



High energy expectations for renewables

New KPMG survey of US renewable energy executives finds industry momentum fueled by demand, innovation, and incentives

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Introduction

The US renewable energy industry has the wind at its back

Significantly expanded climate and clean energy incentives within recently passed legislation have breathed tremendous life into green projects. Societal pressure on businesses to reduce emissions continues to accelerate every year, adding to the industry's progress. And the rapid advancement of technologies to support better performance, lower costs, improved resiliency, and other benefits has made many renewable generation sources on par with and—in an increasing number of instances—a competitive alternative to conventional energy sources.

August 2024 will mark two years since the passage of the Inflation Reduction Act (IRA). Given the upcoming anniversary, we decided to check in with US renewable energy company executives about their companies' plans and their views on sector growth, emerging technologies, financing tools, changing regulations, and other key issues.

What we found is that the expansion of renewables is a business opportunity and the result of customer demand as much as the outcome of pressure from government, investors, and society to reduce emissions as quickly as possible. However, incentives are critical to project planning and will be for the foreseeable future. Wind and solar continue to dominate, but companies are exploring new technologies to build out their portfolios, another benefit of the legislation.

Despite progress, barriers still prevent a smoother supply chain and access to talent. Inflation and the higher cost of capital also continue to pose a threat to the industry. Read on for detailed survey results and discussion around the findings, which indicate several bright points for the US renewable energy industry and ongoing efforts to prevail over challenges.

About the survey

In March 2024, KPMG canvassed hundreds of US executives across the renewable energy industry and received responses from a mix of public and private organizations, including renewable energy developers and service providers; independent power producers; utilities and system operators; emerging energy companies; and engineering, procurement, and construction contractors. Data throughout the report is from the KPMG survey unless otherwise noted.





Customer demand

The marketplace is the primary driver of growth in the renewable energy industry

Customers have the greatest influence over renewable pipeline strategies, according to more than 70 percent of companies surveyed. Those customers, which include corporations, rate payers, and local utilities, have far more combined influence on their investment decisions than government mandates or ESG.

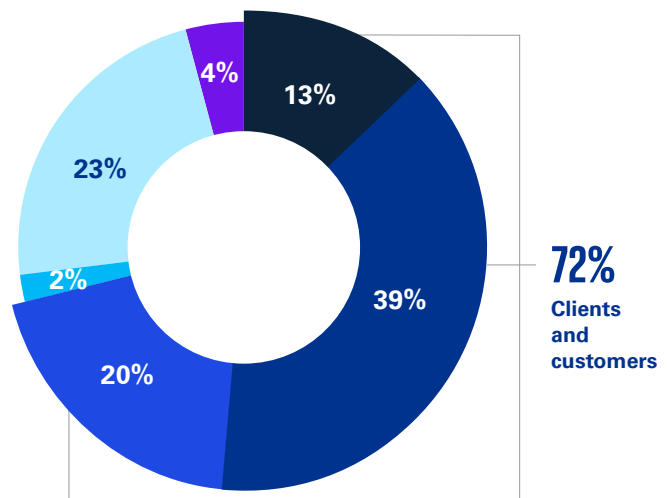
More than half of executives, 55 percent, also say that politics is not a factor in their investment decisions, indicating a measure of stability for projects regardless of election outcomes in November 2024 and beyond.

Meanwhile, those who say their investment decisions are in fact influenced by shifting political winds (23 percent) or somewhat impacted (21 percent) express concern about long-term planning.

Some worry over the stability of the IRA and tax credits, which one respondent said “is putting a pause on attracting equity capital into the sector, or demanding a higher return to account for the political risk.” Others said projects—particularly offshore wind—could be delayed or terminated depending on which party is in control over the agenda in Washington after the election. Uncertainty in and of itself can make justifying significant investments in technology more challenging.

Key stakeholders in project development

What stakeholders are the most relevant in your project pipeline development strategy?



- Rate payers
- Corporate/customers
- Local utility
- Local corporate
- ESG metrics
- State and local government

Note: Responses may not equal 100 percent due to rounding

72% of companies in the US renewables industry say **clients and customers are the most important stakeholders** in their project pipeline development strategy. Just 4 percent say meeting ESG metrics has the greatest relevance.

55% say their investment decisions are **not impacted by shifting political winds**.



Renewable portfolio standards

More than half of companies, 57 percent, say state renewable portfolio standards (RPS) don't have an impact on their project pipeline decisions. This reaffirms other survey findings indicating that customers are driving planning and strategy decisions and suggests demand is spread across multiple states and jurisdictions.

The nearly 40 percent of those who agree RPS impacts their strategy point to increased project demand, financing stability, and other positives. There also is a sense of urgency.

"We are pursuing clean tech better and faster than ever. The bad news is that the scale of [climate change] and the rapidity of its worsening is far eclipsing our efforts," a renewables executive noted. "We are nowhere near where we need to be, so any thought of slowing down, delaying, or keeping the status quo is massively missing the mark. We need radical acceleration of our clean energy efforts if we are going to achieve stability"

Do state renewable portfolio standards impact your project pipeline decisions?

57% say no. "RPS can tend to increase demand in a particular region, but even in areas where there is no RPS, there can be strong demand from corporate green initiatives."

39% say yes. "We're more likely to prospect in places with strong RPS requirements, as there will be greater future demand for power purchase agreements."



Innovation

Most companies in the renewable energy industry plan to expand beyond their current portfolio of business into new technologies

While early incentives focused primarily on wind and solar, the IRA expands tax credit eligibility to battery storage, hydrogen, carbon capture, and other technologies that until now were less economically viable without tax incentives.

These newer technologies, especially wind and solar with battery storage, also have the research and development behind them to make investment less risky and more likely to garner results. The expanding menu of renewable investments also comes at a time when stakeholders are acknowledging that net zero goals cannot be reached without an expanded mix.

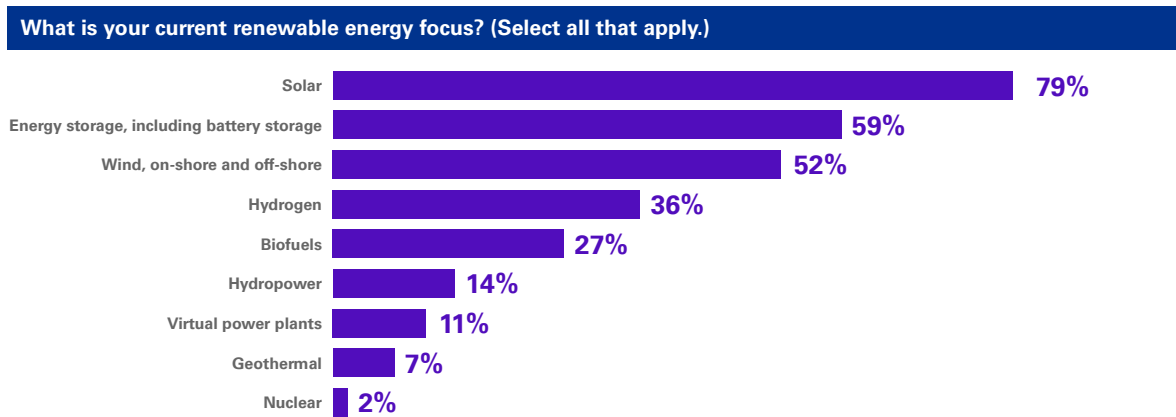
One growing factor is artificial intelligence (AI). Data centers already account for between 1 percent and 1.5 percent of electricity demand worldwide and will need multiple times that much to meet AI needs. One research analysis suggests that based on current AI trends, the leading producer of AI servers will need to ship 1.5 million units per year by 2027, representing at least 85.4 terawatt-hours of electricity annually or “more than what many small countries use in a year.”¹

Solar is king

Solar is the fastest-growing US energy source, and installation reached a record 31 gigawatts of capacity in 2023, up approximately 55 percent from the prior year.² The bulk of executives surveyed say their organizations are invested in solar, and nearly three-quarters of all respondents indicate their organizations are now looking to pair solar with storage. Half are also exploring onsite solar technology.

Investment in green hydrogen production through renewable energy received a big boost from the IRA. EV charging also is attracting attention from close to one-third of companies, followed by microgrid technology at nearly 30 percent. Industry executives anticipate that growth in microgrids over the next five years will be driven almost equally by efforts to reduce carbon and to increase resiliency against natural disasters and cyberattacks.

Current portfolio

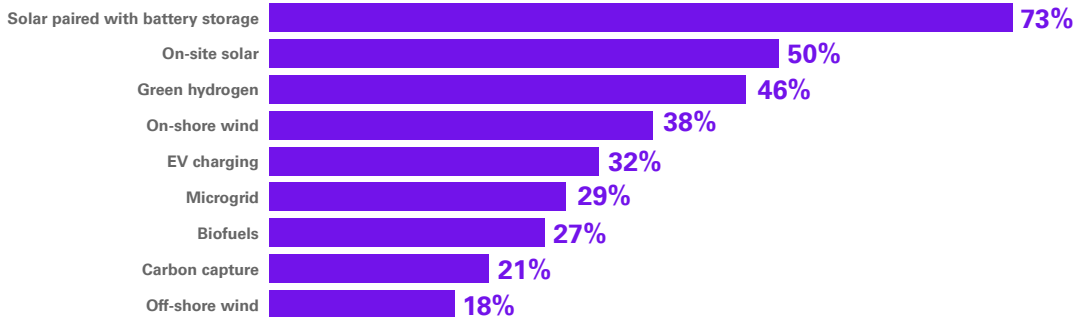


¹ Scientific American, “The AI Boom Could Use a Shocking Amount of Electricity” (October 13, 2023)

² World Resources Institute, “State of the US Clean Energy Transition: Recent Progress, and What Comes Next” (February 7, 2024)

Future investment

Are you considering expanding your projects to include new technologies, such as hydrogen, battery storage (whether as an add-on to existing projects or as a standalone asset), fuel cell renewable fuels, etc.?



Nuclear is coming back on a smaller scale

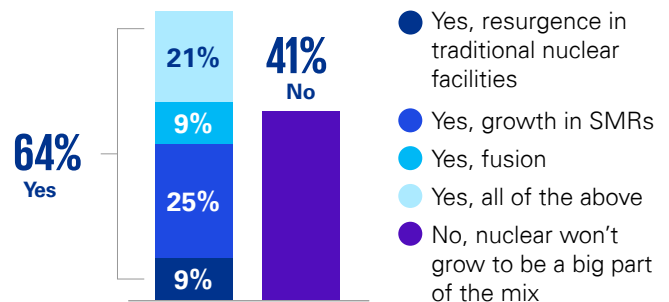
The United States joined more than 20 countries at COP28 to endorse nuclear as a key energy source for achieving net zero goals.³ With a global effort to revitalize nuclear energy, and given breakthroughs in fusion technology, the majority of executives (64 percent) expect significant growth in nuclear as a renewable source.

Those who anticipate nuclear's expansion include 25 percent who expect the growth to be in small modular reactor (SMR) projects designed to provide energy to industry and in areas with limited grid capacity. With escalating demand for energy driven by data centers and other high processing needs, a number of large companies are considering SMRs.⁴

However, challenging permitting and construction issues remain barriers for US-based companies. Nuclear projects also are likely to hit snags in communities reticent to have reactors, even small plants, in their backyards. Few companies (7 percent) have plans to expand into SMRs, and approximately 40 percent don't see nuclear becoming a big part of the overall energy mix.

Expectations for growth in nuclear energy

Based on breakthroughs in fusion technology and/or the recent discussions at COP28, do you expect to see significant growth in nuclear energy?

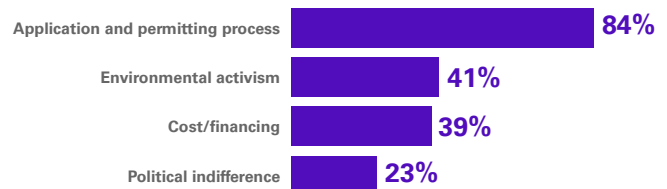


Transmission is largely unaddressed

Despite multiple incentives to build renewable energy projects, there is no holistic strategy and few supports exist to improve transmission capabilities. The application and permitting process remains the most significant barrier to increased transmission capacity.

Barriers to renewable energy transmission

What are the most significant barriers to renewable energy transmission?



³ US Department of Energy, "At COP28, Countries Launch Declaration to Triple Nuclear Energy Capacity by 2050, Recognizing the Key Role of Nuclear Energy in Reaching Net Zero" (December 1, 2023)

⁴ The Wall Street Journal, "Microsoft Targets Nuclear to Power AI Operations" (December 12, 2023)



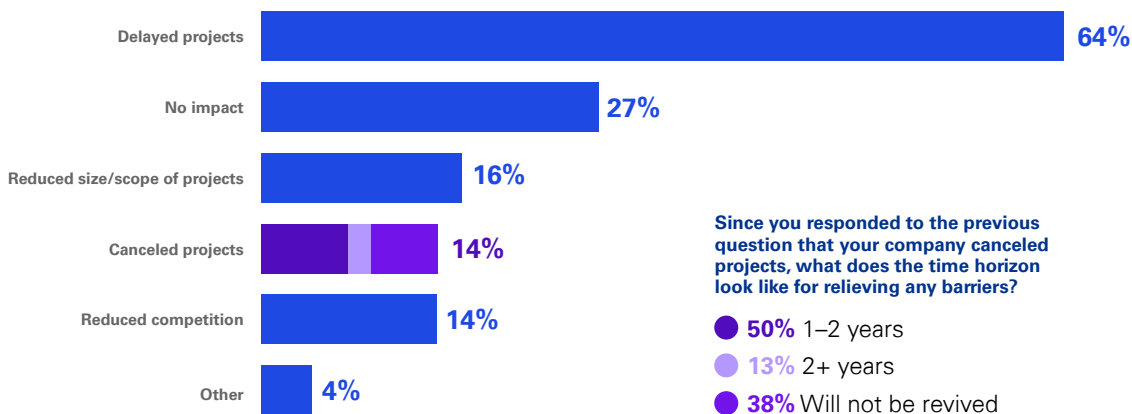
Financing and incentives

Tax credits and incentives remain critical for making decisions to invest in renewable energy projects

The high cost of capital in recent years challenged the sector and led to project delays. The further out the timeline for completion, the worse the impact. Among those that canceled projects due to financing costs, nearly 40 percent will not revive their efforts.

Inflationary impacts on project pipelines

In 2021–2023, how did the higher cost of capital impact your company’s renewable energy development and funding strategy?

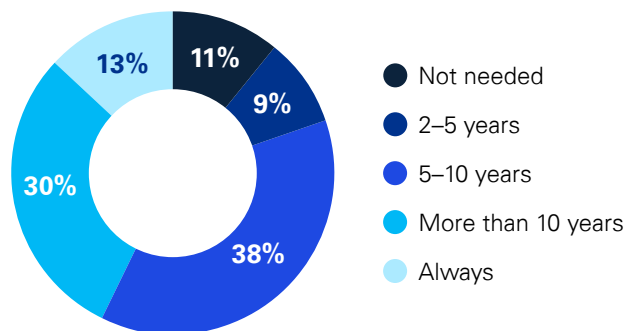


Companies continue to use the long menu of incentives and financing mechanisms available. For hydrogen, battery storage, carbon capture, and other innovations, government incentives and support from the IRA as well as the Bipartisan Infrastructure Law and CHIPS Act are and will remain a necessity.

While many projects in solar, wind, and other existing technologies could stand alone, tax credits are key to supporting projects in the continued high-interest rate environment in addition to helping make renewable energy affordable to the rate payer. Forty-three percent think government incentive and financing programs for these projects need to stay in place at least 10 years.

Government incentives are essential

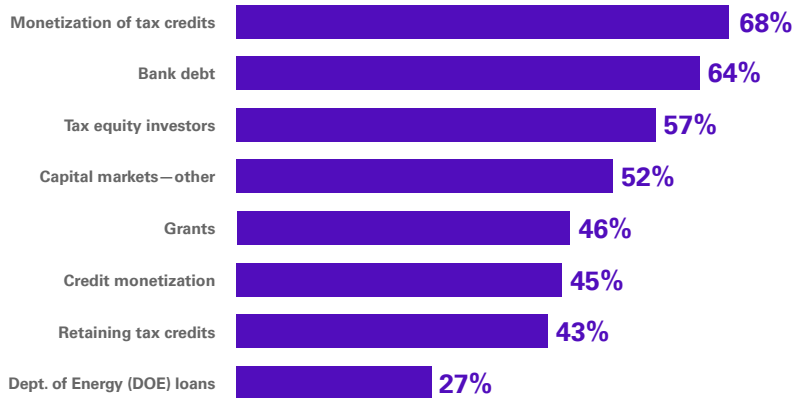
For existing technologies, i.e. wind and solar, how long do you think government incentive/financing programs need to stay in place until such projects can stand on their own?



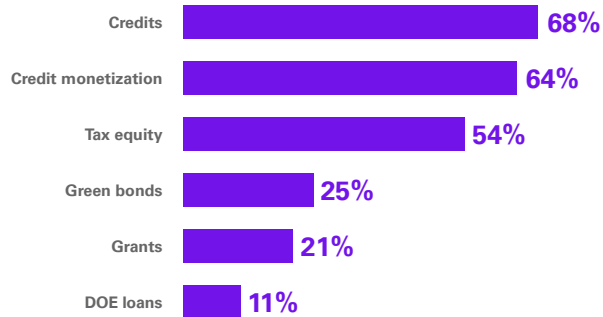
Note: Responses may not equal 100 percent due to rounding

Financing today and tomorrow

What financing mechanisms is your organization leveraging?



What do you think will be the most relevant mechanisms for growing the renewable energy industry?





Supply chain

Supply chain bottlenecks for key renewables materials, supplies, and contractors are expected to continue for several years

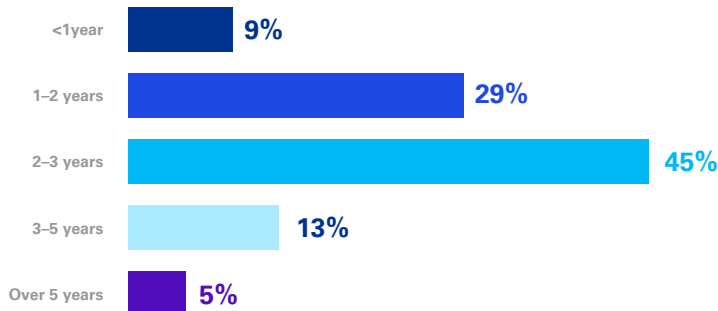
While opinions may shift as we move further into 2024, supply chain challenges remain top of mind for industry players.

Most US renewable energy companies, 63 percent, expect supply chain bottlenecks to stretch at least several years. Approximately 30 percent foresee relief within one to two years.

Four out of five companies have diversified suppliers since COVID-19 supply chain disruptions, including expansion geographically and nearshoring to reduce supply chain complexity. One in five has entered into venture partnerships to access materials.

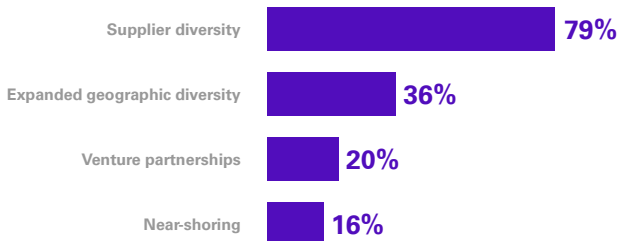
Ongoing supply chain concerns

Given the acceleration and investment in renewable energy projects, there is currently a bottleneck in the materials, supplies, and contractors. How long until this is relieved?



Supplier diversification efforts

How has your organization adjusted sourcing materials to address supply chain challenges?



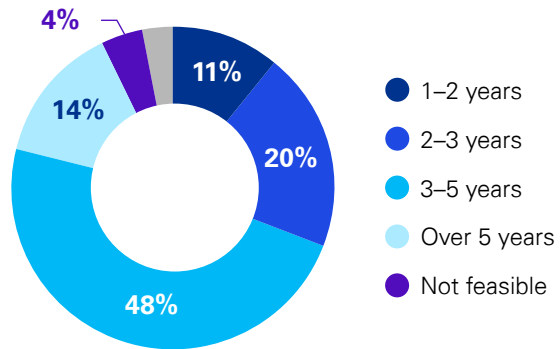
Ramping up domestic production

The IRA tax credits to boost domestic materials production could be quite impactful to the industry. High-quality, US-manufactured solar panels, for example, are available today. However, most companies anticipate it will be three to five years before onshore manufacturing really takes off. Segments of the renewables industry are looking for help—now.

“The utility-scale energy development business (whether renewables or not) is currently constrained by shortages in the areas of transformers and breakers—the lead times for which currently sit beyond 24 months,” one executive said. “This is a serious problem that requires urgent public-private action.”

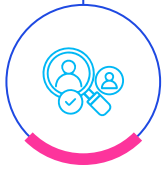
Timeframe for established onshore manufacturing

The IRA has significant incentives for domestic content; however, very little is manufactured in the US to supply the demand. How long do you think it will take to develop onshore manufacturing that can take advantage of tax credits?



Note: Responses may not equal 100 percent due to rounding





Talent

Companies are on a hiring spree but face stiff competition for human capital

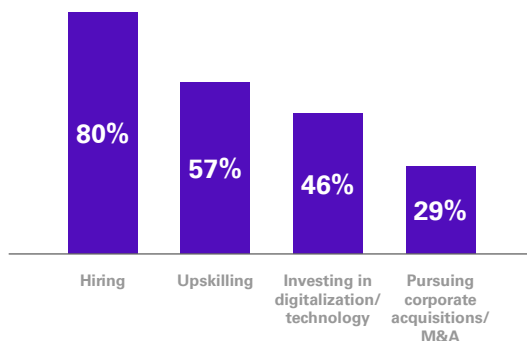
US renewable energy companies are trying to staff up and train their current workforces to meet growing clean energy demand and develop technological expertise. The majority are hiring, and more than half are upskilling their employees.

However, more than half also say their ability to compete with other industries on salary is their greatest challenge to establishing the talent pool they need. Almost one-quarter also point to difficulties attracting candidates to the energy industry due to an outdated reputation or misconceptions about a lack of innovation and attention to environmental concerns.

The result is not just a talent shortage in the ranks but at the top as well. A limited number of potential leaders exist for an expanding number of executive and director roles across the fast-growing renewable energy industry, according to executive search firm Heidrick & Struggles.⁵

Actions to build the workforce of the future

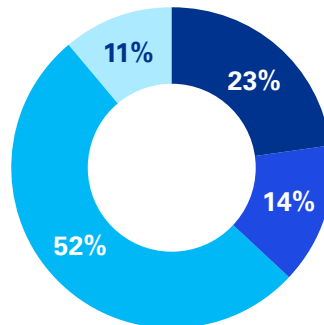
To meet capital human capital, are you:



Dealmaking activity in renewable energy dropped off in 2023 compared to the previous year in face of high interest rates and other challenges, but optimism began to grow in the latter part of the year.⁶ Nearly 30 percent of companies surveyed say they are looking at acquisitions and other dealmaking activity to gain talent. Furthermore, to drive efficiencies with the labor force they have, companies continue to invest in digital technologies.

Challenges to hiring and retaining talent

What are the greatest challenges to establishing the right talent pool?



- Energy industry reputation (misconception about innovation)
- Talent drain through retirement
- Ability to compete on salary
- Ability to offer work-from-home options

Note: Responses may not equal 100 percent due to rounding

⁵ Heidrick & Struggles, "The next energy crisis? Talent"

⁶ FTI Consulting, "U.S. Renewable Energy M&A: Review of 2023 and Outlook for 2024" (March 22, 2024)



In summary

The irreversible shift to renewable energy is underway. Customers increasingly demand lower- and zero-carbon emission sources, and governments will require it. Innovation, government incentives, and alternative financing structures are driving the development of technologies at an exponential rate.

US renewable energy executives largely agree that these incentives and financing

mechanisms are critical for injecting certainty into project planning and making alternative energy widely available. Figuring out how to maximize these incentives is just one of many challenges in a complex sector. US renewable energy companies need strategies to address innovation, regulation, supply chain constraints, talent, and other key elements for long-term success in the renewable energy industry.



How KPMG can help

KPMG works with traditional and renewable energy companies globally to support their organizations through the energy transition to net zero.

Our professionals help US energy companies understand the complex and evolving policy, regulatory, and business tax matters of renewable energy projects to enhance incentives and execute on monetization approaches. Our experience covers a broad range of tax issues across the lifespan of a project, from the implications of costs incurred before development to the sale of existing projects, eligibility for credits and incentives, and tax and financial reporting implications.





Authors



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