Building resilience into the energy transition

Revealing the risks to renewable energy infrastructure—and how to manage them

Contents

Foreword

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Between now and 2030, renewable energy consumption is expected to grow by 60%. Both energy providers and their financiers are eager to make this expectation a reality.

But the green energy transition is strewn with risk. As renewable projects replace carbon-intensive power sources, their vulnerability to physical and other risks during construction and operation is starting to emerge, with claim volumes and costs accelerating over the past five years.

To understand the renewable energy sector's risk exposure, FM surveyed 650 executives: 400 renewable energy providers and 250 lenders and investors.

Operators are starting to understand the risks, the survey shows, and they're increasingly looking for new ways to inject even greater resilience into their projects. But before this resilience can be secured, a deeper understanding of the risks must be established.

As more claims arise and more research is conducted, our understanding of how these assets perform in a range of environments and circumstances will grow, and with that understanding comes the insight required to deliver the resilience the renewable energy sector seeks.

To deliver maximum resilience, however, this insight must be introduced to projects at the earliest stage. And the renewable energy sector—developers, energy providers, financiers and insurers—must find ways to share their experiences in managing risk while satisfying legal and competitive priorities.

The appetite to complete the transition to a cleaner energy landscape is strong, but ambition alone won't make it happen. With a clearer focus on risk and greater levels of collaboration, we will start to clear the fog surrounding many of these risks and make resilience a market standard.

Key findings

Energy providers are increasingly exposed to environmental and technological risks. However, as they strive to enhance resilience, it's becoming evident that there is a growing need for more reliable data and risk insights.

To address this insight gap, we surveyed 400 executives from the renewable energy sector and 250 senior financiers to understand their appetite and their challenges as the transition continues to gather momentum.

The appetite to build and invest in renewable energy infrastructure is strong.

97% of solar energy providers plan to **grow their capacity** in the next three years.

95% of providers that operate onshore wind infrastructure plan to **grow their capacity**.

73% of financiers plan to **increase their investment** in infrastructure projects.

This infrastructure is exposed to risk throughout construction and operation.

Renewable energy providers' **top risks during construction** are:

44%
Rising equipment costs

41%
Regulatory/ permitting delays

40%
Supply chain disruptions

Their top **operational risks** are:

54%
Weather damage

50%
Failure of generation equipment

48%
Supply chain disruptions for replacement parts

With project finance in high demand, resilience to risk impacts financiers' willingness to back a project.

61%

of financiers believe demand for investment outstrips supply.

And most say a project's resilience to risk has a moderate or significant impact on:

Renewable energy providers are confident in their projects' resilience but a lack of insight into technology and environmental factors causes uncertainty.

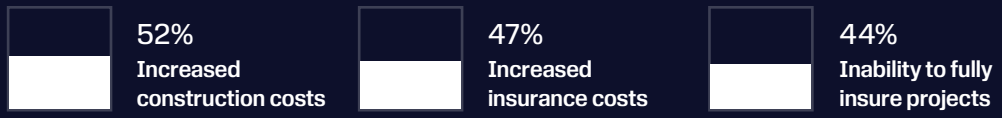
59%

are very or extremely confident in the resilience of their projects.

Their greatest sources of uncertainty over risk are:

This uncertainty drives up costs and limits insurance coverage.

Uncertainty over resilience to risks leads to:



Introduction: How resilient is the energy transition?

With global demand for electricity expected to double by 2050, much is riding on the energy sector's ability to transition to the wholesale production of sustainable, renewable energy. The International Energy Agency is confident the sector can respond, predicting the world will add more than 5,500 gigawatts of renewable energy capacity between 2024 and 2030, three times the increase seen between 2017 and 2023.

Nearly all (97%) of the energy providers we surveyed that use solar generation plan to grow their solar capacity in the next three years, including 45% who expect it to grow by more than 100%. And 95% of onshore wind operators plan to grow this capacity, including 40% who plan to double it or more (Figure 1).

This growth is being driven by ravenous demand for power. The top motivations behind renewable energy providers' plans to expand their capacity are future (51%) and current (48%) energy demand.

"In particular markets, load growth is driving the development of renewable energy," says Kevin Christy, head of innovation and operational excellence in the Americas for Lightsource bp, a leading onshore renewable energy provider. "At a recent renewable energy conference, a constant theme from state utility regulators was that renewable energy is just a function of business development for their utilities."

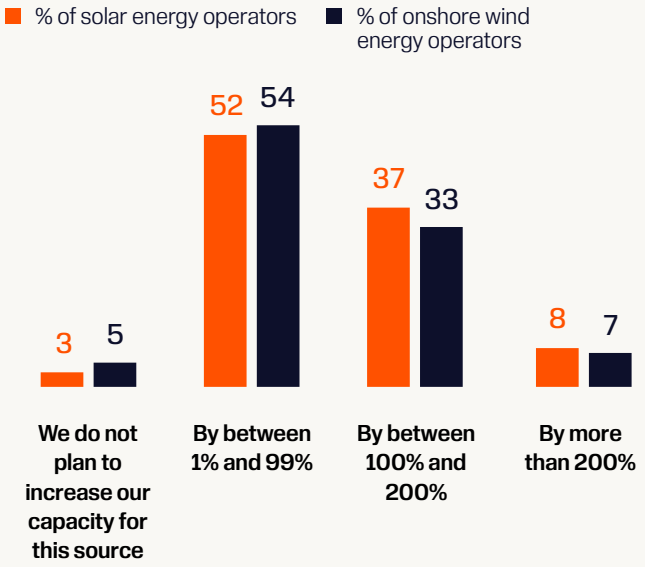
Financiers are equally ambitious, with 73% planning to increase their investment in renewable energy projects in the next three years and 28% planning to do so significantly.

73%

OF FINANCIERS EXPECT TO GROW THEIR INVESTMENT IN RENEWABLE ENERGY PROJECTS

FIG. 1. RENEWABLE ENERGY PROVIDERS HAVE AMBITIOUS EXPANSION PLANS

By how much, if at all, does your organization plan to increase its energy generation capacity from each source in the next three years?



Note: Numbers may not total 100% due to rounding.

Navigating risk, embracing innovation

Despite growing demand and the enthusiasm to meet it, the wholesale transition to renewable energy faces challenges. Renewable energy projects must navigate various risks, including local weather patterns and uncertainties associated with new and untested technology. However, these challenges also present opportunities for innovation and improvement, driving the industry towards more resilient and reliable solutions.

The pace of technology change is accelerating as manufacturers race to increase the generation capability while reducing the cost: "There is a real urgency to implement new technology to gain a competitive edge," says Doug Patterson, senior vice president, Forest Products and FM Renewable Energy. "But while it's available, it might not be reliable. Much of it is prototypical and, in many cases, hasn't gone through extensive testing before being used."

This uncertainty is reflected in the survey results. More than half (54%) of energy providers are concerned about what they perceive as a lack of transparency from original equipment manufacturers (OEM), with a further 47% expressing nervousness at the pace of technological change.

And these concerns are being factored into project planning, with some energy providers becoming more selective about where they source their technology. "We only buy our technology from our top three providers," says Christy. "We don't want to have to figure out the technology every time we use it."

The pace of this change is expected to stabilize in the medium term, but technology isn't the only risk keeping energy providers awake at night.

During the construction phase of a project, they are focused on immediate issues that might delay the project going live, such as the cost of equipment (44%), regulatory and permitting delays (41%), and supply chain disruptions (40%).

As development moves into the operational phase, the risk focus shifts toward a new set of threats, including the weather (54%), failure of generation equipment (50%) and, once again, supply chain disruptions (48%).

> "There is a real urgency to implement new technology to gain a competitive edge. But while it's available, it might not be reliable. Much of it is prototypical and, in many cases, hasn't gone through extensive testing before being used."
>
> **Doug Patterson**
> Senior vice president, Forest Products and FM Renewable Energy

Managing this array of risk is a huge challenge but one that must be met if energy providers are to secure the investment they need to meet growing energy demands. By embedding resilience at every stage of development, providers can take a more strategic approach to managing risk and secure a competitive advantage in their pursuit of finance.

Our survey found that for 66% of financiers, the resilience of a project would influence their decision to invest, with 69% saying it would influence their valuation of a project and the terms of any deal.

And with 61% of financiers saying that the current demand for investment outstrips supply, the need to embrace resilience—and evidence it to financiers—is crucial.

Greater levels of resilience won't just improve a developer's chances of securing financing in this competitive environment. It can also increase their attractiveness to insurers who will provide more capacity at better terms the more resilient a project is.

"There is plenty of capacity for renewable risks, except to cover natural catastrophes," explains Michael Perron, renewable energy market lead at FM Renewable Energy. "All insurers are limiting cover for severe convective storms, and there isn't really a viable excess market that wants to provide this cover at the moment."

These are real concerns for renewable energy providers, with 47% worried that a lack of clarity around the resilience of their projects would increase the cost of insurance and 44% fearing it could impact their ability to get the coverage they need.

These concerns could slow the progress of the green energy transition. "The appetite of insurers to provide capacity could act as a brake on development in certain areas of the renewable energy market," says Christy. "If not the availability, then certainly the cost."

As most of the risk associated with any renewable energy project is determined once the site and the technology have been chosen, retrospectively applying risk management will have a limited impact.

To satisfy the demands of financiers, insurers and society at large, energy providers and project developers must bring risk considerations into their planning at the earliest stage of development, embedding long-term resilience in their projects.

"All insurers are limiting cover for severe convective storms, and there isn't really a viable excess market that wants to provide this cover at the moment."

Michael Perron
Renewable energy market lead, FM Renewable Energy

01 Managing the impact of uncertainty

As the world's energy systems shift to a more sustainable footing, human society will increasingly depend on the resilience of renewable energy infrastructure.

While this resilience is not guaranteed, ongoing efforts and innovations are paving the way for a more reliable and adaptable energy future. In 2022 alone, the U.S. renewable energy market experienced 650 claims costing around US$800 million, pushing property and casualty premiums up by as much as 45% for certain projects in certain regions.

The vulnerability of renewable energy infrastructure to weather damage has become apparent. One estimate suggests that since 2018, hail-related losses in Texas alone exceeded US$600 million, with the average claim costing in the region of US$60 million. And in March 2024, the Fighting Jays Solar Farm in Texas suffered hail damage that is expected to cost hundreds of millions, potentially exceeding 50% of the initial construction costs.

US$800 million

IN INSURANCE CLAIMS BY U.S. RENEWABLE ENERGY INDUSTRY IN 2022

Source: Edison Energy

> “Even when operators are following the agreed processes as best they can, they are still suffering huge hail losses.”
>
> **Cassian Walker**
> Operations vice president, FM Renewable Energy

“The insurance market has absorbed some big hail losses in recent years. To date, most testing has used relatively small hailstones (2.5cm) to determine impact resistance of solar panels and so insights have been very limited. Not testing to failure and fully understanding the impact energy of hailstones of various sizes to determine the failure points has been a key gap,” says Cassian Walker, operations vice president at FM Renewable Energy.

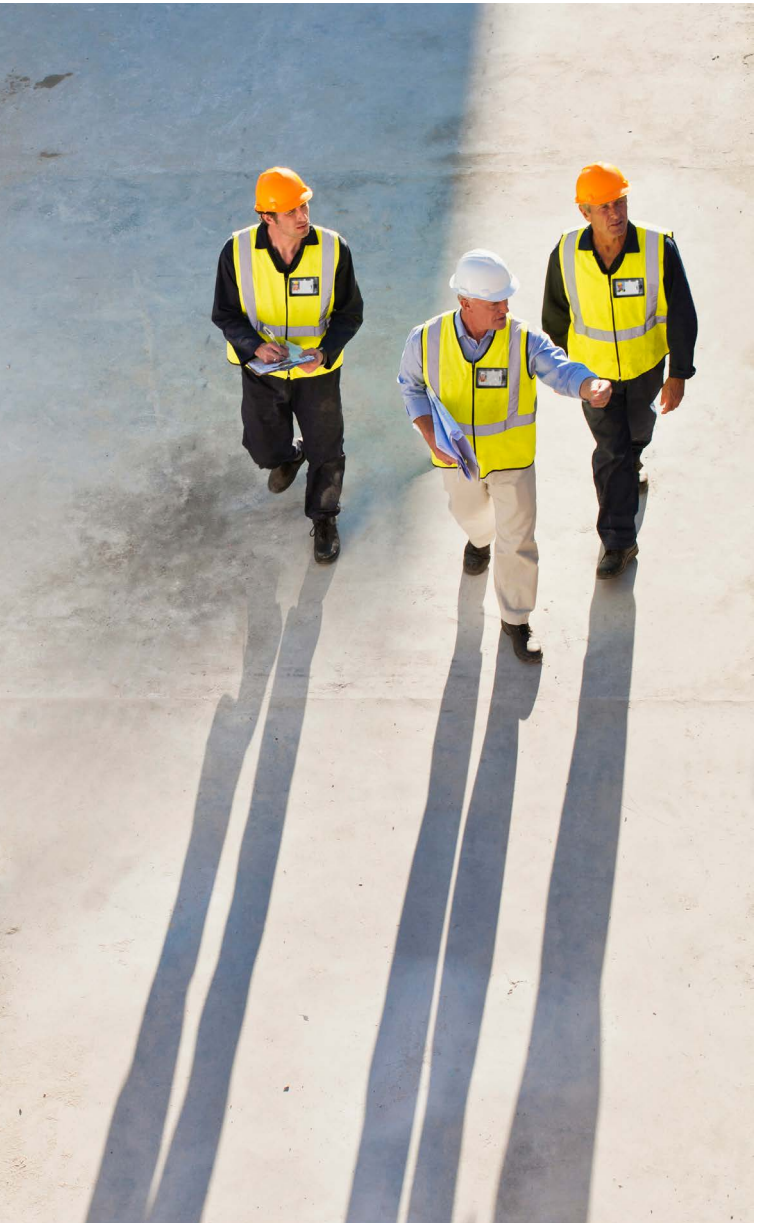
“FM is undertaking that testing now to understand when the panel and the system it is installed in fail, even when operators are following established procedures as best they can, they are still suffering large hail losses. This comes back to understanding the systems limitations and the area it is installed in.”

The durability of the equipment itself has also come under question. Siemens suffered a US$2.4 billion hit to its bottom line in summer 2023 after quality issues were identified in wind turbine blades.

Danish wind turbine manufacturer Vestas incurred a US$175 million warranty cost in the second quarter of 2020 and recorded a US$94 million drop in earnings after designs to protect wind turbines from lightning strikes failed.

And, more recently, in autumn 2024, GE Vernova took a US$700 million hit after a flaw in its turbine blades caused them to fall apart during installation.

“You could believe your project is resilient only to find, once operational, that there are fundamental vulnerabilities with some of the equipment—large hail and wind losses have highlighted vulnerabilities in the technology, quality of installation and established procedures for reliable operation,” says Walker.



Strengthening foundations

The growing frequency of events like these has a direct impact on the terms that insurers can offer, with one estimate suggesting that policyholders are paying between 20–40% more for their coverage than they were a year ago.

This has caught the attention of energy providers, with 87% reporting that insurance is likely to add at least 10% to the overall cost of construction.

But insurance costs aren't the only concern. More than 8 out of 10 (83%) identify a failure to meet their commitments to investors as a likely impact of operational risk (Figure 2). Other likely outcomes include reduced energy production (77%) and legal or regulatory penalties (75%).

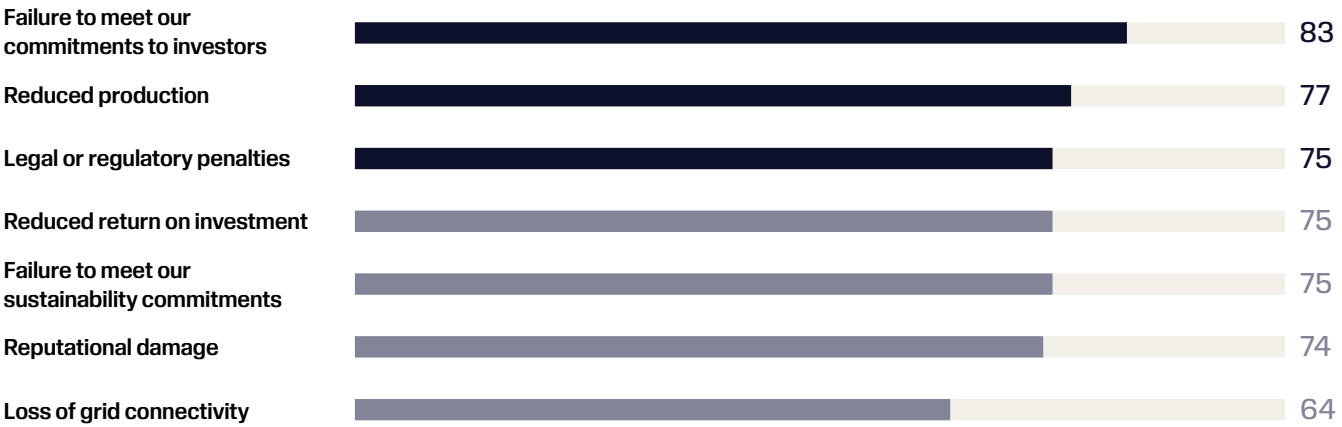
Increasingly, the answer to many of the challenges renewable energy providers face—maintaining energy production, the affordability of insurance and the availability of finance—lies in the inherent resilience of their projects.

"Every party involved in a project has a different perspective on risk," says Patterson. "The key is to get all the parties—financiers, owners and developers—to sit down together with the insurer and communicate what they are trying to accomplish.

"Insurers like FM have the tools and expertise to help everyone make good, risk-informed decisions from the outset."

FIG. 2. OPERATIONAL RISKS LEAD TO MISSED COMMITMENTS TO INVESTORS AND REDUCED ENERGY PRODUCTION

What are the likely outcomes of top risks to renewable infrastructure during operation? (% of renewable energy providers)



02

The role of finance in the energy transition

According to a recent report from Bloomberg, global investment in the green energy transition grew 11% in 2024 to reach a record US$2.1 trillion.

While this includes investment in electrified transport (US$757 billion) and power grids (US$390 billion), a large proportion of this capital—US$728 billion—is dedicated to onshore and offshore wind, solar, biofuels, biomass and waste, marine, geothermal and small hydro projects.

This is a record level of financing, although the pace of growth has slowed significantly since a high of between 24% and 29% over the previous three years, Bloomberg observes.

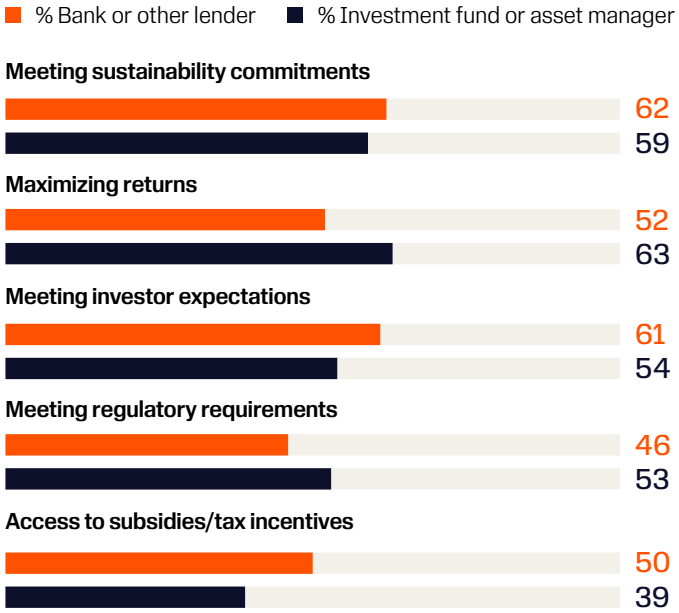
While that suggests a cooling off in investment appetite, our survey found there is still plenty of momentum in the market. More than half (58%) of financiers we surveyed, all of whom are involved in renewable energy investments, have between US$100 million–US$1 billion invested, with 15% having invested more than US$1 billion.

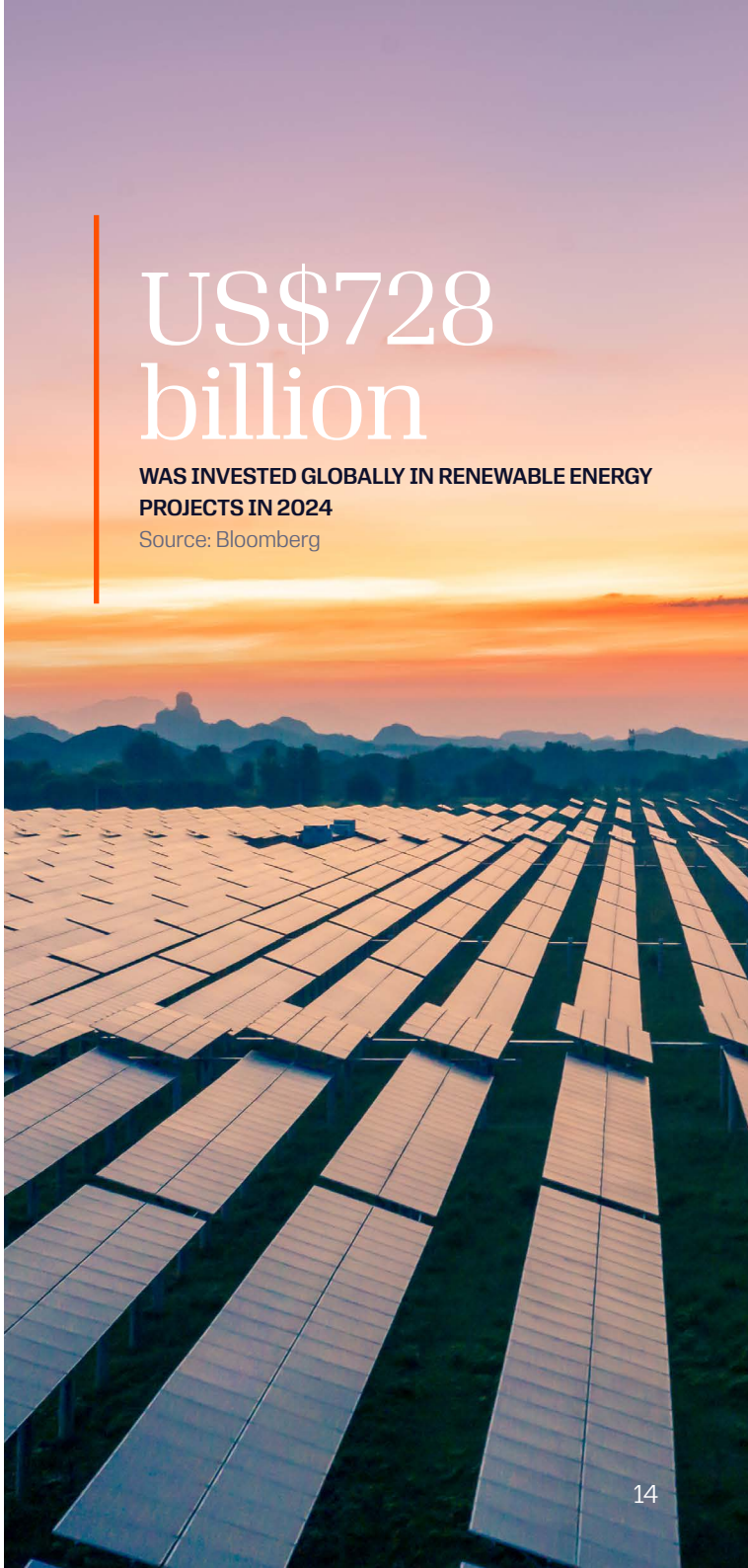
Crucially, the vast majority (73%) say they plan to increase their investment levels—28% say they will do so significantly—with only 12% planning to decrease their investment.

Financiers' motivations for supporting renewable energy infrastructure projects vary depending on the institution, but for 62% of lenders and 59% of investors, the main motivation to invest is to meet sustainability commitments (Figure 3). The sustainability expectations of their own investors also play a prominent role, with 61% of lenders and 54% of investment firms citing it as a key driver.

FIG. 3. SUSTAINABILITY COMMITMENTS DRIVE FINANCIERS TO FUND RENEWABLE ENERGY INFRASTRUCTURE PROJECTS

What are your institutions' top reasons or motivations for financing or investing in renewable energy infrastructure projects?





Those sustainability commitments may start to shift as the political wind changes, but the need to maximize investment returns is an equally powerful incentive for 52% of lenders and 63% of investors.

Despite financiers' evident enthusiasm for the sector, projects seeking funding still outweigh the available investment: 61% of financiers say that demand for their capital outstrips supply.

"Some of our peers are struggling to grab the attention of finance," says Christy. "We take a conservative approach to project selection and keep a low profile with tax equity. But if you are a newer developer you will struggle to get that kind of financing."

This means the main challenge for energy providers and developers today isn't creating demand for their products and services. It's being the first pick for financiers to get their projects off the ground.

And increasingly, the resilience of projects is becoming a key differentiator. Most financiers say that resilience to risk would have a moderate or significant influence on their decision to invest in or lend to a project, the deal terms they offer and their valuation (Figure 4).

But how is resilience defined and how can it be delivered? "Resilience is about understanding how many points of failure there are in the system and how you mitigate that risk," says Christy. "It's about having backups for major components that may fail, or how you respond to a hail event that you know is coming.

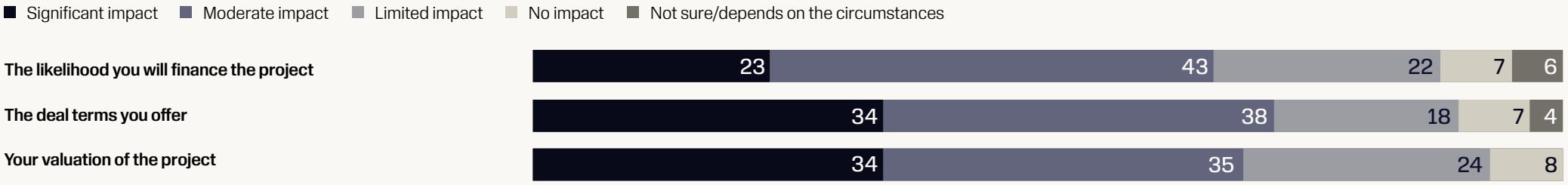
"And it's about how well and quickly you are able to recover from storm-related damage and general outages."

To highlight the inherent risks in these projects, Christy recalls two recent events at Lightsource bp.

The first was a major transformer failure that led to significant downtime and business interruption as the company worked to remediate the site and source a replacement for the transformer.

> "Resilience is about understanding how many points of failure there are in the system and how you mitigate that risk."
>
> **Kevin Christy**
> Head of innovation and operational excellence, Americas, Lightsource bp

FIG. 4. RESILIENCE TO RISK INFLUENCES MOST FINANCIERS' LIKELIHOOD OF SUPPORTING A PROJECT, ITS VALUATION AND DEAL TERMS
What impact does a project's resilience against risks during construction and operation have on the following? (% of financiers)



Note: Numbers may not total 100% due to rounding.

That was swiftly followed by a hailstorm that caused serious damage to the panels on a solar farm: “It was a combination of human error and flawed software design,” Christy recalls. “We saw the storm coming, but the system didn’t respond properly. We learned from that: The equipment provider updated and improved their software and training, and we made some structural changes to our hail stow program to allow more time for troubleshooting prior to the arrival of a potentially damaging hailstorm.”

Having a learning program in place is vital as insurers in the renewables market view every event and every claim as a learning opportunity. They are hungry for real-life data to inform best practices. And while events like these and the insurance claims they generate are still in the minority, their impact on individual projects is significant.

Despite the disruption they cause, losses like these play a crucial role in understanding how the technology performs, particularly in certain geographic areas.

As the frequency of such events increases and the more their impact is studied, the more energy providers, financiers and insurers can remove the inherent uncertainty in renewable energy projects and inject greater levels of resilience.

03

The search for risk resilience

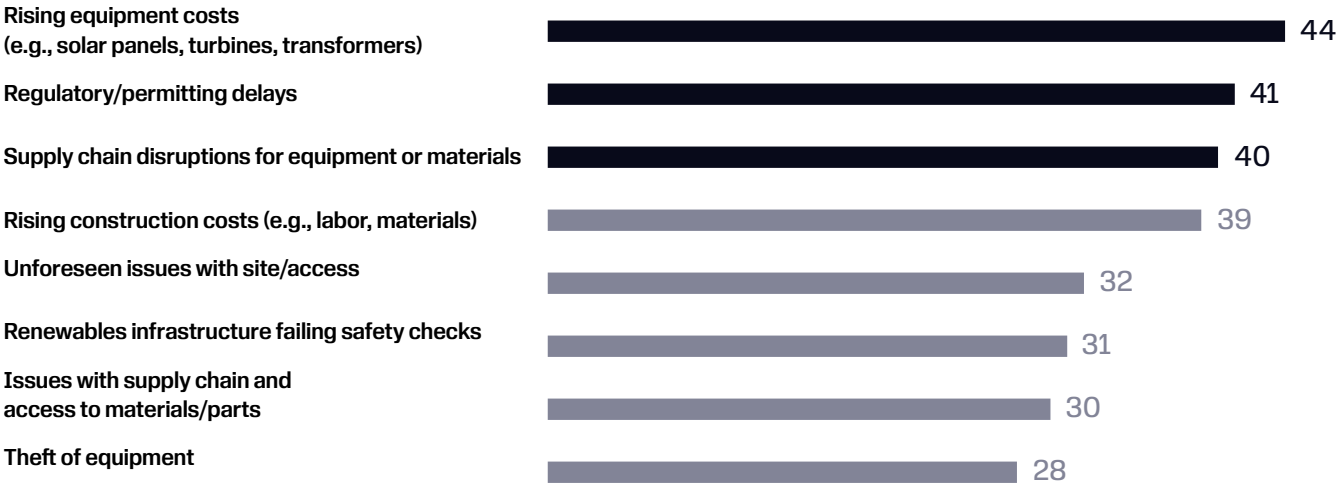
The construction stage of a renewable energy infrastructure project typically takes between 12 and 18 months, during which time projects are exposed to multiple risks.

Any delay in construction results in increased project costs, and supply chain pressures, one of the key causes of delays, are still bearing down heavily on the renewables market. Walker cites a case where it took nine months to source and site a replacement crane after the original was blown over during a windstorm.

Rising equipment costs, permitting delays and supply chain disruptions are the main risks to renewable infrastructure projects during construction, according to providers (Figure 5).

FIG. 5. RISING COSTS, PERMITTING DELAYS AND SUPPLY CHAIN DISRUPTIONS ARE THE MAIN RISKS DURING CONSTRUCTION, ACCORDING TO RENEWABLE ENERGY PROVIDERS

What do you consider to be the top three risks to renewable energy infrastructure projects during construction? (% of renewable energy providers)

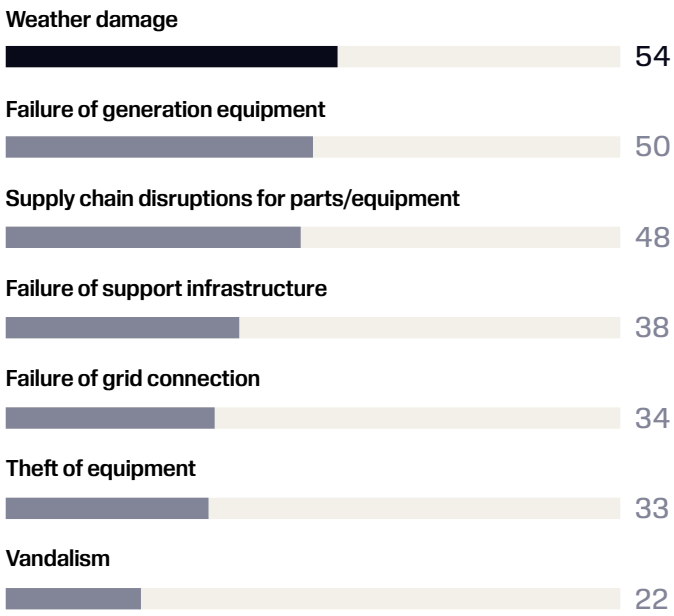


But as projects exit the construction phase and start to come online, the risk priorities for energy providers shift.

During operation, renewable energy providers identify weather damage (54%) as the most prevalent risk (Figure 6). This jibes with a recent study that found hail accounts for 2% of solar panel claims but 54% of the overall cost of claims.

FIG. 6. WEATHER DAMAGE AND EQUIPMENT FAILURE ARE THE TOP OPERATIONAL RISKS FOR RENEWABLE ENERGY PROVIDERS

What do you consider to be the top three risks to renewable infrastructure during operation? (% of renewable energy providers)



"Weather hazards are trending negatively, so we're in regular conversation with our brokers and insurers as well as the broader marketplace about best practices, design, product selection and mitigation strategies to try to get a better understanding of what everyone is dealing with," says Christy.

The next greatest risk during operation is the failure of generation equipment, as identified by 50% of energy providers. The quality of new equipment is highly variable, as OEMs constantly update their designs to improve performance.

To limit their exposure to equipment failure—through a manufacturing or design fault—energy providers are becoming more selective in where and how they source their technology. Some, such as Lightsource bp, take a more cautious approach to emerging technology and its manufacturers.

"We are very aware of that risk, so if we think someone has gone too far with their designs, we'll hold off buying the technology until there is more of a track record," says Christy. "And if we haven't dealt with a technology provider before, we have third parties conducting factory inspections on our behalf."

Independent engineering expertise

This hands-on approach to managing risk aligns with financiers' expectations as they work to understand the risks facing their investments. The majority (62%) expect project resilience during operation to be assessed through regular maintenance and site inspections. And nearly half (48%) expect them to consult with external engineers, although only 35% of renewable energy providers currently do this.

"As a risk expert, we want to conduct regular visits with our clients to collect all the information we can't get remotely—checking out the equipment they're using, understanding the philosophy of the client and really getting to know them," says FM's Chris Kosloski, vice president, client service manager, FM Renewable Energy.

The key, he says, is understanding what processes are in place to respond to a weather event and who is responsible for the response: "We want to talk to the person on site to understand how they react to and manage that weather risk. Often, we can help improve their response because we are already pretty confident about what does and doesn't work in a range of scenarios."

This kind of expertise is not the preserve of the insurance industry—there are a host of independent and well-established risk management firms—but they come at a cost. The fees associated with independent risk management advice are front of mind, with 40% reporting these add at least 10% to construction costs and 42% saying they have the same impact on operational costs.

48%

OF FINANCIERS EXPECT RENEWABLE ENERGY PROJECTS TO CONSULT WITH EXTERNAL ENGINEERS

Advancing the understanding of risk

Of course, inspections and maintenance cannot eliminate every risk, and financial mitigations are essential, too. For nearly half (46%) of financiers, securing adequate insurance is one of their top three expectations of energy providers.

But with the cost of insurance increasing in line with the number and value of claims, many in the market are struggling to find the level of coverage their projects require—and that financiers demand. Nearly half (49%) of energy providers say insurance adds at least 10% to their construction costs, while 42% say it adds the same burden to their running costs (Figure 7).

While insurance and risk management are usually seen as a cost of running a business, tight profit margins in the renewable energy sector mean there is a strong appetite to better manage costs, wherever possible.

The most effective method of reducing insurance premiums is to reduce the exposure by securing a deeper understanding of the risks faced. But to date, that comprehensive understanding has been somewhat elusive in the renewables market.

"This is still a maturing market, so everyone has to learn from each other and we need more vehicles to share that information," says Perron.

There are barriers to this information exchange, however, with energy providers often prevented from sharing their experience of a weather event, and the impact it had on their asset, by non-disclosure agreements with their OEMs and suppliers.

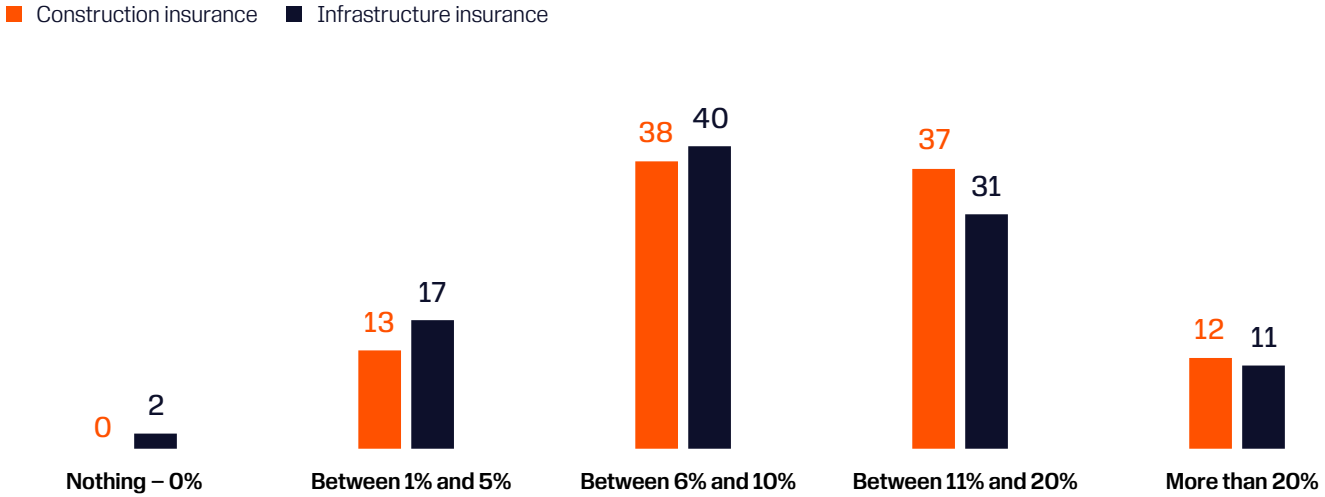
Perron, however, believes there is room to maneuver within these legal constraints, and that a balance can be struck between protecting intellectual property and advancing the understanding of risk across the renewable energy sector.

"We want to further the understanding of these threats and how the technology performs in certain circumstances so everyone in the market can get more comfortable with the risks," he says.

"That requires engineers specializing in renewable risks being on the ground and advising clients on best practices, whether that is for stowing solar panels, maintaining transformers, or using lightning protection systems."

FIG. 7. INSURANCE ADDS SIGNIFICANTLY TO CONSTRUCTION AND OPERATING COSTS

How do the following measures contribute to construction/total running costs of your renewable energy infrastructure? (% of respondents)



04 Building resilience from the start

The ambitions of renewable energy providers can only be realized if their projects can be shown to be resilient to the many risks they face. While the industry's understanding of these risks is improving with every claim and research initiative, a comprehensive view of the risk landscape remains elusive.

Despite this lack of clarity, energy providers are reassuringly confident they are well insulated from risk, with 59% either very or extremely certain about the resilience of their projects.

Still, they acknowledge some areas of uncertainty: They highlight a lack of understanding of environmental factors (54%) and a lack of transparency from equipment manufacturers (54%). The pace of technological change is also a key concern for 47% (Figure 8).

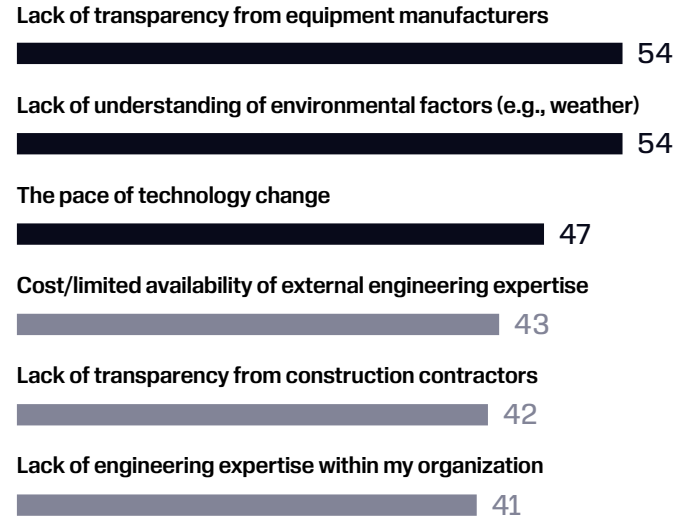
This highlights the need for expertise in engineering, natural hazards and how particular technologies respond to their environment. "To really understand the nature of the risk, it's vital to understand how the technology is going to perform in the site-specific conditions it will operate in, throughout its life cycle," says Walker. "This isn't just about the asset design—it's how that asset operates in a resilient way, and how the technology and process is optimized for a particular geographical area."

It is vital that this expertise is applied at the earliest stages of an infrastructure project. As Walker explains, there is a limit to what risk management can achieve once an asset is up and running.

"A lot of the inherent risk in any renewable project lies in the exposure to natural hazards, particularly the weather and what that could look like over the lifetime of the asset, that future-proofing approach should drive the technology that has been chosen," he explains.

FIG. 8. A LACK OF INSIGHT INTO TECHNOLOGY VENDORS AND ENVIRONMENTAL FACTORS CAUSES UNCERTAINTY OVER RISK

When assessing the resilience of renewable energy infrastructure to risk during construction or operation, what are the greatest sources of uncertainty? (% of respondents)



Build resilience from the outset

To secure that level of insight, energy providers and financiers should bring risk experts into the conversation at the earliest possible stage, a sentiment supported by 53% of financiers who expect a project to benefit from independent risk assessment during construction.

These risk experts can advise on how a particular design, construction method or location will affect the risk profile of a project even before ground is broken. “The best time to get risk expertise involved is right at the beginning and carry it right through the development stage,” says Walker.

> “The best time to get risk expertise involved is right at the beginning and carry it right through the development stage.”
>
> **Cassian Walker**
> Operations vice president, FM Renewable Energy

In contrast to financiers, providers prefer to rely on in-house assessments (46%), which may mean they miss out on the experience, data and insight that is emerging from individual experiences right across the sector.

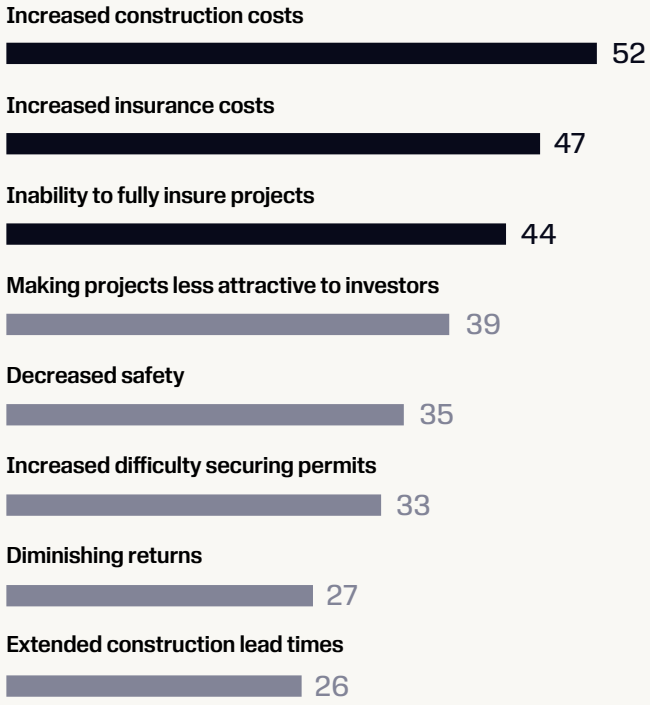
However they assess their risk exposure and resiliency, if done to a high standard and ideally in conjunction with an insurer, energy providers could start to come to grips with soaring insurance costs that have seen some providers presented with near-50% increases in premium for certain risks. It is an issue that is clearly front of mind for energy providers.

When asked about the potential real-world impacts of uncertainty over project resilience, energy providers highlight two insurance-related outcomes among their top three concerns.

Rising construction costs are the greatest concern (52%), followed by an increased cost of insurance (47%), with 44% having genuine concerns over whether they will be able to secure cover for future projects (Figure 9).

FIG. 9. UNCERTAINTY OVER RISK DRIVES UP COSTS AND LIMITS INSURANCE COVERAGE

If you are uncertain about the resilience of renewable energy infrastructure to risks, what impact does it have on a project? (% of operators)



> “If insurance is your only solution, then you don’t understand the problem.”
>
> **Doug Patterson**
> Senior vice president, Forest Products and FM Renewable Energy

With insurance rates changing on an annual basis, market fluctuations like the ones seen in recent years inject a huge amount of cost uncertainty into renewable energy projects. Such is the degree of uncertainty it generates, 43% of providers say it jeopardized their ability to meet their power generation ambitions.

But with the right risk management support, these costs can be managed and consistently reduced over time as the risk improves. “We want to select the best risks, and our research and engineering expertise allows us to understand which projects are the better risks to take on,” says Kosloski.

With that deeper understanding of which projects will perform better over their lifetime, insurers can provide broader and higher levels of coverage at more competitive rates.

But as Kosloski points out, if there is a willingness from the provider to improve the risk, insurers like FM will be willing to work with them. “Our primary aim is building long-term relationships to improve the risk profile over time,” he says.

By bringing risk expertise into design-and-build conversations, energy providers can make themselves stand out in a very choosy insurance market and attract the capacity and coverage they need to get their projects off the ground.

The endgame, from every stakeholder’s perspective, is to build more resilient projects across the renewable energy landscape. The best way of achieving that is through greater levels of collaboration on the data and insight that is being gathered around the market.

“FM is undertaking 20 individual research projects dedicated to renewable risk, and we are reaching out to industry and government organizations as well as trade bodies to feed many of our findings into the broader consideration of renewable energy risk,” says Patterson.

And this thinking must go beyond the traditional risk transfer model, which increasingly is just one piece of a wider risk response puzzle. “If insurance is your only solution, then you don’t understand the problem,” Patterson adds.

The energy transition is in full swing, but the returns it offers energy providers and their financiers are not guaranteed. By engaging with risk engineering experts from the outset, providers can reduce their costs, increase their operational reliability and ensure they become every financier’s first pick, every time.

Recommendations

The answer to the growing resilience question for the renewable energy sector is clear—greater access to risk expertise and insight, delivered at the right time, will bring the clarity that developers and operators need, and will help satisfy the demands of financiers and insurers.

No two projects are the same.
Be aware of the significant impact different geographies can have on the technology performance.

Choose the right partners.
Renewable energy infrastructure projects present new risks that require specialist expertise and experience to manage. Seek out those who are willing to work with you to define your unique risk profile and your response to it.

Make risk part of your project planning.
Risk management has a limited impact after construction, so bring risk expertise into your projects as early as possible, ideally at or before the design stage.

Be curious and collaborative.
Nobody has a full picture of all the risks renewable energy projects face, so find ways to share your experiences of managing risk and absorb those of others.

How can FM help you get ahead of risk?

By preventing loss, we can power the future of energy. With more than 70 years' experience in the energy sector, FM Renewable Energy can help you to define your current and future risk exposure and develop a plan to protect your assets today while building resilience for the future.

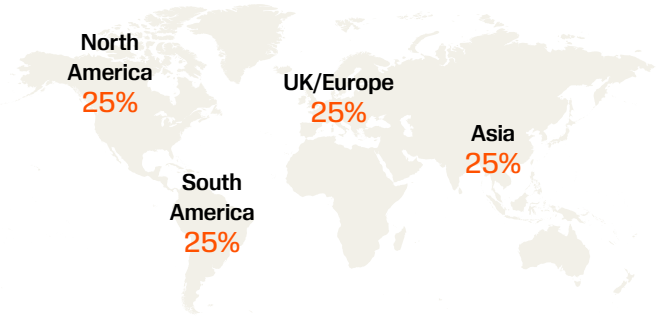
- Reducing risk starts with identification, beginning with a client site visit. With FM, you gain access to a team of scientists, technicians and engineers in 14 countries. Our account and field engineers work to understand key property hazards at your facilities and work with you to find practical, cost-efficient solutions.
- While big risks are getting more sophisticated, we're getting smarter. FM Renewable Energy brings a different perspective to risk. We know that no two risk profiles are the same, so we work closely with our clients to understand their specific exposures and develop tailored responses for them.
- Founded on the belief that most losses are preventable, risk management is core to our proposition. Our role is to make your assets as resilient as possible to the risks of today and tomorrow, and we have a clear record of continuous risk improvement through every year we work with a client.
- A science-based and research-led approach forms the foundation of our reputation for engineering excellence. Renewable energy is no different, and we are already drawing unique risk insights from the 20 renewables-focused research projects we have embarked on.

Methodology

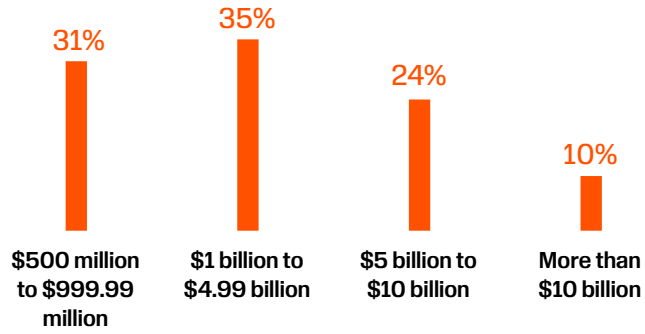
In August and September 2024, FM surveyed 400 executives from renewable energy providers and 250 financiers involved in the renewable energy sector. The respondents' demographic profile is as follows:

Renewable energy providers

REGION

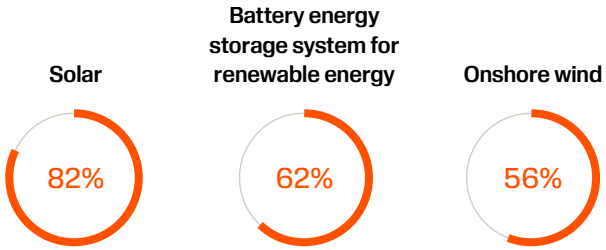


COMPANY SIZE (ANNUAL REVENUE)



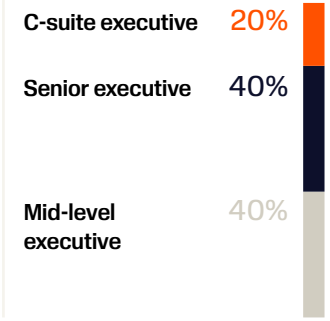
All currency figures shown in US dollars

INFRASTRUCTURE TYPES OPERATED



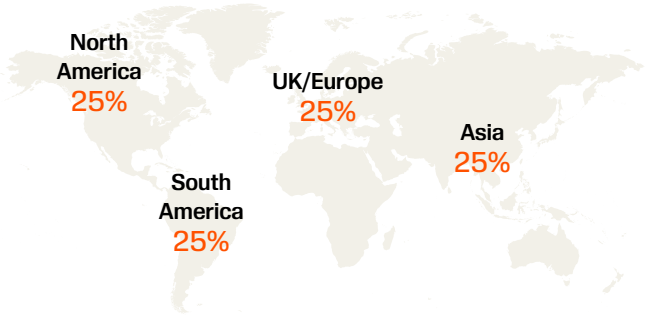
FUNCTION

SENIORITY

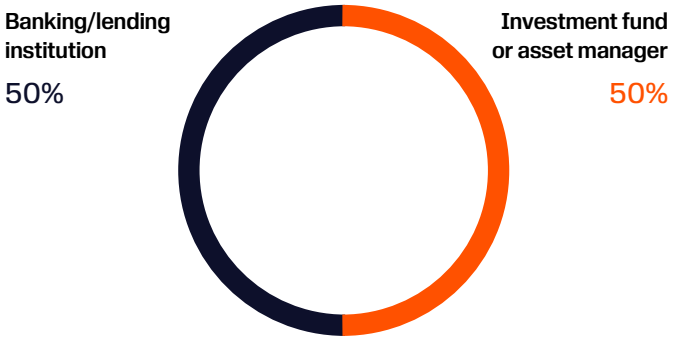


Financiers

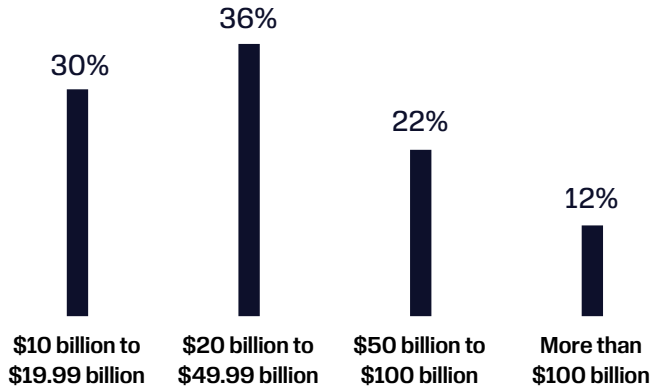
REGION



TYPE OF INSTITUTION

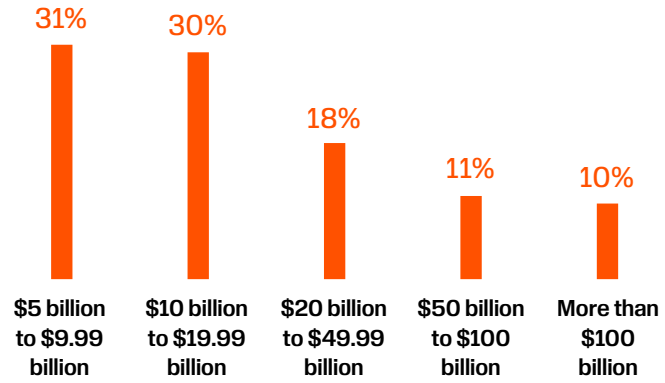


LOAN PORTFOLIO – BANKING/LENDING INSTITUTIONS



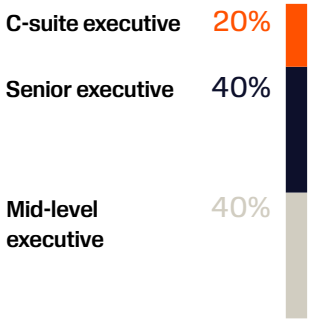
All currency figures shown in US dollars

ASSETS UNDER MANAGEMENT – INVESTMENT FUNDS AND ASSET MANAGERS



All currency figures shown in US dollars

SENIORITY



Protect your purpose