Reuters Events

NO TRANSITION WITHOUT TRANSMISSION: SECURING FUTURE GRID INFRASTRUCTURE

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CONTENTS

THE CRITICAL ROLE OF ELECTRICITY NETWORKS

What is keeping U.S. energy sector leaders awake? There is plenty to choose from. But one topic—grids—stands apart from all others.

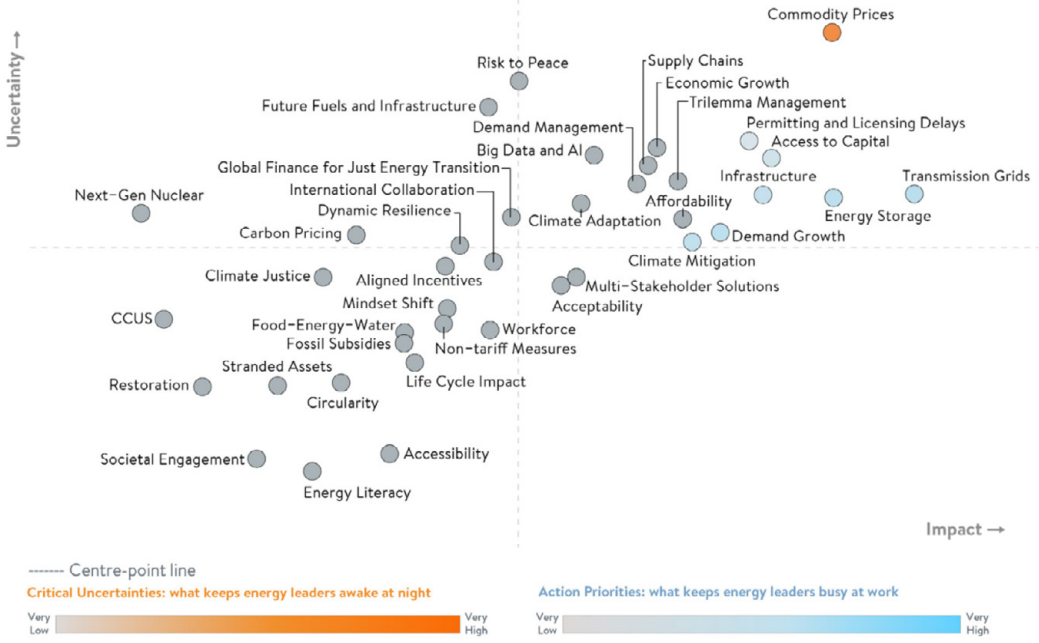
U.S. power grids were "not designed to handle the rapid increase in load growth and resource integration" driven by "federal and state-level policy, regional economic growth, rapid technological development and evolving market dynamics," one insider told Reuters in a recent report.[1]

The sentiment echoes the findings of the World Energy Council's 2025 World Energy Issues Monitor, where transmission grids emerged as the top action point for the industry, for the second year running.

"Grid expansion and modernization are essential to enabling clean energy growth, yet challenges in permitting, investment and collaboration slow progress," says the report.[2]

TRANSMISSION GRIDS ARE THE BIGGEST ACTION PRIORITY FOR ENERGY LEADERS

The World Energy Issues Monitor global impact and uncertainty map in 2025.



Source: World Economic Forum.[3]

Electricity networks occupy a central role in today's societies, delivering the energy needed for almost all modern applications. And that role is growing as energy systems worldwide transition from thermal to electric forms of generation and consumption.

Increasingly, the electricity network will not only power our lights and appliances but also our industries, transportation, heating and cooling.

"If we're going to transition to a low-carbon economy and support renewables, we have to keep evolving the grid," says Catherine Carlyon, Country Leader for Australia at global commercial insurer AXA XL. "We can't afford to be complacent. The grid is a critical part of the transition."

A COMPLEX RISK LANDSCAPE

The importance of the electricity grid was brought home to 55 million people across the Iberian Peninsula in July 2025, when a major blackout hit the region. The outage lasted several hours and was thought to have cost Spanish industry around $1.8 billion.[4]

Such events are far from rare and have affected even greater numbers in the past, with 620 million Indians losing power in 2012[5] and 99% of the Pakistani population suffering a blackout in 2023.[6]

Electricity network outages can have many causes, with mechanical or electrical failure a growing issue as grids get older.

"In North America and probably most of the world, the grid has been underfunded from an infrastructure perspective for a long time," observes Christopher Fasser, AXA XL's Energy Transition Strategy & Operations Lead for the Americas.

Other hazards are also on the rise. The digitization of grid technologies is potentially making grids more prone to cyber threats[7]. And the increasing frequency and severity of weather events in some parts of the world is adding to the risk of natural catastrophe damage to electricity networks.

Some of these trends are also increasing the levels of liability risk seen by grid operators. Malfunctioning equipment can become a fire hazard, with potentially crippling effects.

"The risks and costs associated with wildfire mitigation, liability and recovery are creating a direct feedback loop with utility business risks," said the Pacific Northwest National Laboratory in July 2025. "This could pose an existential threat to the utility business model."[8]

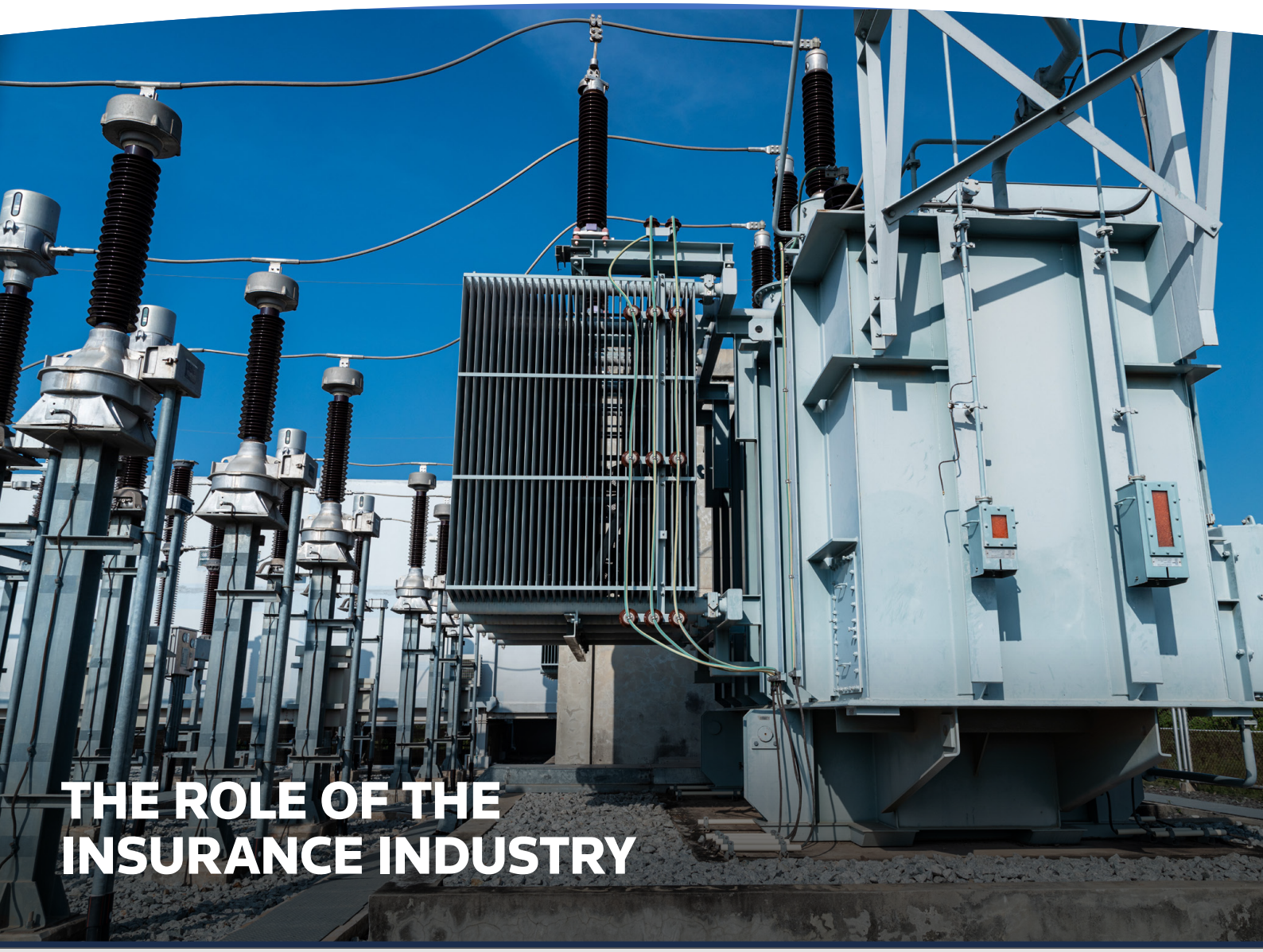
Many of these challenges could be overcome with appropriate levels of technology and infrastructure investment, but grid upgrades themselves are not exempt from risk.

The long lead times and significant societal and environmental impacts of upgrades mean infrastructure investments may face political, regulatory and legal headwinds.

And in common with other large energy infrastructure projects, grid upgrades can suffer delays and cost overruns due to worker shortages and equipment bottlenecks.

This complex risk landscape has important implications for how far and fast grids can adapt to growing requirements for electrification and the appearance of new sources of demand, such as that required to power AI data centers.

"You already have aging and inconsistent infrastructure and now you're adding a huge demand into that ecosystem," says Fasser.



THE ROLE OF THE INSURANCE INDUSTRY

The good news for infrastructure developers and investors is that the insurance industry has a range of products and services that can reduce the risks linked to grid transformation, such as property and casualty offerings that protect projects during construction and operation.

Companies such as AXA XL also offer political risk and credit cover to safeguard against regulatory and permitting challenges, and cyber insurance to counter rising digital threats. Credit and project finance insurances can protect lenders against non-payment risk, making financing easier.[9]

Also of interest to grid operators are structured risk solutions, which provide cover for non-traditional insurance areas such as project performance.

Meanwhile, parametric programs offer a set payment once a specific parameter is exceeded and are often used to insure against extreme weather events.[10]

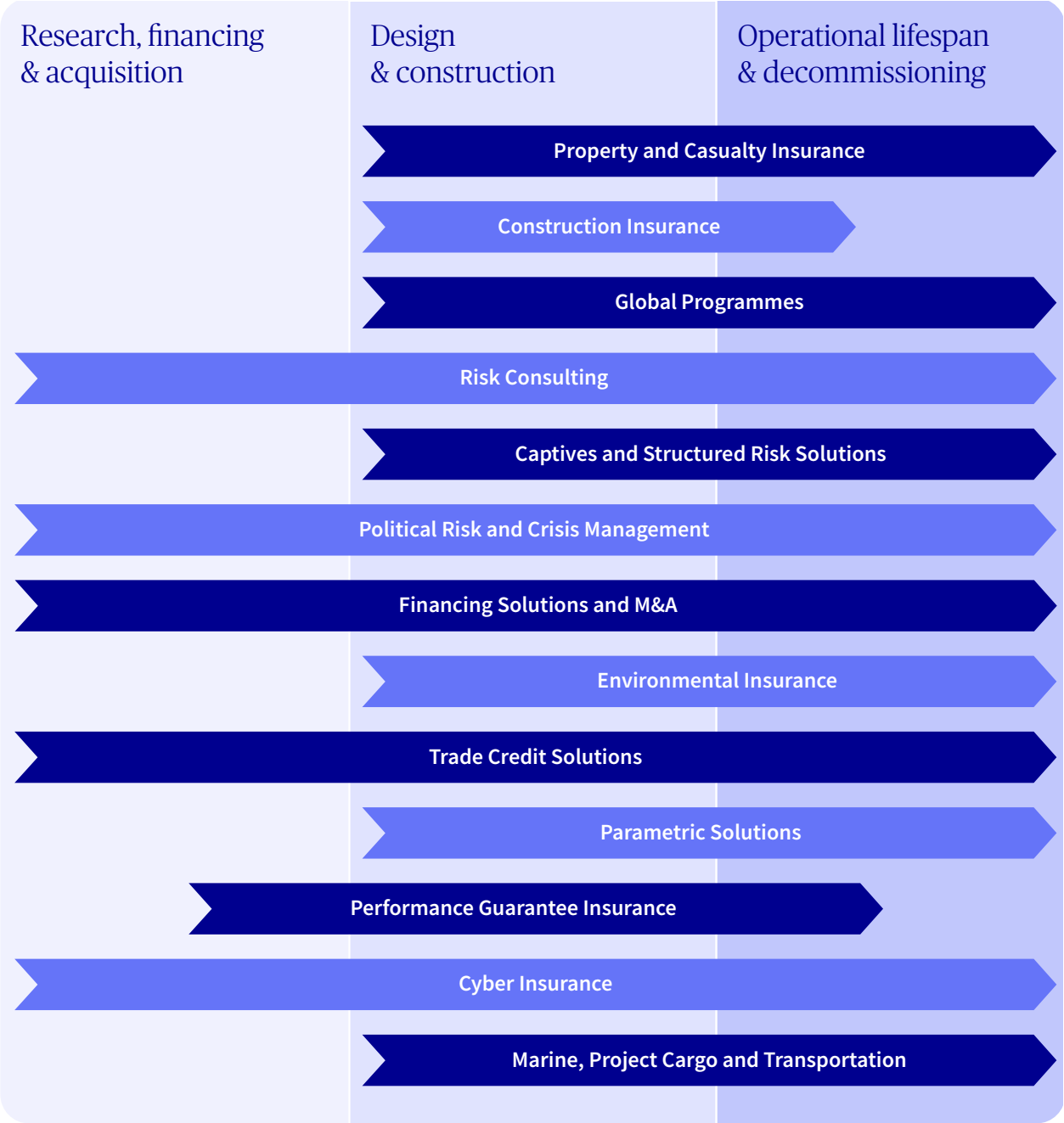
While insurance cannot protect against all the threats facing grid development and operations, the range of options that can be used to cut the risks facing the transmission network sector is wider than one might expect.

In Australia, for example, "what is causing a lot of problems is supply chain issues—getting all the equipment," says Kim McEwan, Head of Casualty at AXA XL in Australia. "Most of our equipment is not made locally, so has to come from overseas. And that's where marine insurance is important."

Bringing marine insurance to bear on land-based transmission infrastructure projects might already seem a stretch, but insurers can go even further to protect electricity grids, well beyond the realm of policies and premiums.

INSURERS OFFER A GROWING RANGE OF PRODUCTS TO PROTECT ENERGY INVESTMENTS

AXA XL's energy transition insurance portfolio across the lifecycle of energy assets.



Source: AXA XL.[11] *Not all AXA XL insurers do business in all jurisdictions nor is coverage available in all jurisdictions.*

MORE THAN A POLICY

The insurance industry is uniquely positioned to assist transmission network operators and developers because it not only liaises with grid companies and investors over risk mitigation requirements but also sees how and why things go wrong.

As well as using this information to refine insurance products, insurers can offer important insights into project design, technology selection and more.

For instance, says Thorsten Leubert, Energy Transition Senior Risk Consultant at AXA XL, "A distribution company saving $10,000 for an online monitoring system can easily end up with a multi-million loss on a transformer fire, resulting in two or three years of business interruption."

Insurers "are not just asking questions, ticking boxes, and giving this back to our underwriters," he says. "We see claims in transmission and distribution, and we try to support a client towards reduced operating risk."

While risk engineering and consulting represents an important way of safeguarding grid development and operation, insurers can go even further by collaborating with industry research initiatives.

In Australia, for instance, AXA XL is using scenario-based modeling to create risk mitigation strategies for business. Also, "a lot of our transmission companies work with the University of Melbourne, looking for how they can improve the network," says McEwan. "A lot of that gets shared."

Meanwhile in London, AXA XL is partnering with the UK's first accelerator for development-stage climate tech entrepreneurs. The partnership sees AXA XL offering insurance and risk management expertise to the members of London GreenCity,[12] including the developers of energy infrastructure.

A final and no less significant contribution to grid transformation is that posed by direct investments.

As of June 2025, AXA Investment Managers, part of the BNP Paribas Group, had 4 billion euros under management with 50% of capital allocated to digital and renewables projects, including investments in energy transition assets such as smart grids and EV charging networks.[13]

Underpinning such capital flows is a desire to reduce global risk generally, a key requirement for the long-term viability of the insurance industry at a time when changing weather patterns are increasing losses in an unpredictable way.

"Insurance always has an interest in investing in assets which are promising in the future," says Leubert.

AN ELECTRIFYING FUTURE

The insurance industry has already proved its worth in safeguarding the evolution of electricity network infrastructure through episodes such as the early development of offshore wind, where insurers played a role in improving subsea cable installation[14] techniques following a string of losses.

Currently, says Leubert, there is a focus on transformer-related risks as grid developers may not be aware that the lead time for new equipment stretches to six or seven years.

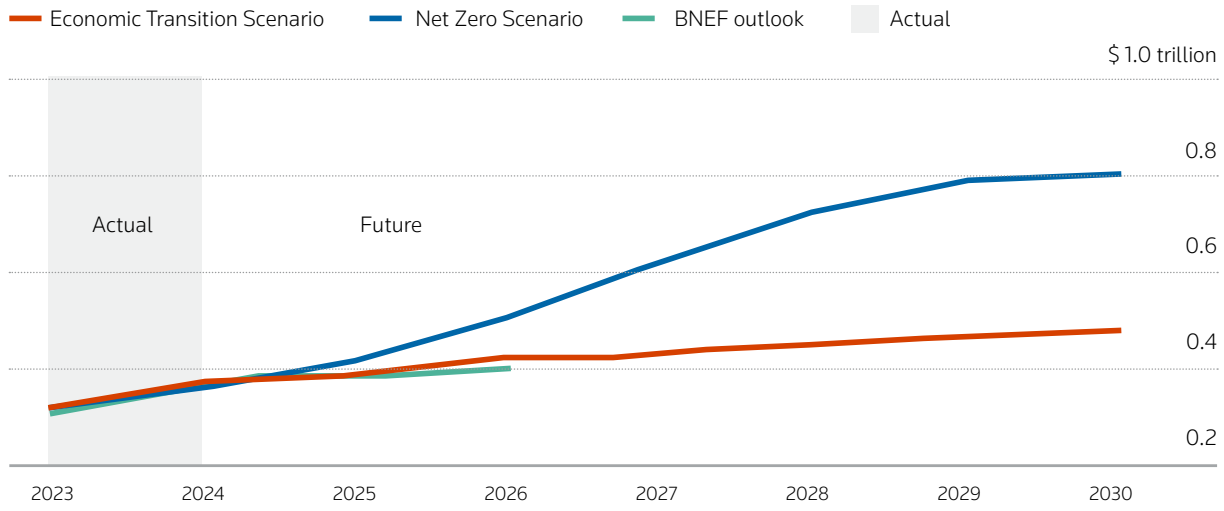
"We want to reduce the risk, of course, for us to pay out for a loss, but on the other hand we also want to be a benefit for the asset manager; bring risks to mind that he or she has never seen before or considered," Leubert says.

This kind of support will be more important than ever as grids worldwide scale up to meet the challenges posed by decarbonization, electrification and demand growth. The International Energy Agency estimates electricity consumption will grow by an average 4% a year through to 2027.[15]

According to the analyst firm BloombergNEF, the world's grids will require $811 billion a year in investments by 2030 to stay on track for the transition to a low-carbon economy. Even in the event of a slower, economics-led transition, grid investments of $483 billion a year will be needed by 2030.[16]

GRID INVESTMENTS ARE ON THE RISE AROUND THE WORLD

BloombergNEF estimates of global grid investment under varying scenarios.



Source: BloombergNEF New Energy Outlook 2024.[17]

Regardless of the pace of change, grid infrastructure is evolving to become more complex and potentially more exposed to a greater range of risks.

"You've got legacy systems, upgrades, new energy sources connecting to the grid," says Stephen Nguyen, Head of Distribution and Marketing for Australia at AXA XL. "At the same time, cyber risk is escalating globally and the digitization of grid operations will expand the attack surface."

As well as requiring new risk mitigation products, the evolution of electricity networks will involve the development of new technologies—and these, too, could be supported through insurance.

"If it's a novel technology with small-scale track records, you're assuming the risk that the technology is going to work as expected when you start to scale up and commercialize it," says Fasser. "We can help reduce some of that risk with our Technology Performance Insurance offering."

CONCLUSION: A CALL FOR COOPERATION

The transition to low-carbon energy production and distribution means a shift to a highly distributed, intermittent grid, which is very different from the transmission architecture of today. If increasing demand is to be met by renewable sources, greater grid flexibility is needed.

While some of the current grid-based issues related to the energy transition will likely require policy intervention, such as connection times and interconnector capacity constraints, it is also clear that the insurance industry can play a major role in reducing grid investment and deployment risk.

Adding infrastructure in an efficient, risk-managed way is critical to consumer buy-in to the transition, and "we have a lot of toys in the box we can use to support our clients," Fasser says.

"In this case I think it is how we utilize those capabilities and reorient them to meet the needs of this specific sector. There are new applications for types of coverage we should think about adapting, relative to the grid."

To use these tools effectively, however, it helps to have deep and early engagement with grid infrastructure stakeholders. And that engagement is urgent.

The grid challenges that face energy leaders will not be solved overnight, but the scale and speed of the improvements required means available risk mitigation strategies must be introduced as quickly as possible.

"It can't be an evolution—it has to be more radical than that," says Carlyon of AXA XL in Australia. "We can't reduce the use of thermal power stations without shoring up the grid, so it's imperative."

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