beazley

Spotlight on Energy Transformation 2026

Powering a new energy order

Executive summary

We are entering a period of profound transformation in the global energy system – one defined by immense opportunity for real economic growth, but also long-term, complex risks unfolding without an established roadmap for what lies ahead.

The transformation is gaining pace, supercharged by data centres, industrial growth, geopolitical shifts and the push for secure, clean energy. Governments, businesses and investors increasingly recognise that long-term reliance on fossil fuels alone is economically and environmentally unsustainable, accelerating the transition to cleaner, more resilient and domestically powered systems.

Momentum is undeniable. Capital is being redeployed, new participants and low-carbon technologies are entering the market, and new assets are emerging across renewables, nuclear, storage, grids, and digital infrastructure.

For brokers, insurers, investors, developers and owners, today's energy transformation represents a fast-moving and increasingly complex risk landscape – yet also a once-in-a-lifetime moment.

It is reshaping insurability, investment decisions, business continuity and long-term competitiveness, placing insurance at the centre of enabling the energy systems of the future.

Delivery is constrained

While the prize is transformational – the transition is an execution challenge. It demands unprecedented infrastructure, policy, capital and technology, with tight timelines and within evolving regulatory frameworks. Delivery risk spans supply chains, construction, financing, grid integration and operational performance, while new technologies are being scaled at pace.

Success will depend on disciplined execution, robust risk management and the ability to navigate uncertainty at every stage of the process. To complicate matters further, the transition is not moving at a single speed.

Even critical, commercially attractive projects can face delays or cost overruns, particularly when renewable assets encounter climate-driven disruptions, inadequate grid readiness, supply constraints, regulatory changes, or restricted insurance capacity.

Energy transition risk does not sit neatly in one category. A single failure can affect whole project performance, long-term viability, capital allocation and investor confidence.

32% Almost one in three global leaders ranked energy transition related supply delays and instability as a major top-three macro risk[1].

The magnitude and interconnected nature of these risks are driving the traditional insurance industry to rethink operating models, accelerate product innovation and find ways to unlock capacity needed to meet the scale and complexity of the new energy order.

The resilience gap is widening

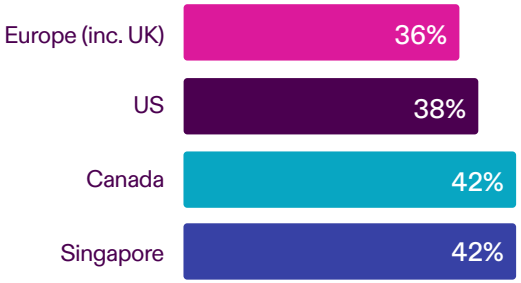
Currently, risk management is not keeping pace with the scale and complexity of the transition.

Many organisations still look at risks like climate, tech, and operations in silos instead of intertwined issues that can collide and impact each other in an instant.

Resilience is often treated as something to add in once a project is built and the risks are already locked in. Waiting to build resilience until the end of a project is likely to result in losses multiplying, longer downtime, more expensive recovery, costing organisations time, capital and credibility.

75% Three-quarters of global executives surveyed are struggling to transition to non-carbon energy sources and meet net zero targets[2].

Perceived preparedness for the energy transition



Percentage of executives who feel 'very prepared' for the impact of moving away from carbon fuels, and the costs associated with moving to net zero.

True resilience defines the victors

The next phase of the energy transition demands a new approach to risk.

Leaders can no longer rely on static risk models or annual box-ticking exercises. Renewable energy firms and operators must test how their assets, tech, and suppliers handle stress, while making sure their insurance programmes are appropriate, and capital buffers and continuity plans can withstand the headwinds that unfold alongside the opportunities.

Insurance can help make risks visible and financeable, but it cannot rescue a fundamentally weak project.

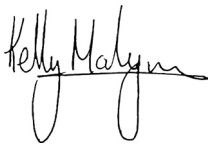
True resilience requires coordinated action – clients, brokers, insurers, lenders, developers, technology providers and policymakers – collaborating from the outset to shape, prioritise and structure projects that can withstand volatility, uncertainty and structural change, rather than simply chasing lowest-cost decarbonisation or fastest growth. From an insurability perspective, this also means considering the use of alternative risk transfer solutions like parametric and captives, alongside traditional specialty cover.

Reshaping without a blueprint

A fundamental reshaping of the global energy system is underway, offering significant benefits but new risks must be navigated without an established blueprint. The organisations that succeed will be those that embed resilience into strategy from the outset and work across the value chain to navigate uncertainty.

This will require deep, sustained collaboration between all stakeholders. The insurance industry has a critical role to play, bringing insight from historical loss experience alongside forward-looking, tech-driven risk modelling to help anticipate emerging challenges, strengthen project design and embed resilience at every stage. Combined with our ability to provide financial security and unlock capacity, this makes us essential partners in turning ambition into viable, long-term, investible assets.

Navigating this untrodden path will not be easy – but done together, it represents one of the greatest opportunities in our lifetime to build a more resilient, sustainable energy future.



Kelly Malynn
Head of Transition & Emerging Risk
Beazley

Bowler Broadcast
The fast lane – opportunities in the energy transition

Key takeaways

For brokers

1 Risks are converging
Energy transition risks are systemic and interconnected, and clients need help and loss insight to understand their aggregated exposure across assets, operations, supply chains and financing.

2 Proactive partnership is essential
Long-term broker-led partnerships with clients, insurers and capital providers will help to improve risk insight sharing and ensure risk transfer keeps pace with the scale and complexity of the energy transition.

3 Insurance has a central role to play
As transition risks outpace traditional insurance structures, brokers are well placed to identify coverage gaps, challenge the market and help develop solutions that reflect the realities clients face.

For business leaders

1 Risks are no longer isolated
Geopolitical instability, AI-driven energy demand and climate volatility are creating interconnected exposures that need to be mapped and stress-tested across operations, supply chains and infrastructure.

2 Risk aligned businesses will lead the energy transition
Risk-aligned organisations that secure energy supply, protect assets, and invest in adaptable infrastructure will enhance resilience, maintain competitiveness, and lead the energy transition with stronger investor confidence.

3 Insurance enables transformation – not just recovery
Businesses that engage early with insurers and brokers to shape protection around evolving risks will be best placed to secure investment and move forward with confidence.

Key findings at a glance – 3,500 global business leaders' views

Climate risks reshape business strategy

78%

Nearly **eight in ten** executives agree fires, floods and heatwaves are influencing where and how they operate.

Regulation is adding complexity, not clarity

75%

Three-quarters say the diversity and complexity of global regulations are increasing operational risk.

Sustainability takes a back seat

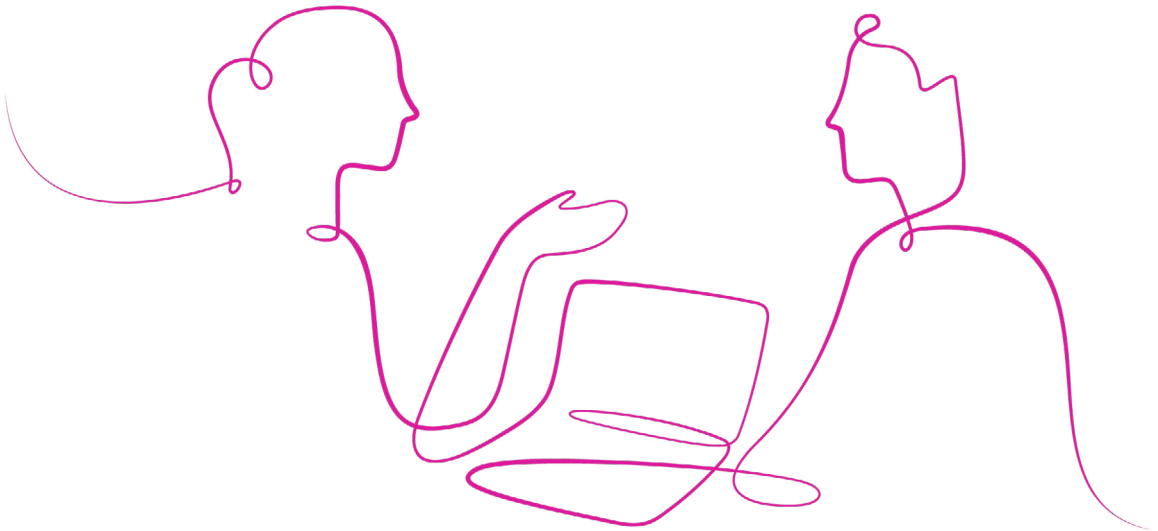
74%

Almost **three-quarters** agree the current economic climate is pushing sustainability down their priority list.

Transition is a sticking point

75%

Three-quarters of executives agree they are struggling to transition while still meeting net zero targets.



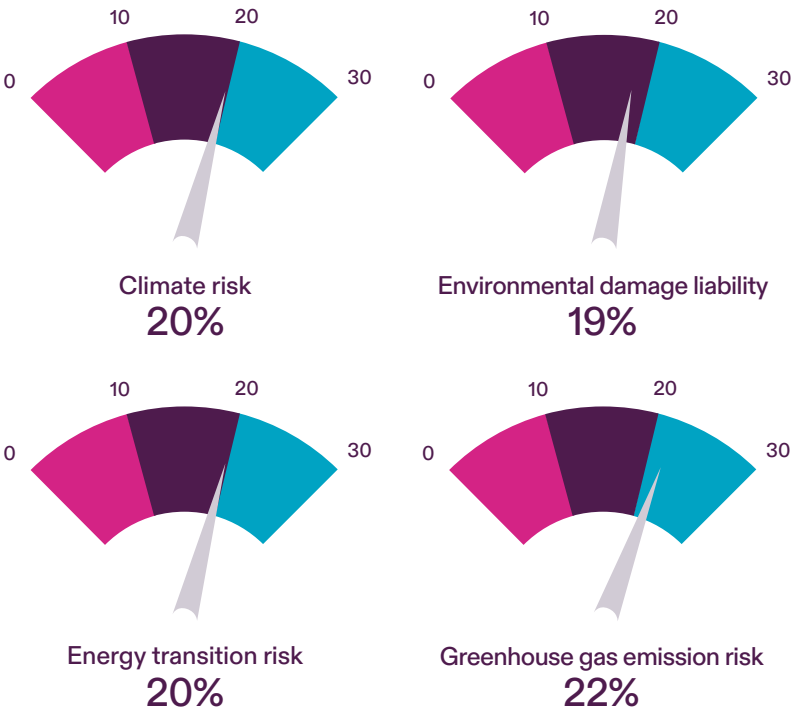
Source: Beazley Risk & Resilience survey 2026/27

What the statistics reveal

Converging, under-rated risks

In 2026, global executive concern converges across environmental and climate risk, with greenhouse gas emission concern leading slightly, followed by energy transition and climate risk, which remain steady, and marginally higher than environmental liability damage worry.

Risk concern

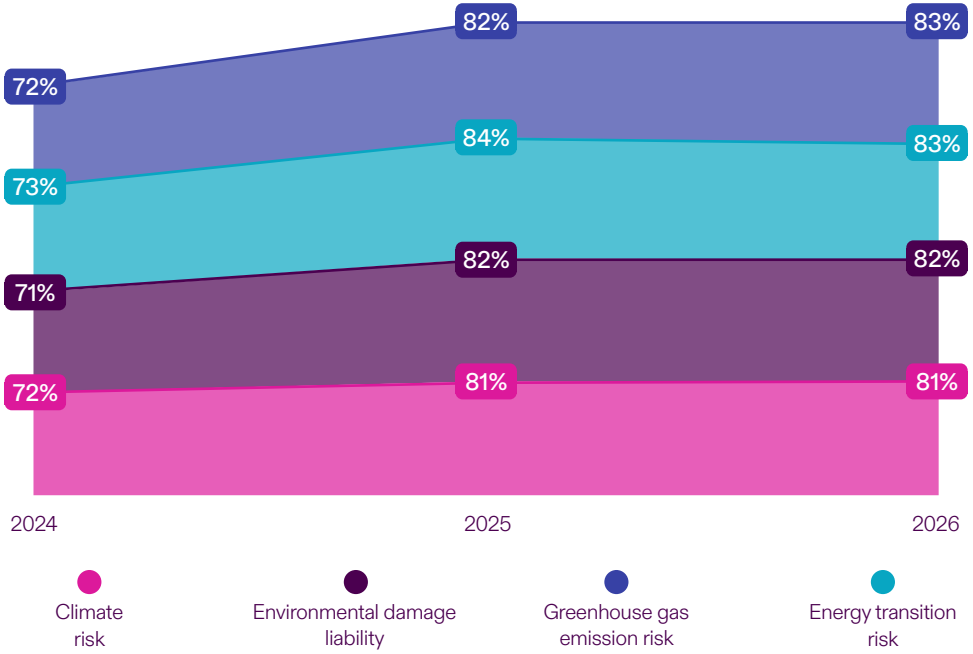


Percentage of global executives ranking these risks as their top environmental and climate risk concern.

Perceived preparedness

Perceived preparedness improves across all environmental & climate risk categories. From a 73% baseline in 2024, climate, environmental damage liability, greenhouse gas emission, and energy transition risks all remain broadly consistent this year, indicating ongoing confidence in firms' sustainability risk management strategies.

Resilience



These statistics are taken from the annual Risk & Resilience Surveys undertaken in 2024, 2025 and 2026, with respondents based in the UK, US, Canada, Singapore, France, Germany and Spain. This year's survey was undertaken between 05.01.26 and 13.01.26, with the same year on year sample base. The resilience statistic is a combination of 'very' and 'moderately prepared' answers.

Risk concern by industry

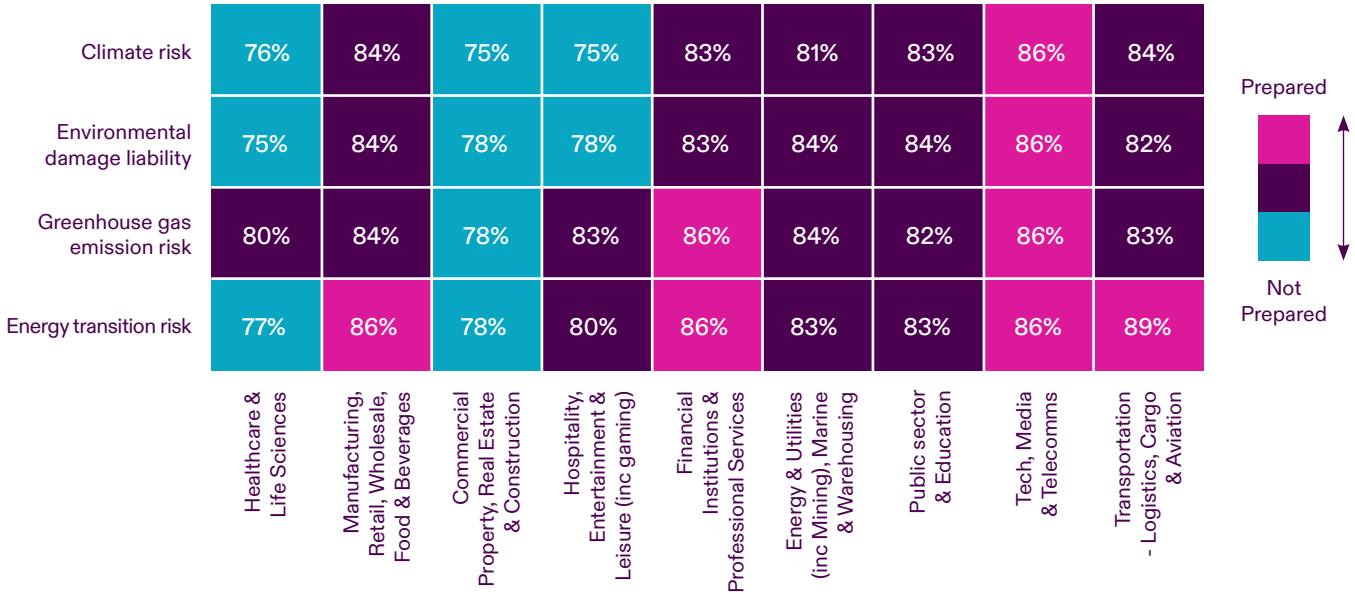
Concern about environmental and climate risks remains moderate across all nine industries we survey, typically ranging from the high-teens to mid-20s. Energy transition and emissions risks show slightly higher concern in some sectors, while financial services report lower concern, indicating varied prioritisation of sustainability challenges across industries.

Preparedness by industry

Perceived preparedness for environmental and climate risks is strong across all industries surveyed, typically ranging from mid-70s to high-80s. Tech, media, telecoms, and transportation report the highest levels of confidence, particularly on energy transition, while variations across industries reflect differing maturity levels and the influence of existing regulatory frameworks.

How concerned is your industry about climate and environmental risk?

How prepared is your industry for climate and environmental risk?



Source: Beazley Risk & Resilience survey 2026/27

Contents

The new energy order

Multiple forces are powering the energy transformation

Decarbonisation, energy security, financial returns and surging demand from AI and new technologies are accelerating a global shift in how energy is produced, owned and consumed.

Investment and innovation are reshaping the market

Record funding, rapid renewables growth and advances in energy infrastructure, storage, hydrogen and nuclear are creating major opportunities and boosting clean energy competitiveness.

Power is shifting to new players and priorities

Policy shifts, corporate demand and infrastructure needs are shifting control to private capital and corporates, while reliability, security and risk management are becoming critical to success.

Wired for growth

Rewiring the future of renewable energy

A new energy order is emerging. The global renewable energy transition now underway represents one of the most profound economic transformations in modern history; reshaping power at every level and unlocking vast opportunities across clean, distributed and owned energy systems.

The four forces driving this transition are the:

- Drive to cut carbon emissions
- Push for energy security
- Pursuit of financial returns
- Surging energy demand from data centres and digital infrastructure

Together, they are redrawing the energy landscape. Established renewable energy sources like wind and solar are already growing in their share of the market. World-changing innovations from fusion to small, modular nuclear reactors (SMRs) – and surging investments in renewable energy across the board – are driving real momentum. The commercial opportunities are plentiful and boundless.

Transition investment is turbocharging

Clean energy investing made history in 2024 by crossing the US$2 trillion threshold[3] and overtaking fossil fuel investing in a landmark first[4].

In 2025, energy transition investments set a record at US$2.3 trillion, and continued their lead over fossil fuels[5]. A cocktail of market trends is propelling this investment boom. Insurance is now a prerequisite for investment into renewable energy projects.

> **“Renewable energy transition projects simply are not financeable without insurance. It acts as a critical gatekeeper to capital deployment in emerging energy systems, and where protection gaps exist, investment slows.”**

Jason Kaminsky
CEO
kWh Analytics (A Beazley company)

Renewable momentum running high

The renewable sector is thriving. By 2024, solar photovoltaic (PV) capacity had grown faster than any energy tech in history. More so, solar capacity installed in 2024 was greater than the combined capacity installations of all fuels in any year before 2023[6]. Meanwhile, the evolution of wind power brings it to the cusp of becoming mainstream energy status.

Battery energy storage systems (BESS)[7], grid infrastructures and earlier-stage solutions like green hydrogen[8] – many of which have been evolving over decades – are also now attracting large-scale funding that would have seemed implausible a decade ago.

> **“Across Europe the energy mix is shifting, with wind, and solar supported by BESS storage, as renewables move toward becoming the dominant source of electricity generation.”**

Teresa Merino
Regional Manager Europe – Renewable Energy, Beazley

The regulations reshaping energy economics

Regulation is rapidly reshaping the economics of renewable energy investment, shifting capital toward cleaner solutions. In the UK, the Emissions Trading Scheme[9] is driving up costs for high emitters, making low-carbon alternatives more attractive. In the EU, the Corporate Sustainability Reporting Directive[10] is requiring companies to disclose standardised, assured sustainability data, raising transparency, curbing the scope for greenwashing, and rewarding credible transition plans.

Together, these changes are boosting investor confidence and accelerating capital into energy transition projects. The result: lower barriers for green developers, and rising scrutiny and costs for carbon-heavy assets.

The rise of sovereign-backed energy

Where climate policy and decarbonisation were once primary drivers for energy transition investment, financial and strategic considerations are now becoming equally influential. Since 2022, energy security has climbed to the top of policy agendas[11], driving governments across Europe, North America and Asia to invest in resilient domestic energy systems[12].

Crises like the one in the Strait of Hormuz have accelerated this shift. As they reinforce the case for renewables, not just as a climate imperative, but as the foundation of energy sovereignty. Reliance on imported fossil fuels ties countries to fragile, geopolitically exposed, creating economic risk for import-dependent economies.

As a result, energy is no longer viewed purely through a commercial lens, but through alignment with national energy strategy. Renewable energy, being locally produced, is especially well positioned. Projects that strengthen energy independence are increasingly being fast-tracked, supported by public funding, and state backing.

Data centres scale up next gen power

Data centres are becoming a powerful catalyst for the energy transition. Leading operators are adopting stricter procurement standards, like the '24/7 clean energy' and the subsequent hourly matching approaches[13], which monitor and ensure continual use of renewables. This creates overall demand for low-carbon power and more time-aligned usage insights that do not come with annual matching[14] and improves system-wide decarbonisation.

4x Data centre electricity use is on track to quintuple by 2040[17].

While not yet universal, hyperscalers are already shaping investment in next-generation technologies including advanced nuclear and geothermal, particularly where they can provide reliable, low-carbon baseload supply[15]. At the same time, the shift from annual certificates to granular matching of consumption with local clean energy generation, is raising the bar for credibility and decarbonisation. The impact is clear – capital is increasingly flowing into scalable green energy, supporting new technologies and reshaping how projects are financed and prioritised – even if early deployment remains uneven across the data centre industry[16].

A power shift: new portfolios, new growth

New players: Technological advances and rising capital are reshaping how energy infrastructure is financed and procured, with influence extending beyond traditional utility ownership models. Infrastructure funds, pension capital, sovereign investors, and large tech companies are taking larger stakes in renewable and next-generation energy projects, particularly in solar, wind, and emerging low-carbon technologies[18].

At the same time, corporate buyers are playing a more active role in shaping project development through long-term power purchase agreements and, in some cases, co-investment in generation assets. Utilities remain central but a broader mix of private and corporate capital is now funding, building and enabling new energy capacity.

New solutions: Wind and solar are central to the energy transition but are inherently variable, creating periods of surplus and shortfall as weather conditions change. This variability is driving demand for flexible solutions, particularly larger-scale BESS systems to capture excess generation and release it during periods of peak demand, for longer periods than is currently possible, to help stabilise the grid more consistently.

Alongside these evolving 'mega batteries', a new class of energy assets is emerging, including long-duration storage, hydrogen, and EV charging infrastructure, forming a system layer offering flexibility, reliability, and enabling deeper industrial decarbonisation.

New growth: Demand from heavy industry is accelerating. Sectors such as shipping and steel cannot rely on electrification alone, as they require energy-dense fuels and high-temperature processes. As a result, energy transition is moving beyond clean generation to broader ecosystem efficiency, focused on making renewable energy dispatchable, reliable, and usable across the economy.

If harnessed effectively, emerging market players can unlock growth by filling funding gaps left by traditional state-owned and privately funded utilities which often lack the capital to deliver trillions of dollars in grid upgrades and unproven technologies[19]. Shifting control away from slow-moving, heavily regulated monopoly utility incumbents enables more agile private players to deploy and scale new technologies faster.

They can also future-proof their core operations by securing direct access to clean energy supplies and modern charging infrastructure, while reducing exposure to unpredictable public utility rates and volatile fossil fuel markets[20].

The potential is vast – but so too is the exposure. The winners will be those who move fastest to align infrastructure with demand and unlock efficiency at scale. In this new energy order, risk management is no longer defensive, it is a competitive advantage, and it will define the winners.

The new energy order ecosystem

Policy and market drivers

- Energy security
- Industrial policy
- Decarbonisation
- Electrification
- Geopolitics

Capital and ownership

- Utilities
- Infrastructure funds
- Pension capital
- Sovereign wealth
- Corporate buyers
- Developers

New Energy Order

Assets and systems

- Solar
- Wind
- Battery storage
- Green hydrogen
- EV charging
- Grid infrastructure
- Data centres
- SMRs
- Fusion

Risk and insurance implications

- Execution risk
- Physical climate risk
- Regulatory risk
- Financial risk
- Aggregation risk
- Liability risk
- Technology risk
- Geopolitical risk

What's changing?

- Energy security is reshaping investment priorities
- New owners are entering complex infrastructure markets
- Insurability and resilience are becoming central to financeability

Case study

Insuring the next energy frontier

Rewiring the future of renewable energy

The first phase of the energy transition was powered by the rapid scaling-up of solar, wind and battery storage. The next will be more complex, decentralised, diverse, and riskier. Alongside renewables, technologies like small modular reactors (SMRs), fusion and AI-driven infrastructure for data centres are set to reshape the energy landscape – across land, space and sea.

While the evolution of solar[21], wind[22] and BESS continue[23], the world has taken note – inspired by the successes and driven by the constant and expanding demands of industry, net zero targets, technology and geopolitical spillover. Pioneering solutions are emerging that not only support the rising needs of renewables but move beyond them.

What once seemed like scientific impossibilities, engineering fantasies and financial non-starters are now entering the realm of the possible across land, space and sea.

The potential is evident, but it is loaded with risk-heavy complexities:

- Limited or no historical loss data
- Evolving regulatory frameworks
- Highly specialised supply chains

To meet the needs of these new technologies and industries, insurers need to evolve into forward-looking risk management partners that actively co-create solutions for unproven green technologies.

beazley

> **“The next phase of the energy transition will not simply involve scaling existing renewable technologies. It will involve entirely new forms of energy generation and infrastructure, moving from experimental science into commercial deployment. Insurance will play a critical role in determining how quickly those systems can scale.”**

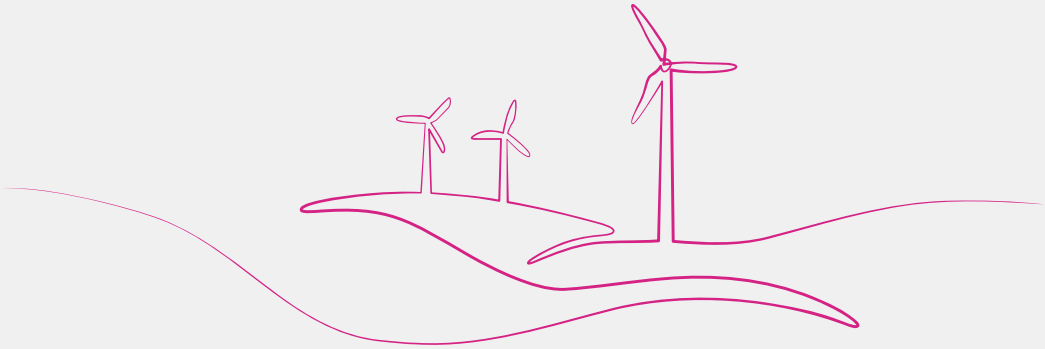
Denis Bensoussan
Head of Space, Beazley

New clean energy pioneers

Land

Small modular reactors (SMRs)
The rapid expansion and energy requirements of AI-data centres, increased demand for energy security, and corporate and governmental net zero targets are driving renewed interest in nuclear energy. In turn, a new swathe of government initiatives and private investment is pushing SMRs up the renewable energy agenda[24].

Russia and China already have commercial SMR units online[25], and there is currently a push for SMRs in North America, South America, Asia, and Europe – to come online over the next decade. The revenues generated by SMR deployment is anticipated to reach US$53.8 billion in 2036, and almost US$300 billion by 2046[26]. As these SMRs come to fruition specialist insurance coverages are needed, protecting against construction and operational risk; transportation and supply risk; decommissioning guarantees; and further liability risks owing to more intensive regulatory scrutiny that nuclear energy creates.



Fusion

Early stage deployment

Fusion brings the revolutionary promise of near-limitless, low-carbon energy. Long regarded as a scientific ambition rather than a commercial reality, fusion is increasingly moving towards early-stage deployment. Governments and corporations are searching for long-term solutions to rising electricity demand driven by AI, electrification and urbanisation[27], and are buoyed by fusion's promise.

In the face of hyper complex engineering, scientific hazards and untested regulatory frameworks, fusion facilities require substantial upfront investment, long construction timelines, and confidence in delivery and future operational performance. With billions of dollars of private investments worldwide[28], a 2028 deployment is planned[29], and developers, lenders and corporate partners increasingly require evidence that these risks can be transferred and managed before capital can be deployed at scale.

Early insurance activity is currently centred around construction and specialist liability cover for pilot facilities, but over time the market is expected to evolve towards operational performance guarantees and long-term technology reliability cover.

Sea

Floating Nuclear Power Plants (FNPPs)

FNPPs are essentially SMRs but based on the sea[30] – reactors with modular parts, on floating barges. One is already active in Russia, and governments and private companies around the world are working as a public-private partnership, propelled by the skyrocketing power demands of offshore data centres, port electrification, remote communities, islands and coastal desalination hubs.

In addition to the risks for onshore SMRs, floating plants have added perils to contend with from structural damage caused by collisions and severe weather, as well as the risk of radioactive contamination and marine environmental damage, complex cross-border regulatory jurisdictions, tethering failures and underwater and cyber attack threats.

Wave-powered data centres

Wave-energy promises 24/7 clean power directly to maritime infrastructure. As data demands surge, ocean-powered computing is moving from concept to coastlines, leveraging predictable swells to deliver zero-carbon cooling and electricity to near-shore and submerged facilities[31]. Wave-powered floating data centres offer meaningful solutions to land-based real estate shortages, grid strain, and high cooling costs. However, their offshore nature brings much of the same risks as with the FNPPs, with the harsh marine conditions particularly acute on highly sensitive data centre environments.

Space

Space-based solar power (SBSP) and data centres on the moon

Orbiting solar arrays place photovoltaic (PV) hardware outside Earth's atmosphere, enabling solar panels to have 24/7 sun, and escape the weather risks on Earth. The result would be a constant, high-yield stream of electricity beamed directly to ground stations, offering a baseload power source from above[32].

Moon-based data centres are now in the early stages of commercial testing, with businesses 'betting big' on the prospects[33]. They will run on pure solar power and use the vacuum of space for cooling[34], essentially eliminating many of the issues on land – from water requirement to energy cost and reliability, to regulations and civil unrest.

Many of the risks are yet to be modelled, but they will include exposures around rocket launches and build, radiation issues, micrometeorite impacts, cyber risk and other business interruption risks if power transmission misaligns.

Blurring the boundaries

These projects demonstrate how the energy transformation is blurring the boundaries between energy infrastructure, digital infrastructure and industrial assets. The associated risks include hidden interdependencies and the increased potential for single-point failures to drive multi-line losses. In conjunction, insurers are increasingly being asked to assess risks that combine property, marine engineering, power generation, cyber resilience and critical digital infrastructure within a single asset class.

"The technologies themselves are only part of the challenge. What matters equally is whether supply chains, regulation, engineering talent and risk management frameworks can scale alongside them. Insurance becomes a critical mechanism for validating those systems and giving investors confidence that these projects are commercially viable."

Denis Bensoussan
Head of Space, Beazley

Insurance will go where risk grows

Progress will not be linear, and uncertainty will persist, due to the scale and complexity of all these ambitious projects.

Developers, operators, investors and insurers need to work from a shared understanding that risk profiles will change over time, as will pricing, coverage and capacity. There is no fixed, long-term insurance solution for technologies that are developing. As systems scale and performance becomes clearer, insurers will adjust terms, rates, and structures accordingly. That learning process matters: loss data, operational insights and early-stage experience will improve decision-making and strengthen the market over time.

Underwriting energy's future

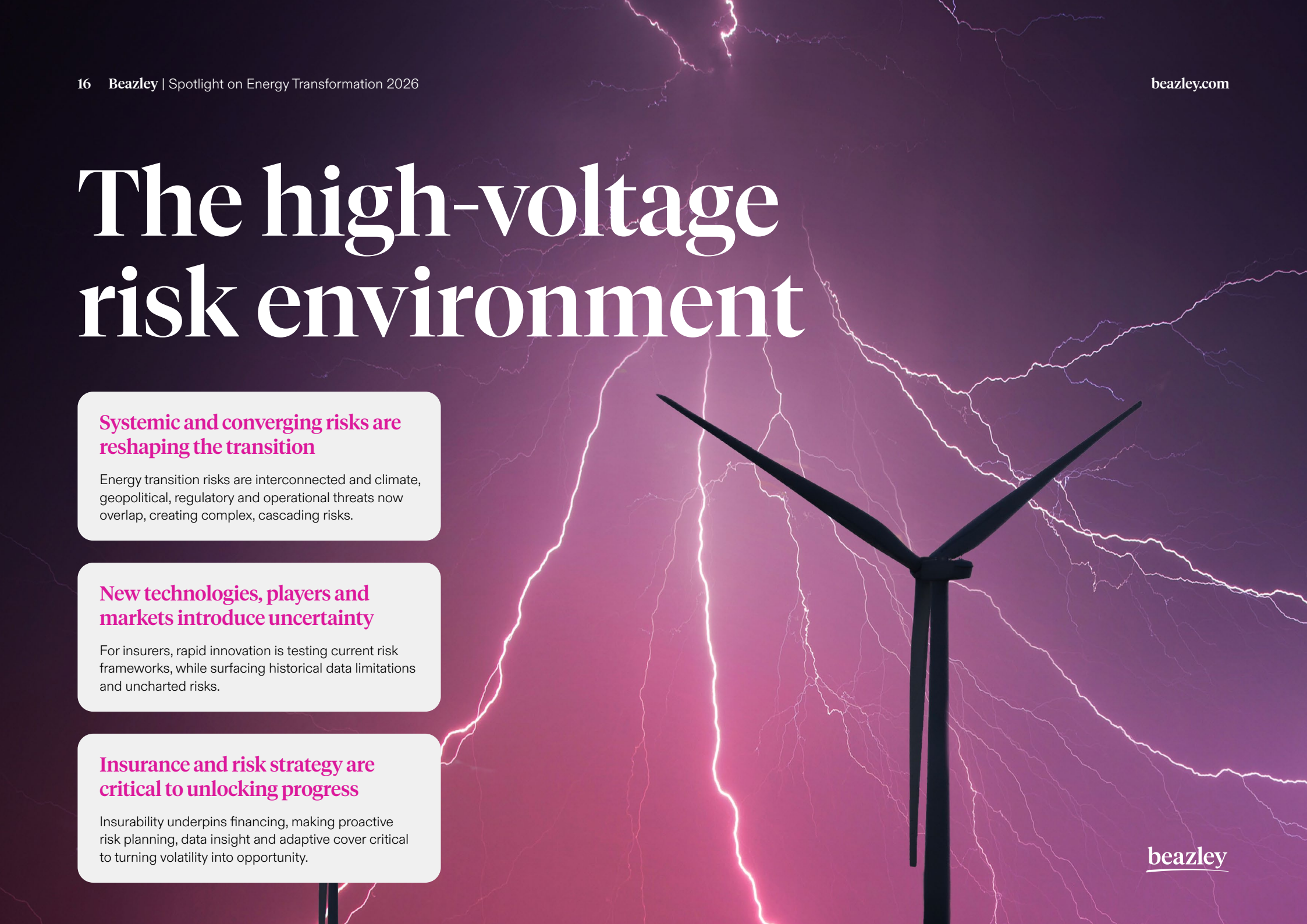
Insurance will remain central, but it will operate differently. It will have a portfolio view of risk that draws on a wider toolkit that includes captives, ILS, parametric insurance and alternative risk transfer structures.

The insurers that can understand and underwrite this complexity will be at the heart of driving investment, commercial scale and risk-mitigated innovation across the future global energy system.

"Novel renewable technologies make risks more uncertain to predict, prompting reduced insurance capacity or higher prices. Parametric insurance eliminates such vulnerabilities with trigger-based payouts tied to event intensity, providing scalable, flexible protection as transition risks evolve."

Stefan Wunderlich
Head of Alternative Risk Transfer, Beazley

The high-voltage risk environment



Systemic and converging risks are reshaping the transition

Energy transition risks are interconnected and climate, geopolitical, regulatory and operational threats now overlap, creating complex, cascading risks.

New technologies, players and markets introduce uncertainty

For insurers, rapid innovation is testing current risk frameworks, while surfacing historical data limitations and uncharted risks.

Insurance and risk strategy are critical to unlocking progress

Insurability underpins financing, making proactive risk planning, data insight and adaptive cover critical to turning volatility into opportunity.

beazley

The price of transition: systemic risk

The energy transformation presents a new and intensifying landscape of interconnected, fast-evolving, systemic risk, amplified by converging global pressures. Making resilience and insurance not just a safeguard – but a gateway to success.

With this new era comes new challenges:

- **Competing priorities:** from governments, investors and insurers alike
- **Shifting ownership models:** with new players unaware or underprepared for the risks they face
- **Operational and delivery obstacles:** including novel operational liabilities, supply chain setbacks, shifting climate dynamics and grid constraints
- **Unpredictable, changing climate patterns creating physical risk:** which can impact the reliability of some renewable energy sources

Ultimately, the winners in the energy transition will be those who understand and map the complex shifting landscape, leveraging data and foresight to turn volatility into competitive advantage.

Convergence is compounding complications

Physical, regulatory, geopolitical, and system-level threats are layering, colliding, overlapping and aligning. Instead of just hitting one by one, they can strike simultaneously.

Extreme weather can damage an asset while crippling local infrastructure, stalling repairs, and disrupting revenue. Geopolitical conflict – as seen with the 2026 war in Iran choking critical shipping lanes in the Strait of Hormuz – can trigger global energy shortages, price spikes and prompt an abrupt reallocation of corporate capital[35]. For example, disruption to petrochemical feedstocks and naphtha flows through the Strait has forced downstream FMCG and electronics firms to pivot investment toward recycled plastics, bio-based materials, and more localised circular supply chains as companies seek security and continuity of supply[36].

The smart approach is not managing these threats one by one but understanding how they converge and where they impact each other. This approach equips firms to plan so unavoidable incidents don't spiral into full-blown crises, where the costs linger long after the damage is done.

> **"Major climate events increasingly trigger second-order impacts, disrupting supply chains and driving wider economic effects such as inflation. These cascading risks extend far beyond physical damage and are now being integrated into regulatory and risk frameworks as their systemic financial implications become more pronounced."**

Juan Duan
Head of Climate & Nature, Beazley

When weather and physical risk outpace the data

For decades, hazard planning and insurance underwriting assumed extreme weather followed predictable patterns. That assumption is breaking down. From severe wildfires in California to rapidly intensifying storms[37], weather is becoming more volatile and less predictable.

According to the National Centers for Environmental Information (NCEI), there were 115 weather-related, billion-dollar loss events between 2020-2024, compared to 57 such events between 2000-2009[38]. As the frequency and severity of these events increases, climate models are struggling to keep pace. This leaves projects that appear robust on paper ever more exposed to risks that can render them unfinanceable and uninsurable.

78% of global executives agree extreme weather events (e.g. fire, flood and heatwaves) are affecting where and how their organisation operates.

At the same time, portfolio concentration is an often-underestimated risk. As investors and developers build renewable assets to meet ESG targets and capture incentives, geographical clustering of wind and solar farms is amplifying exposure. A single event can trigger losses across a whole portfolio.

Understanding and managing aggregation risk is becoming critical, requiring more sophisticated scenario planning and insurance structures.

> **"Scenario planning must account for sensitivity and correlation across variables, as climate pathways can change direction quickly. What appears manageable today may escalate or accelerate unexpectedly, requiring flexible strategies and methodologies to respond to evolving environmental and transition risks."**

David Singh
Head of Catastrophic Risk & Research, Beazley

The Sustainable Markets Initiative (SMI) notes that physical climate risks are notably underpriced. Studies warn that companies globally face US$1.3 trillion in near-term losses from extreme weather while 75% of institutional investors expect climate risks to hit asset prices within the next five years[39].

Solar is a good example. In the US, many large solar farms are spread across wide, exposed sites, so a single severe hailstorm can damage numerous panels. While the physical damage is immediate, additional financial harm comes from dropped power generation, long repair delays, replacement costs and business interruption.

> **"Weather events previously modelled as rare are occurring more frequently, compressing return periods for solar farms for example, making hail a critical peril for insurers. The industry is still catching up to the new reality of what severe convective risk looks like for solar assets at scale."**

Geoffrey Lehv
SVP, Head of North American Accounts kWh Analytics (A Beazley company)

The impact of extreme weather on operations

The percentage of executives who agree that extreme weather is affecting where and how their business operates.

> **"Wind farm failures can cascade like fairy lights – if one element fails, connected assets within the string can shut down."**

Joe Wennell
Claims Manager, Marine, Beazley

Staying competitive in a two-speed transition

To keep up with the thriving renewable sector, the International Energy Authority (IEA) estimates the world must build or fix 80 million kilometres of power lines by 2040 – essentially replacing the entire global grid from scratch[40].

An overhaul of this magnitude is unmasking sharp regional divides, creating the potential for a 'two-speed transition' where the possibility and pace of growth is bound to geography.

China dominates the transition market globally, with US$818 billion in overall energy transition investments in 2024 – around 40%[41] of the global total and more than 80% of global clean energy supply chain investment[42], cementing its dominance across manufacturing, installation and technology development[43].

While Europe and North America are investing heavily, they face steeper hurdles: much higher labour and material costs, slower permit bureaucracy, and old grid infrastructure that was never designed for the demands of a decarbonised, distributed energy system[44].

A new frontier of risk

New entrants are scaling quickly, often across multiple technologies and geographies, while still building out operating models, data visibility and risk frameworks. This can make it harder to fully anticipate how exposures interact across a portfolio – from technology performance to counterparty reliability and insurance coverage.

Next generation assets, such as small modular reactors (SMRs) and fusion are unlocking new capacity, scaling faster, and driving stronger growth potential across the energy system. But they also bring a very different risk landscape into play – with less understood physical risks, less predictable revenues, and regulatory gaps that are still largely uncharted compared to legacy renewables.

With new assets comes a more complex and volatile mix of financial, technical, and environmental exposures. For example, the use of PFAS and PFOA chemicals[45] in solar and battery fire systems is drawing heavy regulatory scrutiny, and because enforcement is often retroactive, this creates environmental liabilities that can haunt owners for decades.

> **"The liability profile of the energy transition is far broader than most investors realise. PFAS chemicals in fire suppression systems, historical contamination on brownfield sites, third-party bodily injury claims, these are not edge cases. They are live and growing areas of loss that require specialist underwriting, not standard property coverage."**

Jenny Han
Focus Group Leader,
Environmental Liability, Beazley

Hedging bets on global power

In key emerging market regions including South Asia, Latin America, Southeast Asia, and Sub-Saharan Africa, rising populations and expanding industries are driving up power demand, drawing in new players keen capture dominant market share and lock in high returns before the economy matures[46]. But investing in these regions carries distinct, interconnected risks.

Emerging markets face risks from weak utilities, volatile currencies, fragile grids, and political contract cancellations. Conversely, developed market risks stem from policy shifts and deglobalisation, which threaten subsidies, trigger tariffs on clean-tech parts, and introduce retroactive interventions like windfall taxes and price caps.

For international firms supporting the global energy transition, smart planning means diversifying income sources to absorb cost shocks. It involves tracking political developments to anticipate change.

Firms can further protect themselves by securing specialised political risk insurance. This covers government actions, trade credit risks, and threats such as terrorism and political violence.

Strengthening operations, securing infrastructure

Battery storage creates a distinct but similarly urgent set of risks. BESS is still a relatively new technology, and a single cell failure can create a thermal runaway event – a dangerous chain reaction that causes fires that are hard to put out, which tend to result in heavy financial losses.

Amidst all this, the industry is effectively 'flying blind'. Limited long-term data means companies are investing heavily in infrastructure without fully understanding the operational risks, asset lifespans, or failure rates. Rapid technological change also is clashing with slow, multi-decade infrastructure cycles, raising the risk of underperformance, obsolescence, or stranded assets.

> **"Network interconnection and intermittency are not side issues in the energy transition. They are central to whether projects can connect on time, operate reliably and deliver the commercial returns investors, developers and insurers are relying on."**

Ben Sheppard
Underwriter, Renewable Energy, Beazley

Success now depends on planning for the worst, not reacting to it. This requires rigorous mapping of supply chain risks, pricing exposures, and embedding contingencies into operations by:

- Building in buffers for delay and disruption
- Defining clear operational red flags across technology and systems
- Using parametric risk transfer tied to predefined climate event triggers
- Empowering frontline teams to act quickly as conditions shift

Bureaucracy delays bite

Regulatory permitting backlogs are a live constraint, as processes for permitting across Europe are drawn out and steeped in bureaucracy.

Delays in permitting create a major impediment to getting insurance, often blocking developers from getting coverage. Because underwriters usually require finalised permits before releasing quotes, projects can get stuck in an uninsurable limbo where affordable market capacity can vanish before a project launches. This permit-to-insurance bottleneck can halt development.

> **"Scaling depends on faster permitting and infrastructure across Europe."**

Teresa Merino
Regional Manager Europe – Renewable Energy, Beazley

Regulatory risk concern

Percentage of executives that believe the diversity and complexity of global regulations are increasing operational risk for their business.

The no-quote transition barrier

Rising demand in across the energy transition does not guarantee funding. Making projects insurable is what will secure financing, as banks require robust insurance cover to be in place before committing capital. Without it, projects stall in the pipeline.

Without insurance quotes, developers cannot secure the loans needed for construction, forcing them to walk away or fund builds themselves. Even signed up investors can block capital release if coverage is not in place to protect from site risks like fire or storm damage.

If delays mount and capital sits idle, timelines slip, costs rise, insurance premiums will likely increase, and investor confidence will quickly evaporate, putting funding at risk.

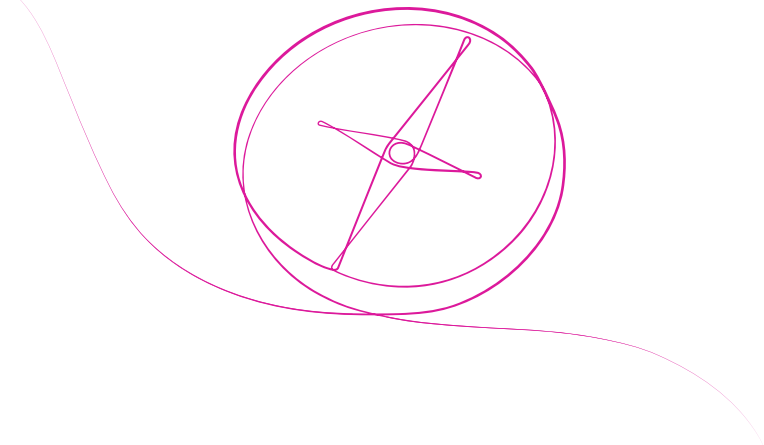
Insurance in an uncharted risk frontier

The rise of renewable infrastructure presents an unprecedented chance for insurers to co-create value, adapting traditional coverages to secure the next generation of energy assets at scale.

While the industry can be a powerful enabler, for many insurers, this is uncharted territory:

- **Stresses old and new:** Fossil fuels are not making a clean exit. Economic and geopolitical pressures are driving renewed demand for fossil fuels. At the same time, demand for secure, clean energy is surging. Fragmented regulation and tightening insurance capacity are adding further strain, pushing the market to its limits.
- **No history:** Novel assets like fusion energy, SMRs, floating offshore wind platforms and green hydrogen lack long-term operational data and present a more complex challenge for underwriters to predict and price risk.
- **Scattered risks:** New ownership models that are often split across multiple parties instead of a single utility or energy company meaning risk is spread across a fragmented web of corporate and investor balance sheets.
- **Legal blind spots:** Evolving carbon markets regulation and strict ESG disclosure rules are creating liabilities – such as financial losses, executive lawsuits, credit rating downgrades – that may sit outside what traditional policies would typically cover.
- **Climate-driven events:** Rising climate-related loss events are increasing in frequency and severity, driving up claims' costs and price volatility. Concentration of renewable energy infrastructure in exposed locations further heightens the aggregation risk, challenging traditional natural catastrophe models and stretching re/insurance capacity.

Traditional insurance products were not designed for the energy transition. For example, marine cargo policies were not built with nuclear floating platforms in mind; property covers were not structured around the performance risk of large-scale battery storage systems. To enable this new energy future, the industry must pivot and start actively enabling projects through close collaboration between insurers, brokers, governments, and developers.



Case study

Weathering the storm

Renewable energy assets are built to harness the elements. Going forward they need to survive them.

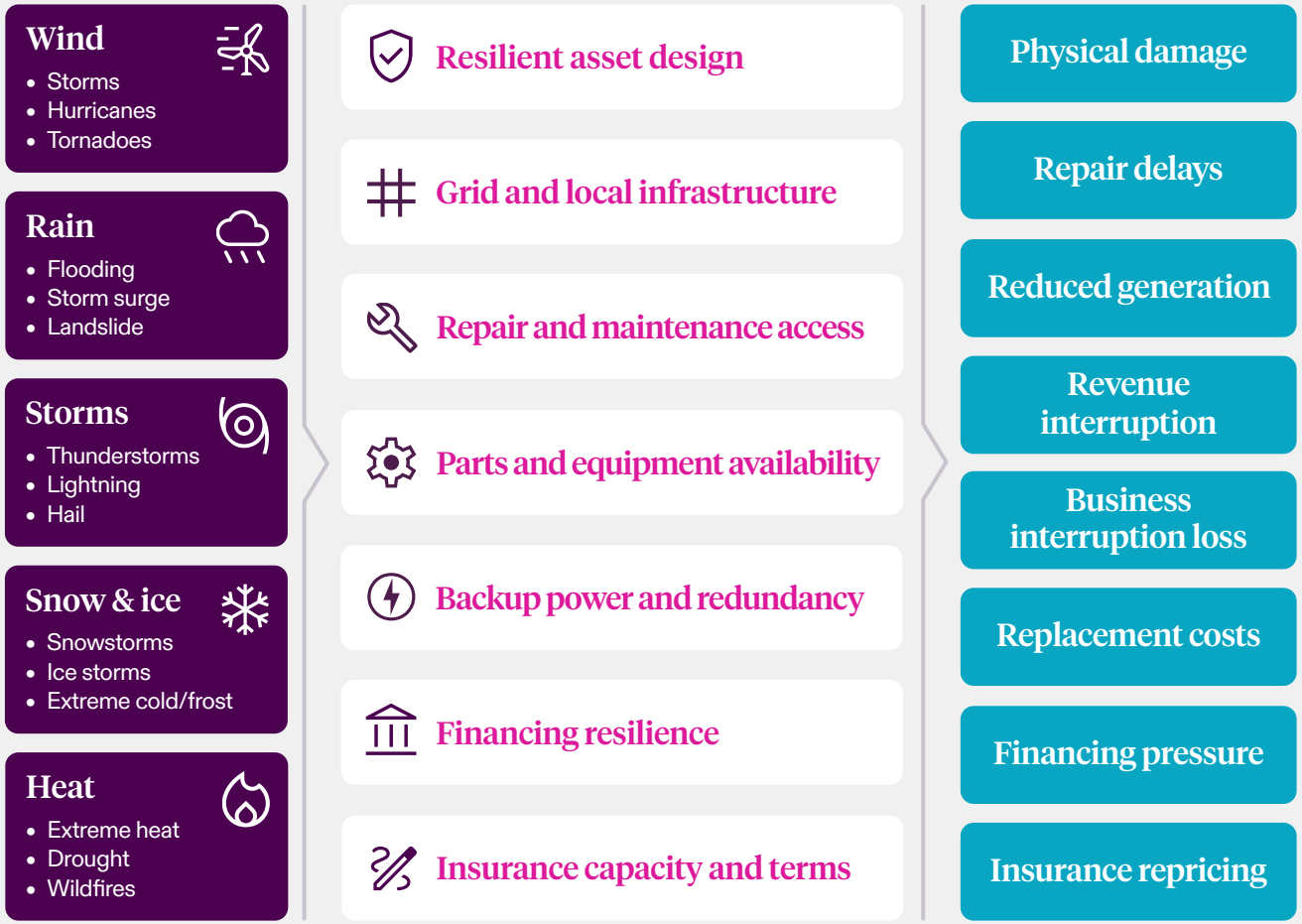
Extreme weather is driving significant losses – we have seen severe storms trigger US$100m+ events across Texas, the Midwest and central US in recent years[47]. Risk is amplified by asset clustering in locations chosen for financial or regulatory incentives but often susceptible to natural catastrophe events, which are happening more often than previously experienced.

These are capital-heavy, front-loaded projects like solar and wind farms, that only earn when they generate electrons – typically over a 30–35-year lifetime. Any downtime hits revenue directly, and this is compounded by the physical loss of assets, and no incentive can offset these costs.

Following large losses, insurers tighten terms resulting in higher premiums, more exclusions and sub-limits and reduced market capacity. This makes proactive risk management critical. Developers need to model extreme weather scenarios, quantify exposure, and define where insurance is essential.

Insurers and brokers can help strengthen resilience before events hit by combining historical and forward-looking loss modelling, exposure insights and asset specification knowledge based on location.

How weather events can trigger cascading energy transition risks



Hail: Solar panels take the hit

Large-scale solar sites have thousands of panels on open land, leaving them exposed to a single convective storm and the widespread damage it can cause.

Hail is the one of the most expensive insurance perils for solar farms[48]. Recent storms highlight the threat. In Texas, 'golf ball-sized' hailstorms hit a solar project in 2024[49], while a short-lived but extreme hailstorm caused around US$70 million in damages to a solar power plant in 2019[50].

The risk is intensifying. Hailstorms are forecast to increase in severity and frequency[51]. Many solar panels are only designed to withstand 25mm hail and 120mph winds, well below the hailstone sizes of today's 'once-in-a generation' storms that are now occurring every few years[52].

Damage includes shattered glass on the panels, cracked photovoltaic (PV) cells and microcracks that are only detectable through specialist imaging, but which degrade performance over time[53].

Loss experience is helping to guide mitigation measures, based on location loss insights has resulted in changes in panel design, with strengthened glass to withstand hail, and smarter tilt and 'hail stow' angles of panels linked to weather tracking systems that move panels when storms are near.

Bowler Broadcast Navigating potholes in renewable energy and driving resilience

Fire: Internal ignition, external spread

Fire risk is not all about where you build, it is how you build and run the site. Although wildfires dominate the headlines, analysis of more than US$150 billion in renewable energy loss data by kWh Analytics[54] found that fire is the second-largest loss driver at PV sites. 84% of PV fire events were attributed to equipment-driven brushfires, and only 4% occurred in high-wildfire-risk areas.
The most common cause was inverter-related brushfire, responsible for 44% of equipment-driven events.

Resilience comes down to three factors:

- **Equipment:** How much combustible material is on the site?
- **Design:** How easily can fire spread between components?
- **Operations:** How well is vegetation managed, maintenance performed, and is there an up-to-date and practiced emergency response?

Lightning: Height drives risk

Lightning damage to wind turbine blades results in millions of dollars of losses a year through physical damage and energy supply interruption. As turbines get taller and wind farms expand into higher-risk regions, the risk of lightning increases. In 2025, the number of US wind turbines struck by four or more lightning strikes rose by 32% compared with 2024[55].

32% more U.S. wind turbines hit by 4+ lightning strikes in 2025[56].

Taller turbines intensify the electric fields and sit closer to storm charge, making them more likely to trigger upward lightning rather than simply be struck by it, which matters as upward strikes account for a large proportion of lightning events on tall turbines[57]. It can also be more destructive than downward 'cloud-to-ground' lightning[58].

In response to losses, insurance coverage is tightening and warranty disputes are growing[59]. Operators must manage the risks in terms of detecting, preparing for and dealing with the aftermath of a lightning event.

Moving from exposure to endurance

Renewables can secure long-term production by designing infrastructure to withstand localised weather extremes and operational exposures. Advances in AI and sensor networks are enabling early fault detection, automatic fire suppression and more resilient grid management.

The insurance industry has a crucial role in helping renewable projects navigate this evolving risk landscape. With improved data analysis, risk mapping and climate insights, they can help developers and operators to understand site exposures and build in better resilience measures from the outset.

Renewable energy risk is no longer just about generation. It is about whether assets can be designed, managed and insured to withstand growing weather volatility and the perils it brings.

Risk rewired

Insurance is an enabler of the energy transition

Helping to shape which projects move forward by unlocking capital, providing risk insight and improving resilience – not just acting as a financial backstop.

Insurers must evolve quickly

Shifting from reactive, siloed protection to proactive, data-driven risk products and partnership that can keep pace with new technologies and rising demand.

Collaboration and innovation are essential

By building the right partnerships, data capabilities, products and cross-disciplinary expertise together the full potential of the energy transition can be unlocked.

beazley

Turning risk into momentum

The insurance sector is looking to embrace the energy transition's uncharted territory. It serves as the financial cushion that global and local eco-pioneers need to turn complex challenges into wins.

With decades of experience modelling emerging risks, particularly climate-related exposure, insurers can bring deep predictive capability to how future systemic challenges are likely to unfold, even as assets evolve and climate volatility intensifies.

While insurance is often a prerequisite for investment, its role in the energy transformation extends well beyond a financial backstop. It provides critical risk insight, technical expertise, and loss analytics that help to shape decisions on which projects move forward, on what terms, and at what pace. The real question is whether the insurance industry can scale fast enough to meet demand.

The energy transition is forcing insurance to evolve from a reactive, siloed form of protection into an enabler of growth.

That shift requires more sophisticated approaches to uncertainty, rethinking how projects are financed, how risks are shared across the value chain, and how alternative risk solutions can unlock investment, support innovation, and build resilience at scale.

Insurance as a gatekeeper to capital

Lenders won't back projects where the risks are not well understood, especially with newer clean technologies and increasingly volatile climate conditions. If insurers cannot model those risks, premiums rise, terms tighten, or cover disappears, and projects stall.

But when underwriters create specialist solutions, such as performance cover for battery storage, revenue protection for wind and solar, or political risk insurance; they help convert uncertainty into investible opportunity, speeding up the development of renewable energy infrastructure.

Insurance as partners in resilience

Insurance plays a role beyond coverage. By setting strict risk management requirements, for example, demanding improved fire suppression in battery facilities or stronger weather-proofing standards, insurers actively shape the quality and durability of the assets being built. This kind of market stewardship goes far beyond paying claims, by helping to build more resilient infrastructure from the outset.

What sets the insurers apart in the energy transition is that there are very few risks they have not seen before. Decades of analysing cyclones, hurricanes, and one-in-a-hundred-year events mean that while green technologies may be new, the underlying risks are familiar. What is changing is how those risks evolve and interact.

> **"Insurance has helped improve battery storage practices and solar panel resilience by requiring better risk management, based on loss insight as a condition of coverage. That is what genuine risk partnership looks like."**
>
> **Ben Sheppard**
> Underwriter, Renewable Energy, Beazley

With a deep data baseline, insurers can stress-test new assets against historical events, simulating for example, how a legacy hurricane would impact modern solar farm. This capability is a gamechanger, enabling clients to move beyond hindsight and proactively map future risk.

Bowler Broadcast
Driving through storms: Managing nat cat risk – insurance for solar & wind

There are further ways that insurance and risk management can act as the critical foundation for resilience for companies navigating the unique risks of the energy transition:

- **Quantifying frontier risks:** Identifying emerging hazards – from tech failures to evolving climate shocks – using advanced modelling, IoT sensors, and digital stress tests to enable firms to uncover and fix vulnerabilities before projects begin.
- **Enforcing asset excellence:** Reducing design flaws and operational errors that trigger catastrophic failures, by tying coverage to technical audits, real-time diagnostic tracking, and strict technical standards, helps drive performance from design through to operation.
- **Signalling commercial viability:** Using risk-based pricing to steer innovators away from flawed or high -risk technologies, and nudging developers to pivot towards more robust, bankable solutions.
- **Accelerating recovery:** Following major incidents, insurers can deploy specialised engineering support, source critical components, and conduct root-cause analytics, minimising downtime and losses.
- **Securing decarbonisation pathways:** By tracking geopolitical, regulatory, and market risks and sharing cross-industry insights insurers help developers adapt early and build through uncertainty.

Evolving products for a new risk landscape

While legacy risk models reflect the past, forward-thinking insurers can actively build the products and frameworks necessary to transition success. Likewise, developers who treat resilience as a capital allocation decision will achieve more stable insurance economics over time. Asset site selection matters too. Businesses that factor peril exposure into location decisions from the outset make better investment choices and build stronger portfolios.

This is where loss history, product insight and AI driven data analytics really comes into play. By providing actionable intelligence developers can optimise their operations, minimise the risks of downtime, and maximise projected revenue.

> **"We have brokers and clients come to us and say – "we're building in this location, what do you recommend?" We can provide them with insight into location, risk and design, helping to reduce exposure, increase asset resilience and secure lower premiums."**
>
> **Geoffrey Lehv**
> SVP, Head of North American Accounts
> kWh Analytics (A Beazley company)

Carbon markets in a time of transformation

Carbon markets represent a growing area of insurance innovation. As voluntary and compliance carbon credit markets mature, insurance is playing an important role in strengthening trust and market integrity for both project developers and corporate buyers. By helping to manage risks such as credit performance and verification uncertainty, insurance supports the liquidity, credibility and tradability of carbon credits, and is becoming an enabling layer in scaling carbon markets.

The rise of alternative risk transfer

The scale of capital required to deliver the energy transition dwarfs the capacity of traditional insurance markets. The World Economic Forum estimates the cost of achieving net zero by 2050 could range from US$100 trillion to US$300 trillion. Mobilising that capital, and managing the risks associated with it, will require new structures that go beyond conventional risk transfer.

Catastrophe bonds, insurance-linked securities and parametric instruments are increasingly relevant to the energy transition. Where current project scale is outstripping market capacity, alternative capital structures are increasingly supplementing conventional coverages, providing the breadth of protection that today's projects require.

> **Cat bonds, and other ILS and parametric structures can supplement more traditional models where project scale outstrips market capacity. The reinsurance market has a fantastic opportunity to be more creative about how we deploy capital alongside conventional risk transfer."**

Richard Gray
Head of Third-Party Capital, Beazley

The power of the collective

Public-private partnerships are becoming more important as governments seek to deploy incentives, guarantees and blended finance to make marginal projects viable. Multilateral banks, export credit agencies and green investment funds are increasingly working with insurers to extend insurability into markets and technologies. Insurers that act as active partners – rather than passive risk-takers – will help shape the energy transition and capture the moment.

Within the market, specialty insurers are moving beyond coverage, offering site-specific risk insight and resilience advice. Better-designed assets attract better terms, creating a virtuous cycle of stronger performance and lower risk.

Brokers play a critical connective role. Sitting between clients and carriers, they translate evolving sustainability strategies into clear risk data, enabling sharper underwriting, more tailored solutions, and smoother project delivery. The Lloyd's Market Association (LMA) recently urged brokers to 'step into a more strategic role and act as catalysts for long-term, collaborative relationships between insurers and their clients'[60].

> **New risks require policies bridging property, energy and environmental coverage, with closer cross-team collaboration. Siloed thinking produces coverage gaps, and coverage gaps cost clients."**

Lindsay Shipper
Head of North American Commercial Property, Beazley

Resilience value loop

The growth opportunity is significant, but it will be captured by those who adapt fastest, building the products, the partnerships, the data capabilities and the cross-disciplinary expertise this new energy order requires. The energy transition is not waiting.

Case study

The role of insurance in the carbon markets

The carbon credit markets are shifting quickly. Multiple forces – new standards, tighter regulations, rapid growth and even an 'integrity reset'[61] – are all taking shape in parallel, underpinning the global transition to net zero.

Carbon credits sit at the core of many decarbonisation plans, covering residual emissions that cannot be removed. What started as a corporate responsibility lever is now a multibillion-dollar asset class with the voluntary carbon space sitting at the centre of climate strategy.

But ambitious promises and growth have not fixed the credibility problem[62]. Carbon credits come with material risk for both buyers and environmental outcomes. At any stage of the credit lifecycle, credits can be reversed, downgraded, double counted, invalidated, duplicated and even stolen.

These risks sharpen as carbon credits move from voluntary use into formal compliance.

From offsets to obligations

For the first time, aviation has a global carbon control. Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)[63] stabilises net emissions from international flights through offsets and the uptake of fuels like sustainable aviation fuel (SAF). Under CORSIA, airlines no longer choose whether to offset emissions, they must.

As the scheme enters its first compliance phase, insurance is emerging as critical infrastructure to help airlines align. It safeguards carbon credits against the delivery, political, regulatory, and performance risks that can undermine them, ultimately determining whether they remain usable and viable.

Despite growing demand, supply can be limited or delayed by the need to meet CORSIA requirements and the insurance industry's ability to back approvals. However, well-governed, compliant projects are more likely to attract quality insurance, which in turn will help to scale the carbon market and to protect this new asset class.

> **"Carbon markets are a prime example of how insurance can enable entirely new climate-related asset classes to scale. As compliance and voluntary carbon markets expand and mature, the ability to manage integrity risks is emerging as a critical requirement for market confidence."**

Neil Kempston
Head of Incubation Underwriting, Beazley

Standardisation brings accountability

As carbon markets formalise; a more defined category of insurable risk is taking hold. Compliance frameworks such as CORSIA and the EU Emissions Trading System[64] are presenting more detailed, standardised and enforceable obligations around the use of carbon credits.

The voluntary carbon markets (VCM)[65], so famously unregulated, are simultaneously undergoing scrutiny from regulators, investors and customers over the credibility of their climate claims.

In both cases, confidence in the integrity of credits is becoming commercially significant. Failures and falsities have clear financial consequences; from compliance penalties and asset write-downs to reputational harm and lost investor confidence.

Markets evolving toward clarity and capital

The carbon credit markets are primed for acceleration. From an estimated US$4 billion base, the VCM is on track to an estimated US$24 billion by 2030[66], while the compliance carbon markets (CCMs)[67] are predicted to grow to an estimated worth of near US$5.91 trillion by 2031[68]. Those who move early can capture value and help shape the market.

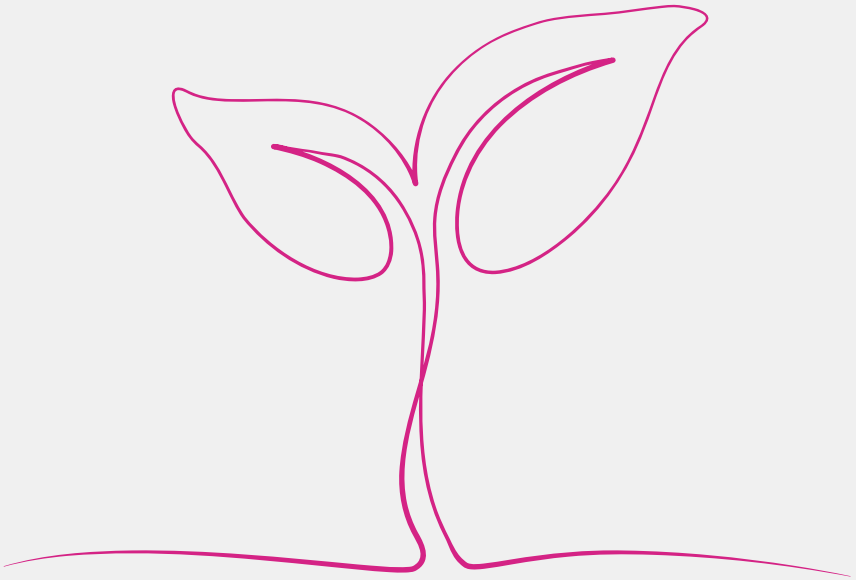
Insurance shifts this market from constrained to investable, freeing stuck credits and providing the level of assurance required for large-scale investment. Rather than covering carbon price fluctuations, insurers are focusing on specific integrity risks such as fraud, double counting, invalidation of credits, revocation of authorisation and governance failures. Thereby helping buyers preserve the original value of the asset and navigate market transactions with confidence.

The sector's evolution also highlights a clear pattern: insurance innovation thrives once regulatory frameworks mature. More clearly defined compliance structures make risks easier to define, model and insure. And as governance standards improve and markets generate more reliable data, insurers are better able to assess exposure and develop products around it. In contrast, regulatory frameworks that are fragmented or in flux mean political and regulatory exposure are a key barrier to coverage and market participation for both buyers and underwriters.

Beyond credits: insuring the transition

Beyond carbon credit integrity, insurers are exploring and creating solutions for adjacent risks, covering technology performance and clean energy tax credit exposures.
As investment in nature and technology solutions grows, insurance is stepping in to mitigate underperformance, operational failure, and missed removal targets.
The insurance industry is thus helping to make emerging technologies more investable and commercially viable, while strengthening confidence in regulatory and tax credit frameworks.

Carbon markets are no longer niche – they demonstrate how insurance can underpin transition markets by creating mechanisms for trust, transferring risk, and stabilising systems that net zero strategies increasingly depend on.



Methodology

About the survey

In January 2026, we partnered with research firm Opinion Matters to survey over 3,500 business leaders and insurance buyers from internationally operating companies based in the UK, US, Canada, Singapore, France, Germany, and Spain.

Participants shared their views on insurers and insurance, as well as their perceptions of risk and resilience across four key categories:

- **Environmental Risks:** Climate change, catastrophic events, environmental damage, emissions, pandemics, and energy transition.
- **Geopolitical & Economic Risks:** Strikes, civil unrest, regulatory changes, economic uncertainty, inflation, war, and terrorism.
- **Business Risks:** Supply chain instability, business interruption, boardroom risk, crime, reputation, employer liability, and ESG compliance.
- **Cyber & Technology Risks:** Disruption threats, technological lag, cyber security threats, and intellectual property risks.

Respondents represented a range of company sizes, from US$/CA$/SG$/GB£/EUR€ 250,000 to over 1 billion in annual revenue, across all surveyed markets.

Each country included a minimum of 50 respondents per industry sector, covering:

- Healthcare & Life Sciences
- Manufacturing, Retail, Wholesale & Food & Beverage
- Real Estate, Commercial Property & Construction
- Hospitality, Entertainment & Leisure (incl. Gaming)
- Financial Institutions & Professional Services
- Energy, Utilities, Mining, Marine & Warehousing
- Public Sector & Education
- Technology, Media & Telecoms
- Transportation, Logistics, Cargo & Aviation

The survey was conducted between 05.01.2026 and 13.01.2026.

This annual Risk & Resilience survey began in 2021 with 1,000 respondents from the UK and US. It expanded to 2,000 in 2022–2023 with the addition of Canada and Singapore, and then to 3,500 in 2024 with the inclusion of France, Germany, and Spain.

Contributors

Denis Bensoussan
Head of Space, Beazley

Juan Duan
Head of Climate & Nature, Beazley

Richard Gray
Head of Third-Party Capital, Beazley

Jenny Han
Focus Group Leader, Environmental Liability, Beazley

Jason Kaminsky
CEO, kWh Analytics (A Beazley company)

Neil Kempston
Head of Incubation Underwriting, Beazley

Geoffrey Lehv
SVP, Head of North American Accounts, kWh Analytics (A Beazley company)

Kelly Malynn
Head of Transition & Emerging Risk, Beazley

Teresa Merino
Regional Manager Europe – Renewable Energy, Beazley

David Schechter
Claims Focus Group Leader – Environmental, Beazley

Ben Sheppard
Underwriter, Renewable Energy, Beazley

Lindsay Shipper
Head of North American Commercial Property, Beazley

David Singh
Head of Catastrophic Risk & Research, Beazley

Joe Wennell
Claims Manager, Marine, Beazley

Stefan Wunderlich
Head of Alternative Risk Transfer, Beazley

References

1. Beazley Risk & Resilience 2026/27 survey
2. Beazley Risk & Resilience 2026/27 survey
3. https://about.bnef.com/insights/finance/global-investment-in-the-energy-transition-exceeded-2-trillion-for-the-first-time-in-2024-according-to-bloombergnef-report/
4. https://climatepromise.undp.org/news-and-stories/investing-renewable-energy-will-usher-better-future-all-heres-why
5. Global Energy Transition Investment Hits Record $2.3 Trillion in 2025 - The Renewable Energy Institute
6. https://ember-energy.org/latest-insights/global-electricity-review-2025/the-big-picture/
7. Why investment in BESS is set to accelerate in the next 5 years - WTW
8. Low carbon hydrogen set for investment rebound, reveals new survey
9. UK Emissions Trading Scheme (UK ETS): a policy overview - GOV.UK
10. Corporate sustainability reporting - Finance - European Commission
11. https://www.weforum.org/stories/2023/01/davos23-rethink-energy-security-transition-net-zero/
12. https://www.epa.gov/green-power-markets/summary-inflation-reduction-act-provisions-related-renewable-energy
13. https://www.linkedin.com/pulse/how-leading-data-centres-made-switch-hourly-matched-green-energy-wqfac/
14. https://re24.energy/blog-the-shift-to-hourly-matched-green-energy/
15. https://www.iea.org/reports/energy-and-ai/executive-summary
16. https://eepower.com/tech-insights/reports-energy-transition-data-centers-opportunity/
17. Global Energy Transition Outlook 2025
18. How US tech giants are shaping the energy transition, despite the US administration's resistance - EnableGreen
19. https://www.worldbank.org/en/topic/energy/publication/the-critical-link-empowering-utilities-for-the-energy-transition
20. https://www.beazley.com/en-US/news-and-events/geopolitical-risk-snapshot-2024/powering-africa/
21. https://www.bbc.com/future/article/20251015-perovskite-the-wonder-material-that-could-transform-solar-energy
22. https://unfccc.int/technology/floating-offshore-wind-power-plants
23. https://ig.ft.com/mega-batteries/
24. Nuclear Small Modular Reactors (SMRs) Market 2026-2046: Technologies, Players, Benchmarking, Forecasts: IDTechEx
25. https://understand-energy.stanford.edu/news/understand-small-modular-reactors
26. Nuclear Small Modular Reactors (SMRs) Market 2026-2046: Technologies, Players, Benchmarking, Forecasts: IDTechEx
27. https://euro-fusion.org/fusion/history-of-fusion/
28. Billions in private cash is flooding into fusion power. Will it pay off?
29. Helion Energy targets 2028 fusion power as AI drives electricity crunch
30. https://www.iaea.org/newscenter/news/floating-nuclear-power-plants-benefits-and-challenges-discussed-at-iaea-symposium
31. https://sustainabilitymag.com/news/panthalassa-the-floating-wave-powered-data-centre-unicorn
32. https://spaceenergyinitiative.org.uk/space-based-solar-power/
33. https://www.cnbc.com/2026/05/20/bezos-blue-origin-space-data-centers.html
34. https://www.linkedin.com/posts/lonestar-data-holdings_did-you-know-the-first-lunar-data-center-activity-7433662292984209408-P16S?utm_source=share&utm_medium=member_desktop&rcm=ACoAAAxBzMwBGdIDf0MRbbMW52_pggVm6lu81Uw
35. https://www.morganstanley.com/insights/articles/geopolitical-risk-impact-investors-institute-2026
36. https://www.atlanticcouncil.org/blogs/energysource/the-strait-of-hormuz-crisis-will-ripple-across-plastics-and-food-supply-chains-helping-beijing-and-moscow-hurting-americans/
37. https://www.wri.org/insights/los-angeles-fires-january-2025-explained
38. Billion-Dollar Weather and Climate Disasters | National Centers for Environmental Information (NCEI)
39. https://www.sustainable-markets.org/news/climate-risks-still-underestimated-by-markets-despite-1-3-trillion-exposure-for-listed-companies-according-to-smi-report/
40. https://www.iea.org/reports/world-energy-outlook-2024
41. https://about.bnef.com/insights/finance/global-investment-in-the-energy-transition-exceeded-2-trillion-for-the-first-time-in-2024-according-to-bloombergnef-report/
42. https://english.www.gov.cn/news/202502/13/content_WS67ad61d6c6d0868f4e8ef9c0.html
43. https://english.www.gov.cn/news/202502/13/content_WS67ad61d6c6d0868f4e8ef9c0.html
44. https://about.bnef.com/insights/clean-energy/a-decade-after-the-paris-agreement-clean-energy-is-making-strides-in-emerging-markets-but-investment-gaps-persist-bloombergnefs-climatescope-finds/
45. Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) | National Institute of Environmental Health Sciences
46. https://about.bnef.com/insights/clean-energy/a-decade-after-the-paris-agreement-clean-energy-is-making-strides-in-emerging-markets-but-investment-gaps-persist-bloombergnefs-climatescope-finds/
47. triple-i_state_of_the_risk_convective_storms_10232023.pdf
48. https://taiyangnews.info/reports/kwh-analytics-7th-solar-risk-assessment
49. https://taiyangnews.info/reports/kwh-analytics-7th-solar-risk-assessment
50. https://www.fastcompany.com/90626944/this-technology-protects-solar-panels-from-extreme-weather
51. https://kwhanalytics.com/industry-reports/2026-solar-risk-assessment/
52. https://www.renewableenergyworld.com/solar/how-is-extreme-weather-reshaping-solar-project-maintenance-and-design/
53. https://www.energy.gov/cmei/femp/hail-damage-mitigation-pv-systems
54. https://kwhanalytics.com/industry-reports/2026-solar-risk-assessment/
55. https://www.xweather.com/annual-lightning-report-2025#behind-the-data
56. Resource | Lightning damage to wind turbines
57. Upward Lightning at Wind Turbines: Risk Assessment From Larger- Scale Meteorology - Stucke - 2024 - Journal of Geophysical Research: Atmospheres - Wiley Online Library
58. Serial defect claims in offshore wind projects will challenge insurers
59. https://www.weforum.org/stories/2023/09/costing-the-earth-how-to-make-green-transition-work/
60. https://www.insurancebusinessmag.com/uk/news/breaking-news/brokers-called-to-be-strategic-enablers-as-insurance-adapts-to-the-energy-transition-539905.aspx
61. https://unfccc.int/news/un-body-sets-fast-track-plan-to-deliver-high-quality-credits-under-paris-agreement
62. https://www.streetwisereports.com/article/2024/07/12/is-the-carbon-credit-market-dead.html
63. https://www.icao.int/CORSIA
64. EU Emissions Trading System (EU ETS) - Climate Action - European Commission
65. What is the Voluntary Carbon Market? • Carbon Credits
66. https://www.grandviewresearch.com/industry-analysis/voluntary-carbon-credit-market-report
67. carbon market - Carbon Market Watch
68. Compliance Carbon Credit Market Size & Growth to 2031

Discover more
beazley.com

Beazley plc (BEZ.L), is the parent company of specialist insurance businesses with operations in Europe, North America, Latin America, Bermuda and Asia. Beazley manages six Lloyd's syndicates and, in 2025, underwrote gross premiums worldwide of $6,100.7million. All Lloyd's syndicates are rated A+ by A.M. Best.

Beazley's underwriters in the United States focus on writing a range of specialist insurance products. In the admitted market, coverage is provided by Beazley Insurance Company, Inc., an A.M. Best A rated carrier licensed in all 50 states and its subsidiary, Beazley America Insurance Company, Inc. In the surplus lines market, coverage is provided by Beazley Excess and Surplus Insurance, Inc.

Beazley's European insurance company, Beazley Insurance dac, is regulated by the Central Bank of Ireland and is A rated by A.M. Best and A+ by Fitch.

Beazley's Bermuda entity, Beazley Bermuda Insurance Limited, is A rated by A.M. Best and regulated by the Bermuda Monetary Authority.

Beazley is a market leader in many of its chosen lines, which include Directors & Officers, Financial Lines, Cyber, Property, Marine and Aviation, Reinsurance, Accident and Life, and Political Risks and Contingency business.

For more information, please go to: www.beazley.com

BZCP155

beazley

Insurance. Just different.