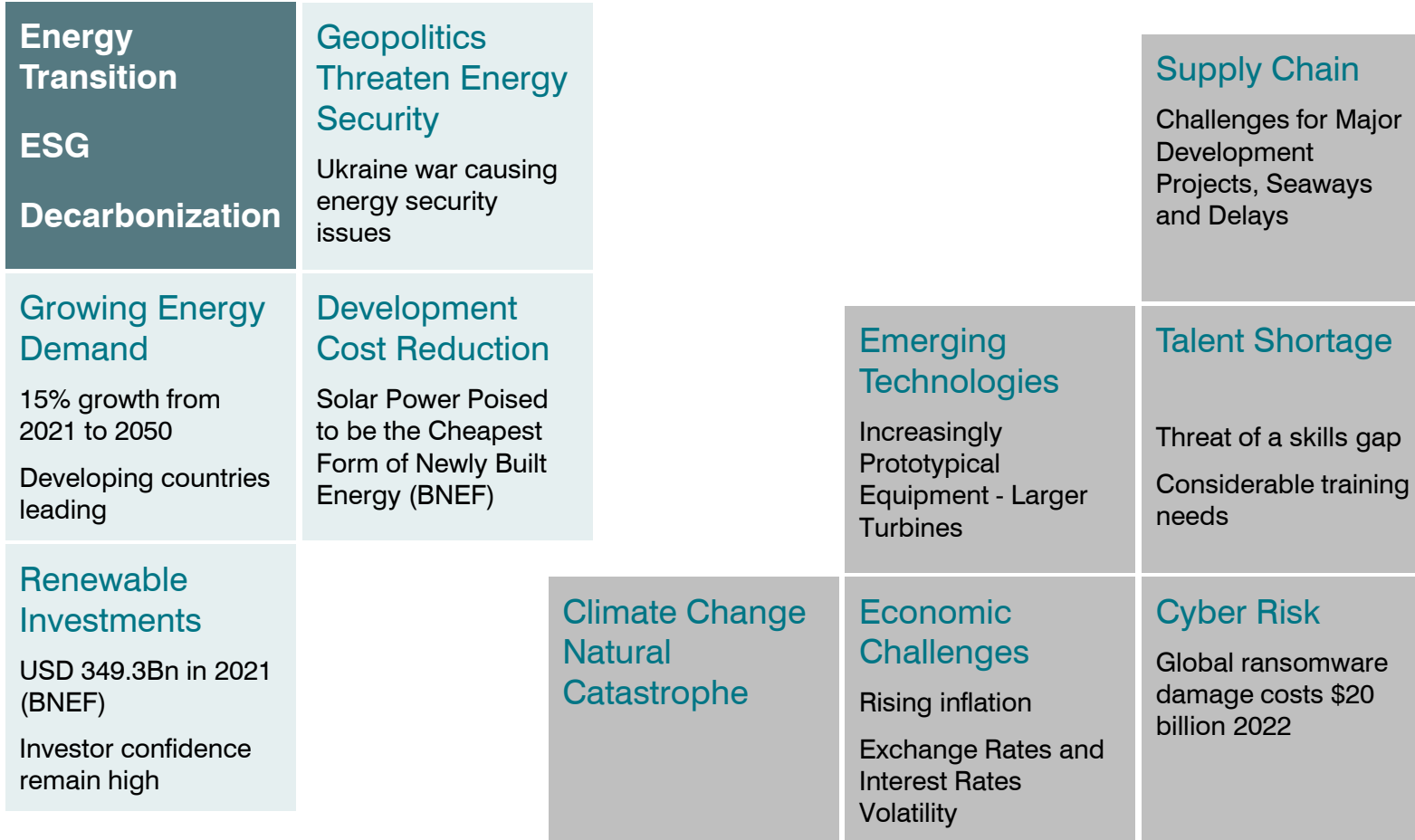
USD +8.4 trill
new
investments
by 2050



Battery storage
market has grown
+300% since
2014

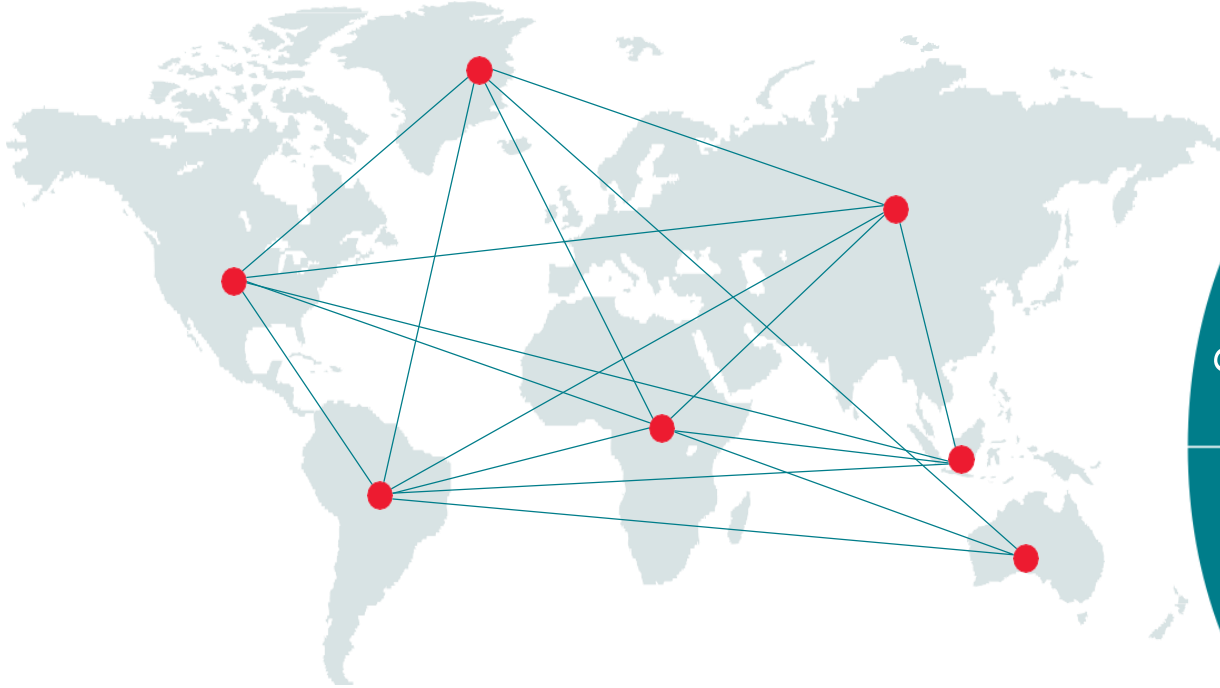


Tailwinds and Headwinds in Renewables Sector



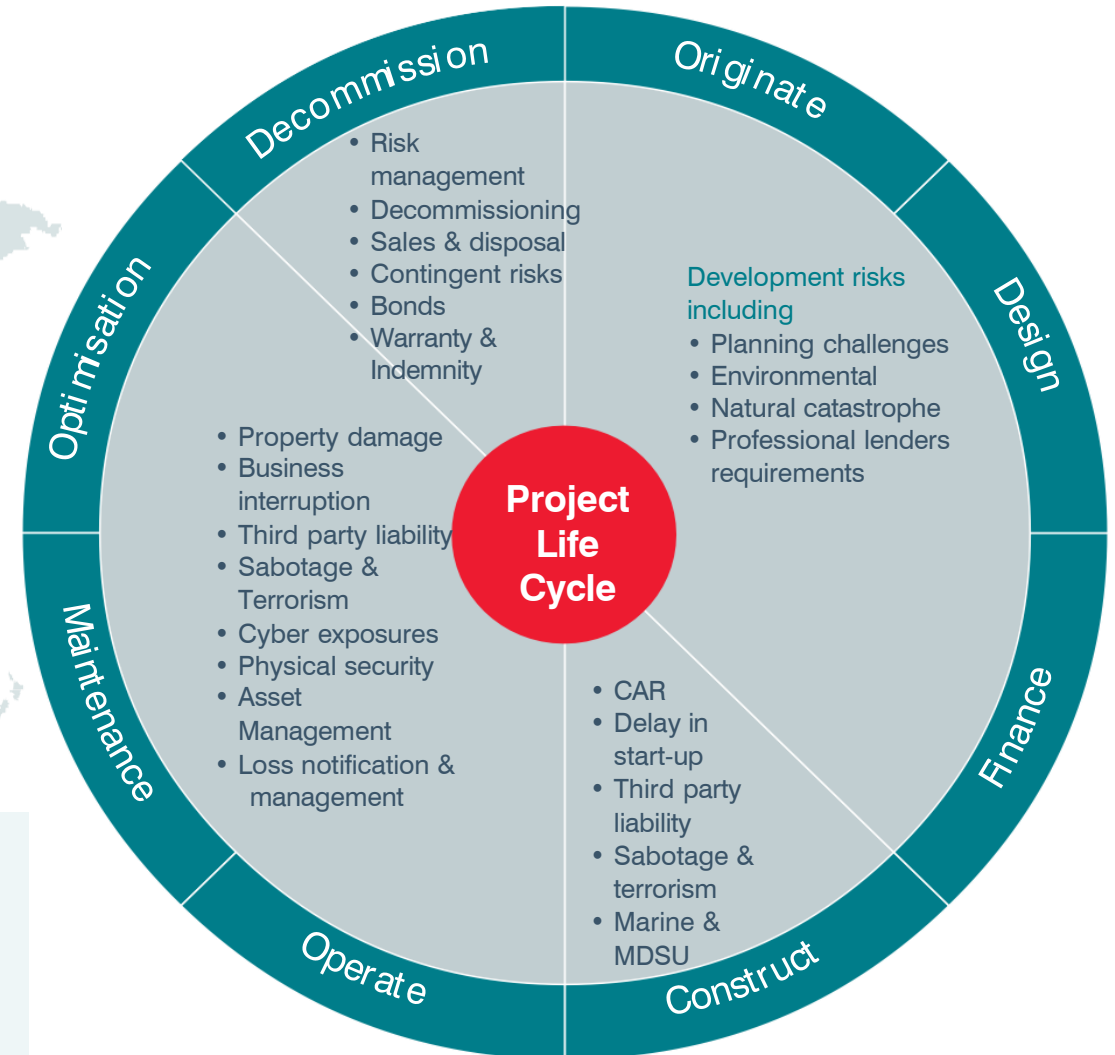
Designing an Optimized Insurance Program

Understanding the risks of each phase is crucial



Insurance program needs to reflect:

- the global nature of the project
- the stage of the project cycle



What to Pay Attention to when in Underwriting Renewables?

Exposure to natural catastrophes

- Unpredictable global weather patterns
- New renewable project may be deployed in locations with high nat cat exposure

Rapidly evolving technologies

- Challenge for insurers when assessing the risk
- Underwriters more comfortable with some new technologies and less with the others

Growth of Offshore wind exposures

- North Sea, parts of Asia, North America are growth areas
- Technologies often regarded as unproven
- Risk aggregations in nat cat prone areas

Supply chain issues

- Impact of labor shortages and inflationary pressures
- Increasing costs of construction projects
- Business Interruption exposure

Account performance and natural hazard exposures are the key underwriting criteria

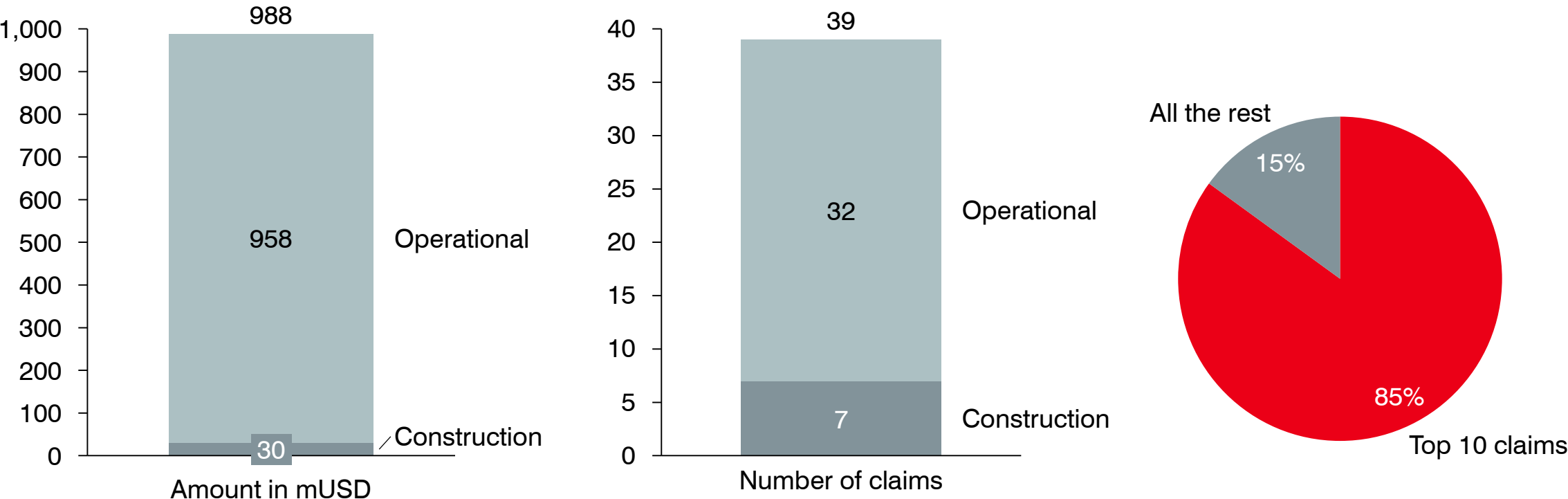
Top 10 Power Energy Claims in 2021 Worldwide

Modest Contribution of Renewables

Land/ Offshore	Country	Cause	Category	Subcategory	Claim amount in USD
Land	UK	Fire, no explosion	Power substation	Substation	440,350,000
Land	UK	Fire, no explosion	Power Thermal	Gas	83,870,000
Land	USA	Collapse	Power other	Coal	74,550,000
Offshore	Netherlands	Unknown	Power T&D	Cable	65,000,000
Land	UAE	Fatigue	Power thermal	Gas	55,000,000
Land	Argentina	Mechanical failure	Power thermal	Multifuel	37,600,000
Land	USA	Ice/snow	Power renewable	Solar	21,000,000
Land	Oman	Unknown	Power thermal	Multifuel	20,698,300
Land	Thailand	Fire, no explosion	Power thermal	Gas	20,966,000
Land	USA	Mechanical failure	Power renewable	Solar	18,340,000

Losses are incurred actual amounts, as reported, not indexed, sourced from the Willis Towers Watson's energy industry loss database for ground up losses of US\$1 million or more at the time of loss. Note that 2021 figures are subject to further development, both in terms of frequency and severity of losses. As at February 21, 2022.

Total 2021 Power Generation Claims

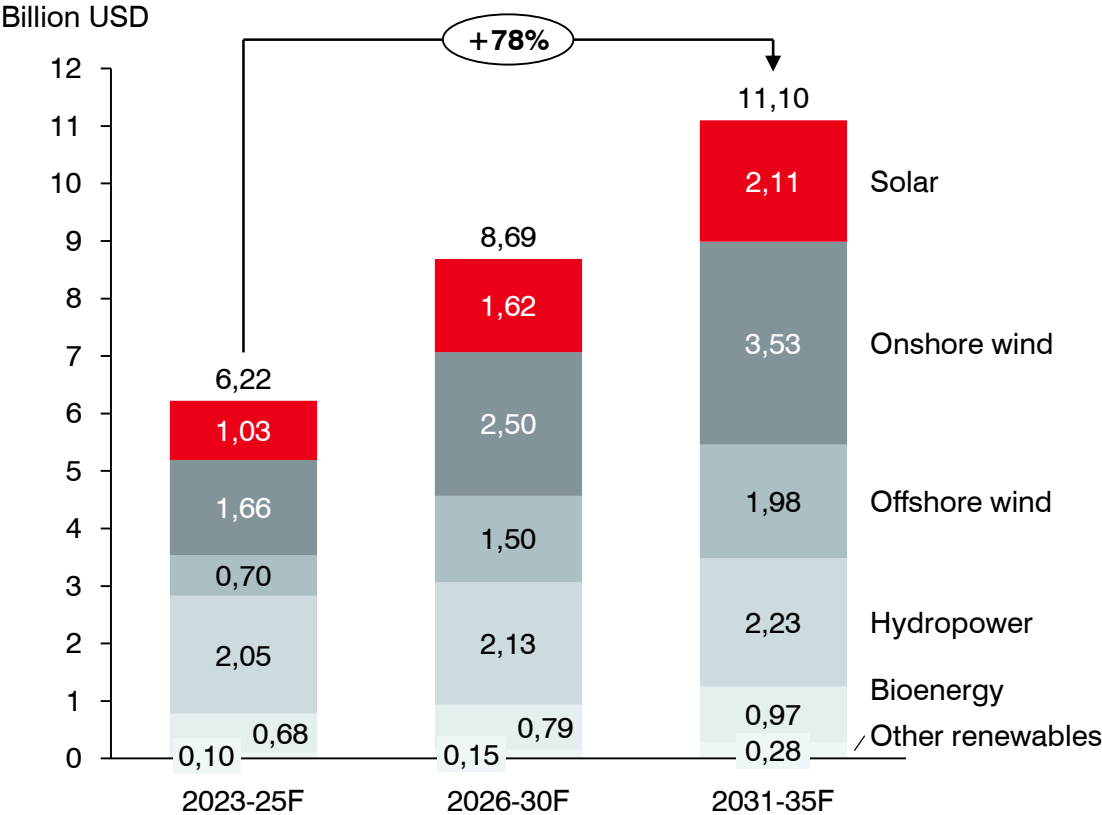


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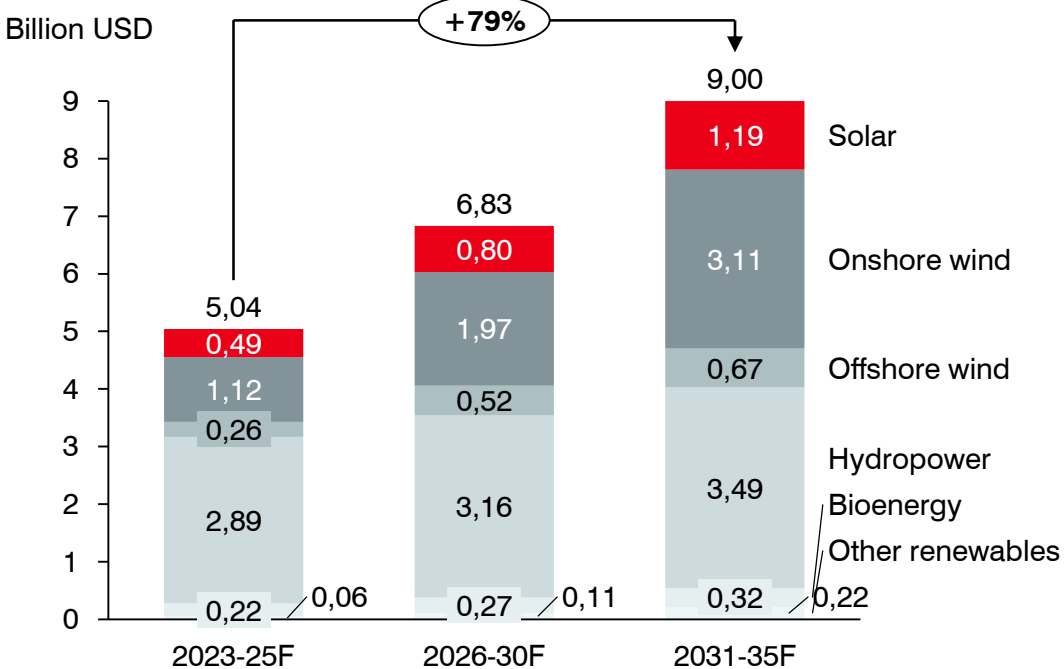
Large individual operational claims prevail

Insurance Premiums Derived from Transition to Renewable Energies

Advanced markets



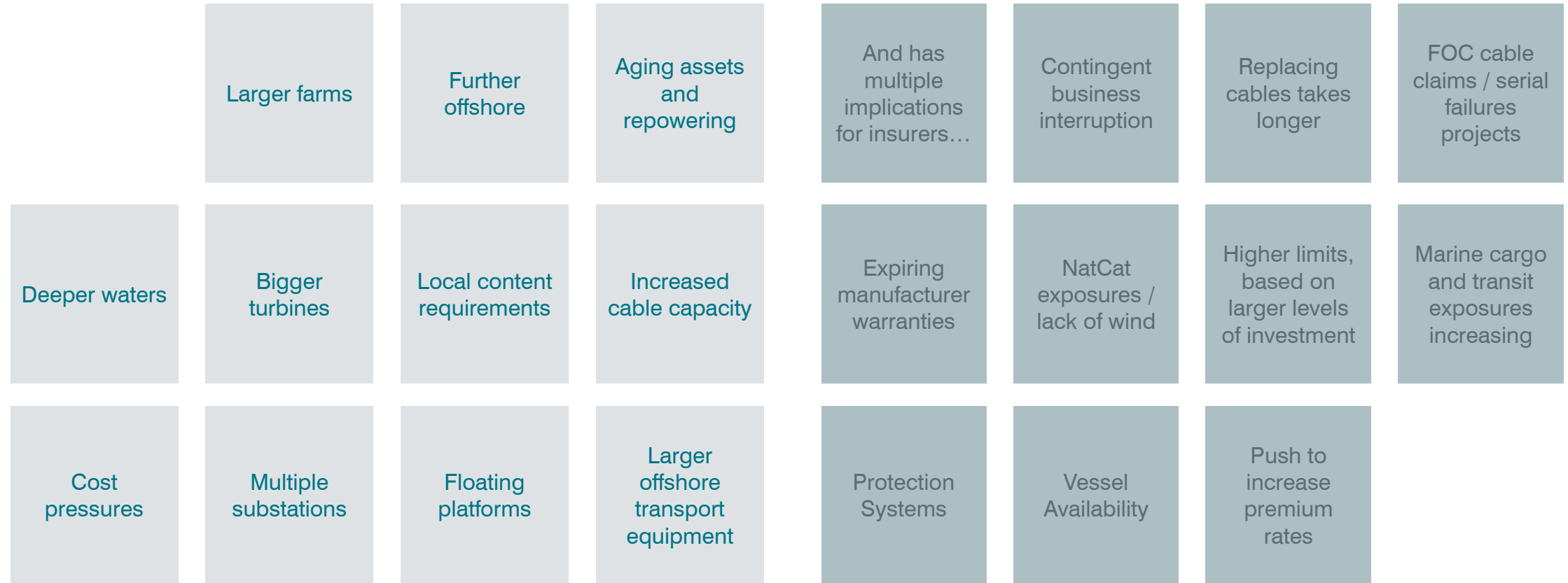
Developing markets



Source: Swiss Re Institute sigma report 5/2022

Swiss Re: USD 237bn of new global insurance premium by 2035 for all renewables related projects

Future Outlook of Renewables: Implications for Insurers



High complexity → professional advice is key in building the renewables insurance portfolio



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