

Navigating Emerging Risks in the Face of Accelerated Growth and Evolution

in the Renewables Sector.





Transformation in the Face of Volatility

Opportunities abound within the dynamic and rapidly evolving renewable energy sector.

Geopolitical threats to global energy markets and supply chain disruptions have brought international energy security into sharper focus. At the same time, a greater understanding of the catastrophic impacts of climate change has supercharged efforts to tackle the human drivers behind rising temperatures and shifting weather patterns.

A Global Tipping Point

The global capacity of renewable power is set to almost double by 2027, overtaking coal as the largest source of electricity generation.¹

Global warming is already on the verge of crossing the critical 1.5 °C threshold in the next decade.²

Together, these geopolitical and environmental factors are driving governments and organizations to reaffirm their net-zero commitments and focus on the accelerated rollout of renewable energy infrastructure. Consumer demand for cleaner, greener energy is also expanding, while investment activity and appetite for renewable energy assets remain strong.

However, developers are contending with global headwinds and an accelerated industry evolution that is challenging the viability of traditional commercial strategies and protections. As the industry grows, so does the complexity of the associated risks.

Businesses in the renewable energy sector must realign their human capital and risk strategies to navigate these challenges and capitalize on emerging opportunities — taking advantage of alternative solutions that match the sector's growth aspirations.

¹ Renewable power's growth is being turbocharged as countries seek to strengthen energy security, IEA, December 2022

² Data-driven predictions of the time remaining until critical global warming thresholds are reached, PNAS, January 2023

Contents

- 1** What is Driving Global Volatility?
- 2** What Are the Major Challenges for Businesses in the Renewables Sector?
- 3** What Are the Opportunities Created by These Issues?
- 4** Why Is it Imperative to Act?
- 5** What Action Should Organizations Be Taking?
- 6** Early Intervention Supports Project Success
- 7** Further Insights



What Is Driving Global Volatility?

The renewables sector finds itself with a pivotal role in tackling climate change and achieving net-zero ambitions.³ The world has placed its vision for the future on decarbonization and clean energy development. It is relying on the renewables sector to deliver economically and environmentally-viable solutions — and fast.

Despite great strides in technological advances, the sector is at the frontline of interconnected macro trends that are challenging growth opportunities. From rising material costs and disrupted supply chains to the threats from economic uncertainty and geopolitical instability — current global volatility poses a considerable threat to sector progress.

As these forces collide, organizations must rapidly reevaluate their operations and strategies around established and clearly defined risks, as well as evolving and emerging threats.

Geopolitics Threaten Energy and Supply Chain Security

While the Russia/Ukraine conflict has had a catastrophic impact on the lives and security of Ukrainians, it has also had significant economic implications across the globe, compounding the long-tail challenges caused by the COVID-19 pandemic.

One of its most critical disruptions has been on global energy markets, as fierce competition for supplies of available oil and gas sent prices skyrocketing. Even before the start of the conflict in Ukraine in February 2022, energy demand was already outstripping supply as countries and businesses emerged from COVID-19 lockdowns.

While energy shortages create a growing demand for installed renewable energy capacity and present a significant opportunity for the sector, the successful development of renewable infrastructure hinges on robust supply chains at a time when supply chain security remains unstable.

Regional lockdowns in China highlighted the global dependence on low-cost manufacturing and exposed supply chain vulnerabilities. Across the globe, a fivefold increase in export restrictions on raw materials⁴ is impacting both the availability and price of the materials needed to meet energy transition targets. As a result, businesses worldwide have been subject to dramatic cost increases, commodity shortages, and longer lead times, forcing companies to recalibrate their supply chain operations.

Global output is anticipated to reduce by nearly

1%

by the end of 2023 due to higher energy prices.⁵

³ For a Livable Climate: Net-zero Commitments Must be Backed by Credible Action, United Nations

⁴ Supply of Critical Raw Materials Risks Jeopardising the Green Transition, OECD, April 2023

⁵ Global Economic Prospects, World Bank, 2022

Global Inflationary Pressures Are Driving Rising Costs

Global markets have been impacted by increased geopolitical volatility and supply chain disruption, creating economic uncertainties for businesses across the globe. Commodity price volatility and the rising cost of freight, power, and labor have stoked inflation as food, fuel and energy costs surge.

Stakeholders throughout the renewables lifecycle have felt the consequences of sharp price rises. Production of some raw materials used in developing renewable energy infrastructure has been curtailed or stopped entirely due to rising costs, slowing the progress of renewable infrastructure development. At the same time, developers are contending with fluctuating exchange rates and interest rate increases that discourage investment and hinder the growth of new projects. The impact of inflation also adds to the severity of costs incurred by developers, which is why it is critical that organizations review insured values and business interruption sums to avoid the risk of underinsurance.

Wind turbine production costs up

40%⁶



Shortage of Skilled Labor Against Growing Demand

Rising costs also add to the human capital challenge for renewable firms. Developers across the globe are in a race to meet growing demand, but to do this, they need the talent to deliver on their ambitions. However, in a tight labor market, there is currently a considerable shortage of skilled talent. As well as inflating the salary demands of the workforce, this skills gap is forcing businesses to spend substantial sums on training and development to build the robust talent pipeline needed to achieve growth.

A heavy reliance on specialist in-demand contractors can also create talent bottlenecks⁷ for developers that hinder the pace of development. Shifting social values are additionally impacting how developers select and develop talent. A focus on diversity, equity and inclusion (DEI) under evolving environmental, social, and governance (ESG) reporting requirements is more critical than ever for businesses who want to build a sustainable workforce.⁸

Currently...

There are

12.7 million

global energy jobs - an increase of more than 5 million since 2012.⁹

By 2030...

The clean energy transition will generate a further

10.3 million

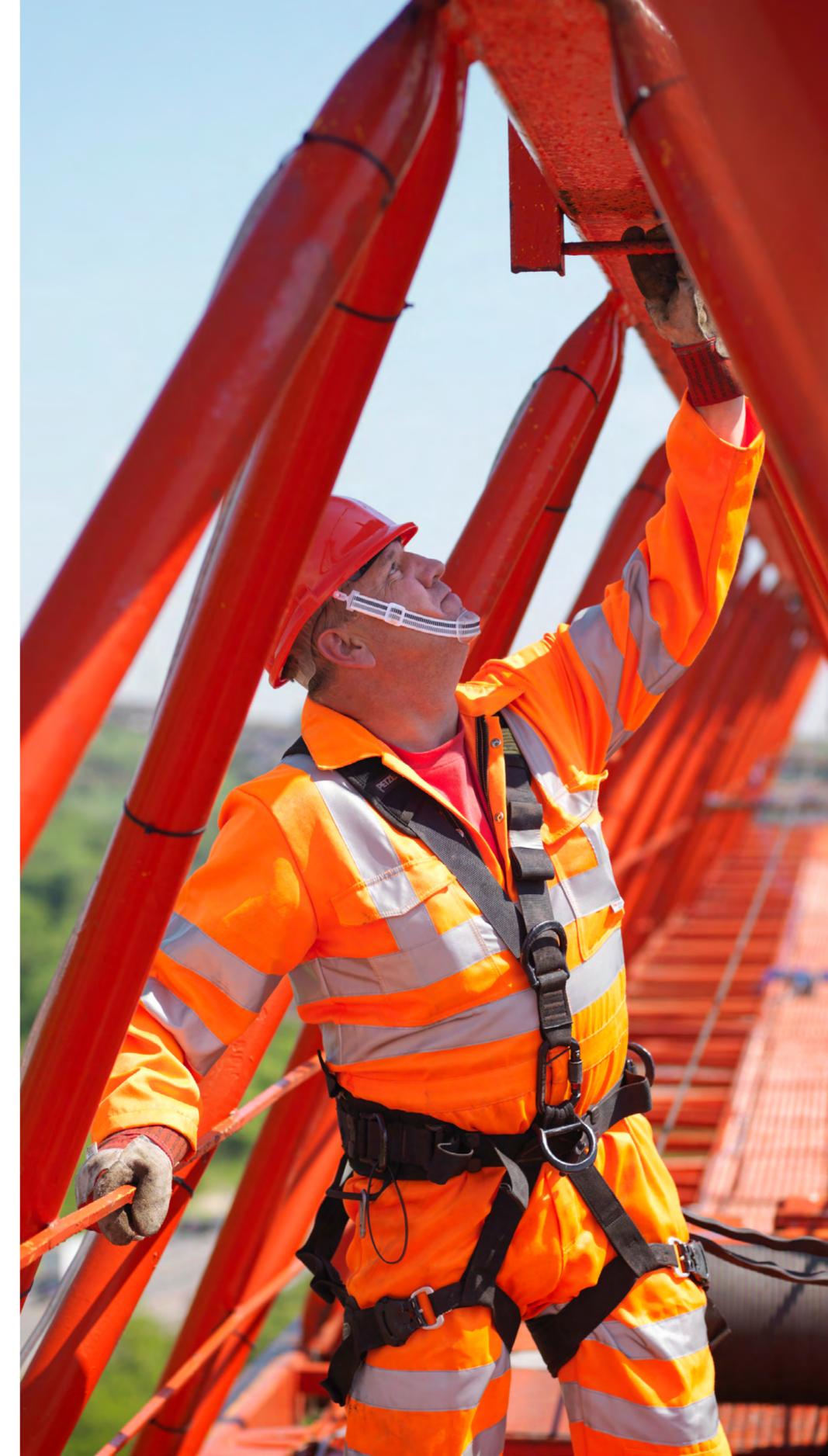
new jobs.¹⁰

⁷ Skills Shortage Imperils Global Energy Transition, S&P Global, 2022

⁸ Aon's Transforming Energy Starts with People, 2021

⁹ Key Data, IRENA, 2022

¹⁰ How Many Jobs Could the Clean Energy Transition Create? WHO, 2022



What Are the Major Challenges for Businesses in the Renewables Sector?

Cost Increases

Inflation is driving up raw material costs and labor prices, putting financial pressures on developers.

While increasing electricity prices provide financial benefits for operators, this changes the risk profile and risk transfer requirements for operators.

Supply Chain Disruptions

Against blistering demand, supply chains are struggling to maintain the momentum needed to facilitate the efficient execution of pipelines.

Such pressures can lead to project delays and increase the need for contingency in planning timelines.

Global Regulation and Legislation

Trade restrictions, political instability and regulatory changes impact the financial feasibility of renewable energy projects. Local and regional planning bureaucracy can also create significant and costly development delays.

In the U.S., for example, a lack of Jones Act-compliant vessels capable of serving as wind turbine installation vessels (WTIV) highlights the gap between growth aspirations and development realities.

Cyber/Terror Threats

Increased threats from cyber and terrorism incidents impact vital energy infrastructure, leading to increased emphasis on security and risk prevention.

For example, drone attacks on major oil facilities in Saudi Arabia, explosions on the Nord Stream Pipeline, geopolitical developments in the Taiwan Strait and recent cyber attacks on wind farm manufacturers have all exposed the breadth of threats to energy infrastructure, workers and companies.



Greater Natural Catastrophes and Extreme Weather Exposures

Climate change is increasing the frequency, severity and unpredictability of extreme weather events/natural catastrophes (nat cat).

In addition to disrupting energy generation within the renewables sector, these extreme events pose significant risks to renewable infrastructure and are driving up insurance premiums, making projects more costly. An increased aggregation of assets in more exposed locations also places a greater focus on risk transfer solutions.

Rapidly Evolving Technology

The rate of technological innovation is a key enabler for the renewable energy sector. With new technology comes the need to understand risk and exposures and potential options for risk transfer.

While the sector fosters innovation, the rapid pace of development means developers are relying on new technology with limited testing, such as floating offshore wind farms.



War for Talent

An aging workforce and robust competition for talent with the traditional energy sectors threaten to create a significant skills gap for the renewables industry.

Solving this shortage will drive the renewables sector to look outside its industry to recruit people with considerable training needs. The rapid growth of the industry and the need for interdisciplinary expertise further exacerbate these challenges.

Increased Competition

Merger and acquisition (M&A) activity and the evolving energy transition have pushed deep-pocketed traditional energy and power players into the renewables market. While increased competition can drive innovation, cost reductions and greater efficiency, it is also ramping up pressure on the industry to secure financing and market share.

It is more important than ever that renewable businesses adapt and innovate to differentiate themselves from their competitors.

ESG

Stakeholders have become increasingly concerned with renewable energy projects' sustainability and the ethical practices of the businesses delivering them. Demands for greater transparency and accountability for renewable developments' social and environmental impacts continue to grow — from material sourcing and land use to community engagement and human rights.

A failure to adequately address ESG concerns carries considerable risk in the form of reputational damage, regulatory penalties and reduced capital investment.



What Are the Opportunities Created by These Issues?

Climate concerns, combined with the current volatility within the traditional energy market, are driving strong demand from consumers, investors and organizations across the globe for cleaner and renewable energy.

Delivering Action on the Global Climate Agenda

As mindsets change, policymakers across every region are looking to the renewables sector to help reduce global dependence on the volatile fossil fuel markets and achieve the emission reductions needed to realize collective net-zero commitments.¹¹ In making these outcomes a reality, renewable energy developers won't only find the potential for organizational reward but can also position themselves as changemakers and stewards of a future that delivers sustainable energy security, broader economic growth and a healthier, less-polluted environment.

Renewables will account for almost

95%

of the increase in global power capacity through 2026, with solar power alone providing more than half.¹²

Investor Confidence Remains High

Against the supply chain challenges that have hampered the industry in recent years and the rising cost of financing projects, investor appetite for renewables remains strong.

11%

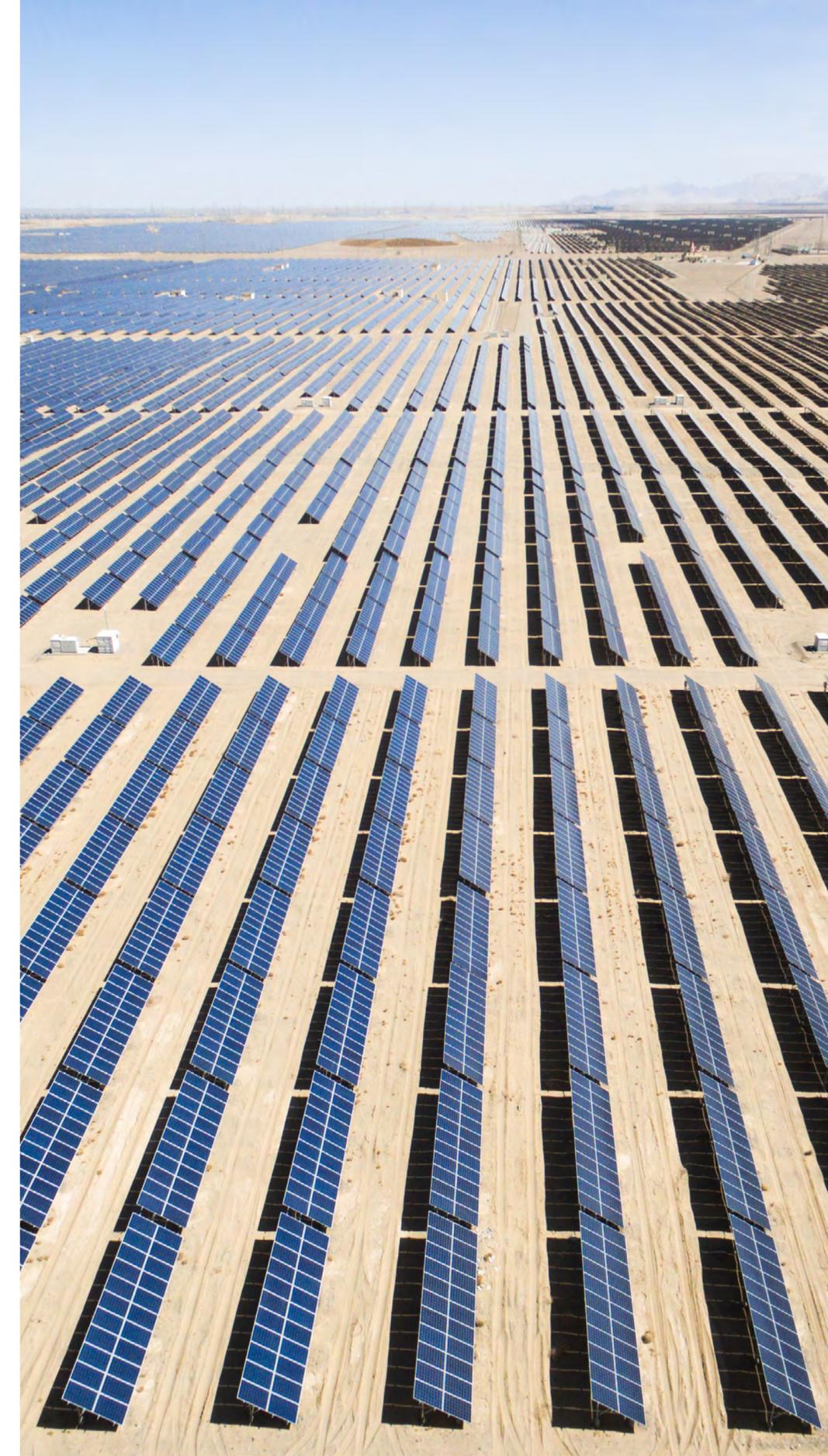
year-on-year rise in renewable energy financing in the first half of 2022, for a total of

\$226 billion.¹³

¹¹ For a Livable Climate: Net-zero Commitments Must be Backed by Credible Action, United Nations, 2022

¹² Renewable Electricity Growth is Accelerating Faster Than Ever Worldwide, Supporting the Emergence of the New Global Energy Economy, IEA, 2021

¹³ Renewable Energy Sector Defies Supply Chain Challenges to Hit a Record First-Half For New Investment, BloombergNEF, 2022



Funding for Technological Innovation

By capitalizing on state and private investment opportunities to undertake research and development (R&D), businesses in the renewables sector can deliver larger projects that enable increasingly efficient and reliable technologies to be brought to market more rapidly. Recent innovations using sodium-ion batteries, electrolytic hydrogen-based direct reduction processes and small modular reactors (SMRs) demonstrate how renewable energy investment is helping businesses reduce capital costs, improve safety and reduce project risk,¹⁴ while creating a cleaner, greener future for the planet.

\$40 billion

anticipated global government spending on energy R&D in 2022.¹⁵

Decentralized Energy Generation

The autonomous energy market is growing as decentralized energy generation enables businesses and household consumers to become both energy producers and consumers. It's a shift that is helping to strengthen energy security and presents an emerging growth market on which renewable energy investors and developers can capitalize.

167 GW

of distributed photovoltaic (PV) systems were installed globally between 2019 and 2021.¹⁶

¹⁴ Clean Energy Technology Innovation, IEA, 2022

¹⁵ Ibid.

¹⁶ Unlocking the Potential of Distributed Energy Resources, IEA, 2022



Building Organizational Diversity

Today, the search for talent is intense and competitive. In the short term, organizations must focus on repurposing human resources to meet immediate demand; for example, reskilling offshore energy workforces to work within offshore wind. However, leaders need a clearly defined human capital strategy to build a diverse talent pipeline and achieve long-term ambitions. With a more diverse, equitable and inclusive workforce, organizations can develop agile and resilient people capable of uncovering blind spots and innovating for the future.

Women make up

48%

of the global labor force but only constitute

32%

of the renewables labor force.¹⁷



4 Why Is it Imperative to Act?

Climate Spotlight

To limit the increase in global temperatures, the electricity supply from clean energy sources must double within the next eight years.¹⁸ Without action, there is a risk that climate change, more extreme weather and water stress will undermine our energy security and even jeopardize renewable energy supplies.¹⁹

An Intensifying Global Gaze

With the energy sector accounting for more than two-thirds of global greenhouse gas emissions,²⁰ the industry finds itself in a paradoxical position as both the cause of and solution to the climate crisis. With this comes the intensifying gaze of stakeholders on the renewables industry, which seeks action and accountability.

Pressure is growing from businesses outside the sector, as they look to the renewables industry to help them meet their ESG commitments and avoid the risk of

greenwashing claims — which come with significant reputational damage. As the renewables industry faces heightened expectations for climate disclosure and commitment, the sector must act now to address its own climate-related risks and opportunities.

Mitigating Risk to Unlock Capital

The renewables industry is dynamic, complex, fast-growing and constantly evolving. This speed of evolution, combined with the force of disruptive global macro trends, has created unique challenges for the sector as businesses try to navigate both traditional and emerging risks.

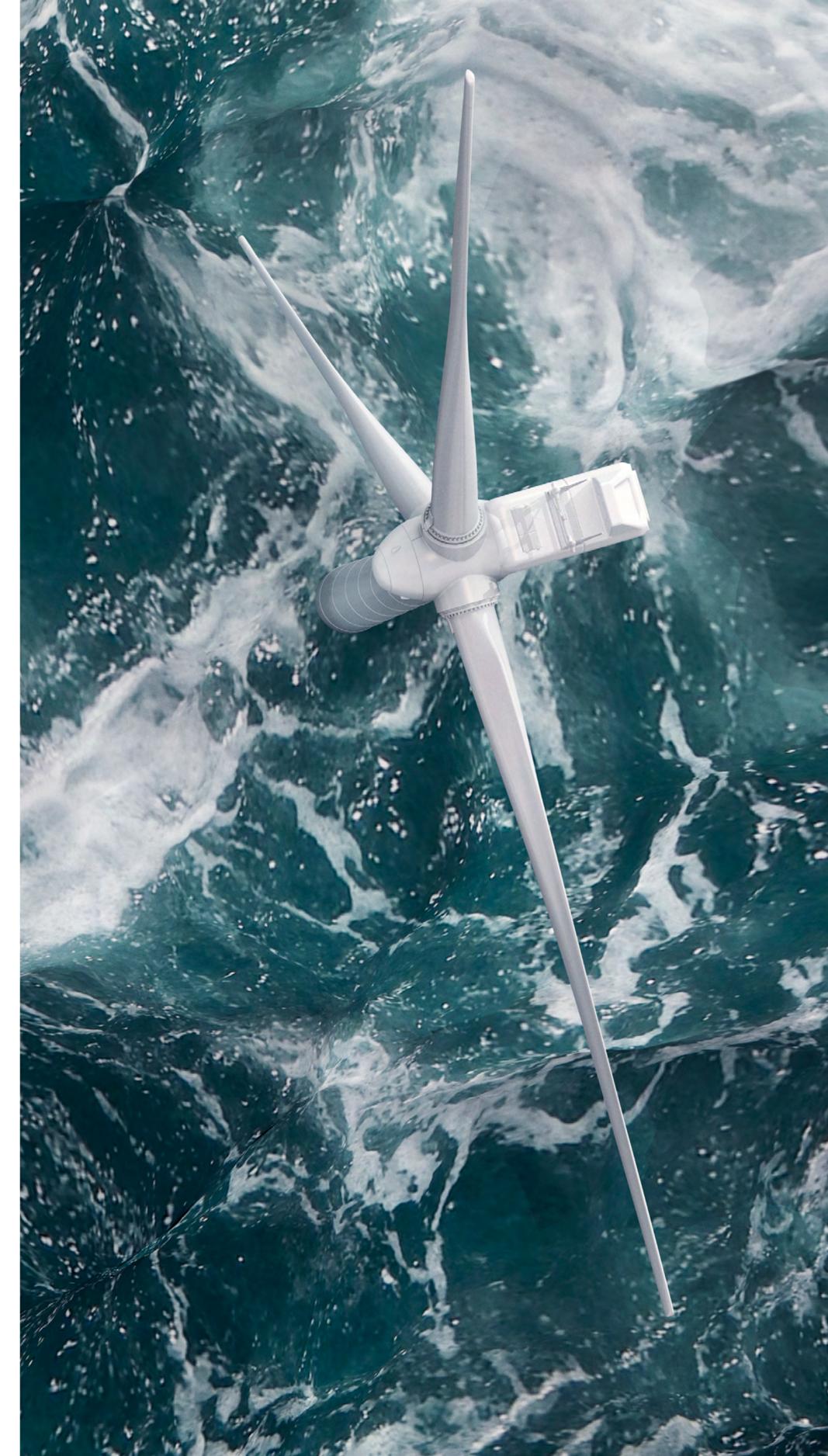
The rapidity of change means that traditional insurance protections don't always keep pace with the needs of the industry. A coverage gap has been driving an uptick in the use of alternative risk transfer solutions, such as captives, parametric insurance and catastrophe bonds.

While investment capital availability remains strong, businesses must mitigate the evolving risks to alleviate the uncertainty of dealmakers who are cautious about their return on investment.

¹⁸ Climate Change Puts Energy Security at Risk, World Meteorological Organization, 2022

¹⁹ Ibid.

²⁰ If the Energy Sector is to Tackle Climate Change, it Must Also Think About Water, IEA, 2020



Increased Carrier Capacity

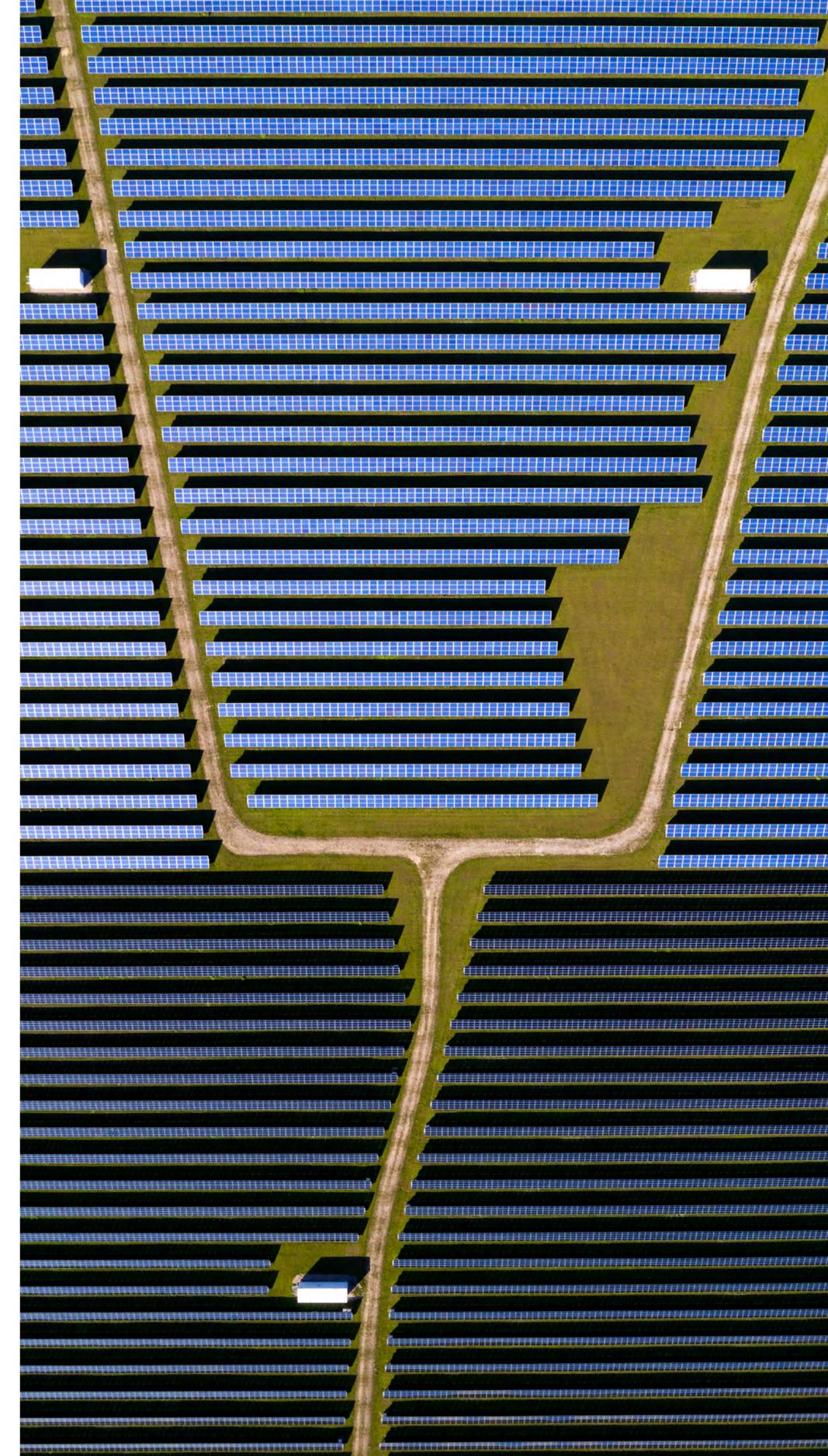
As prominent oil and gas players move into the renewable energy market, insurance companies are following and bringing with them additional insurance capacity, increasing competition and options for clients. While increased capacity is positive for the sector, this is balanced by insurers reassessing their line size deployment and adjusting terms and conditions for nat cat-exposed locations given the market's recent experience of extreme weather events.

Access to competitive insurance capacity through the energy transition is better facilitated when clients present and articulate an ESG position and clear transition targets, enabling markets to offer more capacity for partnership.

Resource Limitations Threaten Ambitions

The limited availability of resources poses a significant threat to the ambitions of the renewables industry – from dedicated vessels and port infrastructure to the technologists and engineers needed to develop and operate renewable energy projects. For example, planning ahead and building in long-term contracting of vessels allow for more flexibility when implementing projects that could be impacted by supply chain challenges, changing weather patterns or licensing issues.

These limitations call for decisive action and increased collaboration within the sector. Continual technological innovation, knowledge transfer, restructured supply chains, shared infrastructure and an upskilling of the workforce are critical steps the industry must take to mitigate the common risks threatening growth across the industry. Additionally, renewables firms should continue to help drive regulatory change that will streamline current permitting processes, which have been slowing down the energy transition.



What Action Should Organizations Be Taking?

To maximize opportunities for growth within a rapidly evolving sector, organizations must first take time to understand their key risks. As well as mitigating well-established risks such as cyber threats or litigation and protecting people and intellectual property (IP), companies should utilize the expertise of a partner with a deep understanding of the industry's evolving risk profiles, and the ability to deploy innovative traditional and non-traditional insurance solutions to facilitate progress.

Embrace Alternative Solutions

The complexities of renewable financing and ownership structures require insurance coverage that incorporates and blends traditional products with innovative risk management solutions.

Examples include:

- Creating bespoke liability solutions for European developers entering the more litigious U.S. market.
- Deployment of parametric insurance to cover natural catastrophes and extreme weather exposures. For example, wildfires in Australia, earthquake risks in Chile or typhoon risks in Taiwan.
- Working with risk engineers to mitigate the risks associated with unproven technologies and achieve the best value for money.
- Developing captive structures to optimize the point of risk retention and manage the total cost of risk.

Optimize Capital Efficiency

To optimize capital efficiency, businesses in the renewables sector must first understand their key risks, then look to mitigate inflationary pressures, secure investment and manage balance sheets with innovative capital strategies.

Focus on:

- Utilizing credit solutions such as credit insurance to free up and optimize working capital.
- Unlocking capital through collateral replacement and reducing costs related to third-party insurance.
- Working with a partner who will negotiate with a lender's insurance advisors and right-size risk transfer.
- Analyzing supply chain risk and developing mitigation plans.
- Advance purchasing to mitigate against future commodity price increases.



- Using tax insurance to ensure that parties involved with a project will receive the tax credit to induce parties to invest in a project via equity, debt and/or outright purchase of credits.
- M&A using Representations and Warranties (R&W) insurance to allow for a cleaner sale and protection to the insured parties in the event of a breach of the R&W.
- Property and casualty insurance to protect against hazards that cause potential loss to capital contributions and/or expected income.

Develop ESG Clarity

Every successful renewable project helps reduce the world's reliance on damaging fossil fuels. However, to increase access to capital finance and demonstrate their own operational commitment to sustainability, businesses must develop robust ESG strategies. For example, developing transparent supply chains can challenge and address the heavy mining of raw materials used in some industry sub-sectors that negatively impact communities and ecosystems.

Focus on:

- Building ESG maturity by evaluating ESG risks and opportunities.
- Ensuring supply chain due diligence.
- Pushing towards a circular economy.
- Developing a diverse and inclusive workforce from the board level down.
- Ensuring data security.
- Protecting organizational reputation.

Prioritize Cyber Resilience

Recent cyber attacks in the wind energy sector demonstrate how the risks of cyber threats have intensified. Today, businesses must prioritize building cyber risk maturity as they navigate new exposures.

Focus on:

- Identifying critical vulnerabilities and exposures.
- Evaluating the organization's core cyber security capabilities.
- Protecting the organization and its core assets with custom insurance coverage.
- Assessing incident response readiness.
- Protecting future investment through M&A cyber due diligence assessment.
- Educating employees on evolving cyber risks.



Build a Sustainable Workforce

Without the workforce to meet the demand for renewable energy, developers will never be able to achieve their ambitions. For a successful future, businesses must build sustainable, agile and resilient workforces capable of driving sector progress.

Focus on:

- Optimizing real-time organizational and talent planning.
- Identifying the gaps in your human capital strategies.
- Upskilling and reskilling your workforce to meet future needs.
- Seeking opportunities to acquire skilled talent through M&A activity.
- Benchmarking your employee benefits and rewards.
- Creating health and benefits packages that attract talent in a competitive market.
- Building workforce agility and resilience by supporting the five pillars of wellbeing: emotional, financial, social, physical and professional.
- Fostering diversity of thought through the development of DE&I strategies.



“

What does a sustainable workforce look like? We believe creating sustainability among your people means nurturing and stimulating the energy of the workforce to foster an enduring spirit that helps drive forward the organization.”

— Mark Potter, EMEA power leader, Aon

Early Intervention Supports Project Success

The strength of the current headwinds facing the renewables industry, combined with the rapid pace of growth within the sector, mean that businesses cannot afford to delay action. Instead, organizations should now focus on adapting and evolving their existing human capital and risk strategies to meet their growth ambitions and the increasing demand for green energy.

To navigate these evolving risks, developers need a partner with a global perspective and capabilities that can identify, quantify and mitigate risks with holistic solutions that meet emerging challenges.

Employing the expertise of an experienced global partner like Aon at the earliest opportunity helps businesses to prepare for challenges at every stage of a project's lifecycle and increase the likelihood of project success. From engagement with the insurance market to liaison with industry specialists and contractors — Aon's technical understanding of the sector ensures our clients receive best-in-class service that keeps pace with the latest technological advancements and provides clients with the best possible chance of delivering an insurable project with reasonable terms and cost-effective solutions.

“

We cannot emphasize the importance of early-stage engagement enough.

Engaging with Aon as the business partner of choice at the earliest possible stage of any new renewable energy project, such as defining contracting strategy and structuring the contract framework, lays the foundations that will ensure all relevant aspects are well-reflected in the structure of the insurance program before financial close.”

— **Guido Benz, Chief executive officer (CEO), global renewable energy, Aon**

The global energy crisis and climate concerns have primed markets for a new era of secure and sustainable energy supply. Today, renewable energy developers must prioritize building organizational resilience and fostering innovation to accelerate this transition, power the winds of change and deliver a more sustainable, equitable and prosperous future for all.



Further Insights

Explore the latest insights and discover emerging trends for the renewables sector from our leading industry experts at aon.com/industry-insights/energy

Aon Tools

[Aon Supply Chain Diagnostic Tool](#)

[Cyber Quotient Evaluation from Aon](#)

[Aon Workforce Resilience Assessment Tool](#)

Thought Leadership

[With an Industry Focus, Environmental, Social and Governance \(ESG\) Risks and Opportunities Can Vary Greatly](#)

[Revisiting the Future of Risk: Energy](#)

[Transforming Energy Starts with People](#)





Contact Us

Guido Benz
Global Renewable Energy
guido.benz@aon.com

Euan Nicolson
Global Energy Transition
euan.nicolson@aon.co.uk

Richard Nunny
APAC
richard.nunny@aon.com

Mark Potter
EMEA
mark.potter@aon.co.uk

Daniel Ocampo
Latin America
daniel.ocampo@aon.com

Carol Stark
North America
carol.stark@aon.com

Jon Wiegand
UK & GBC
jon.wiegand@aon.co.uk

About

Aon plc (NYSE: AON) exists to shape decisions for the better — to protect and enrich the lives of people around the world. Our colleagues provide our clients in over 120 countries and sovereignties with advice and solutions that give them the clarity and confidence to make better decisions to protect and grow their business.

Follow Aon on LinkedIn, Twitter, Facebook and Instagram. Stay up-to-date by visiting the Aon Newsroom and sign up for News Alerts here.

www.aon.com

©2023 Aon plc. All rights reserved.

The information contained herein and the statements expressed are of a general nature and are not intended to address the circumstances of any particular individual or entity. Although we endeavor to provide accurate and timely information and use sources we consider reliable, there can be no guarantee that such information is accurate as of the date it is received or that it will continue to be accurate in the future. No one should act on such information without appropriate professional advice after a thorough examination of the particular situation.

Any forecasts, estimates, projections, opinions or conclusions included in this document depend on macroeconomic conditions (including the COVID-19 pandemic) over which Aon has no control. They cannot not anticipate possible changes in conditions that could materially impact outcomes. This document is not intended to constitute advice or encouragement regarding the advisability of any investment or other strategy. Any person or business relying on any statement does so at that person's or business's own risk.