



2024 ENERGY TRANSITION OUTLOOK SURVEY REPORT

November 2023



WOMBLE
BOND
DICKINSON

A POINT OF VIEW LIKE NO OTHER

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EXECUTIVE SUMMARY

Womble Bond Dickinson (WBD)'s 2024 Energy Transition Outlook Survey Report points to a new phase in the multi-generational journey to Net Zero. While 56% of our respondents are deepening their focus on their transition strategy, the energy sector executives, investors and legal counsel we surveyed also demonstrate an increasing awareness of cost and economic impact. The results suggest a growing understanding of the scale of existing grid modernization, as well as the new infrastructure required to support renewable resource generation. Meanwhile, the critical role of government support has risen to new prominence.

In recent years, energy majors have outlined strategic plans to diversify their businesses to include decarbonization technologies and renewable resources. Now we are seeing some of these companies moderate their previous net zero commitments. This is not true for all; in March TotalEnergies reaffirmed a commitment to its transformation strategy. But a month earlier, BP walked back its previous commitment to a 35% to 40% reduction in carbon emissions by 2030 to a 20% to 30% cut. Shell announced job cuts in its Low Carbon Solutions business to “strengthen its delivery on our core low-carbon business areas such as transport and industry,” and CEO Wael Sawan recently stated that the company is “trying to provide energy security [which is] critical today and continues to be very much foundational on oil and gas production.” ExxonMobil said in May that Net Zero by 2050 is highly unlikely. More recently, Saudi Aramco’s CEO suggested that more investment in oil and gas is required just to meet the demand scenario outlined in the International Energy Agency (IEA)’s Net Zero by 2050 roadmap.

After a period of high commodity prices, oil and gas companies have considerable balance sheets, and are now choosing to reinvest in their core assets. On October 23, Chevron announced its intention to purchase Hess, a large upstream company with oil and gas assets in Guyana, the U.S. and in Asia Pacific. Earlier that month, ExxonMobil agreed to acquire Pioneer Natural Resources on the heels of its July deal to buy Denbury. More deals are expected.

Still, the need to tackle global emissions in line with the Paris Agreement targets remains. The participation of oil majors in the upcoming United Nations COP28 climate summit—though criticized by many—brings pragmatism to the global energy transformation. The fossil fuel industry can still be part of the solution.

Companies operating in the renewable energy space remain committed to Net Zero. Setbacks and challenges are expected, given the volatility of the industry and the complexity and enormity of the energy transition. But it is concerning that major renewable technologies are failing to clear cost hurdles in both the U.S. and Europe—due in part to escalating capital costs and inflation at levels not seen in decades.

Wind and solar energy deployment risks reaching a bottleneck due to grid interconnectivity issues. Permitting is a challenge across the board. Multiyear delays are hampering the delivery of key grid equipment such as transformers. Meanwhile, in the face of insufficient supply and public opposition to mining practices, there is a rush to meet future demand for metals such as copper, nickel and lithium, as well as for the rare earths required for electric vehicles (EVs) and offshore wind turbines.

Our research shows that industry leaders are maintaining or increasing their commitment to energy transition strategies. But this commitment is accompanied by a sobering understanding of economic realities and growing concerns about global conflict. Recent events in Israel and Gaza, and the ongoing war between Ukraine and Russia further emphasize geopolitical

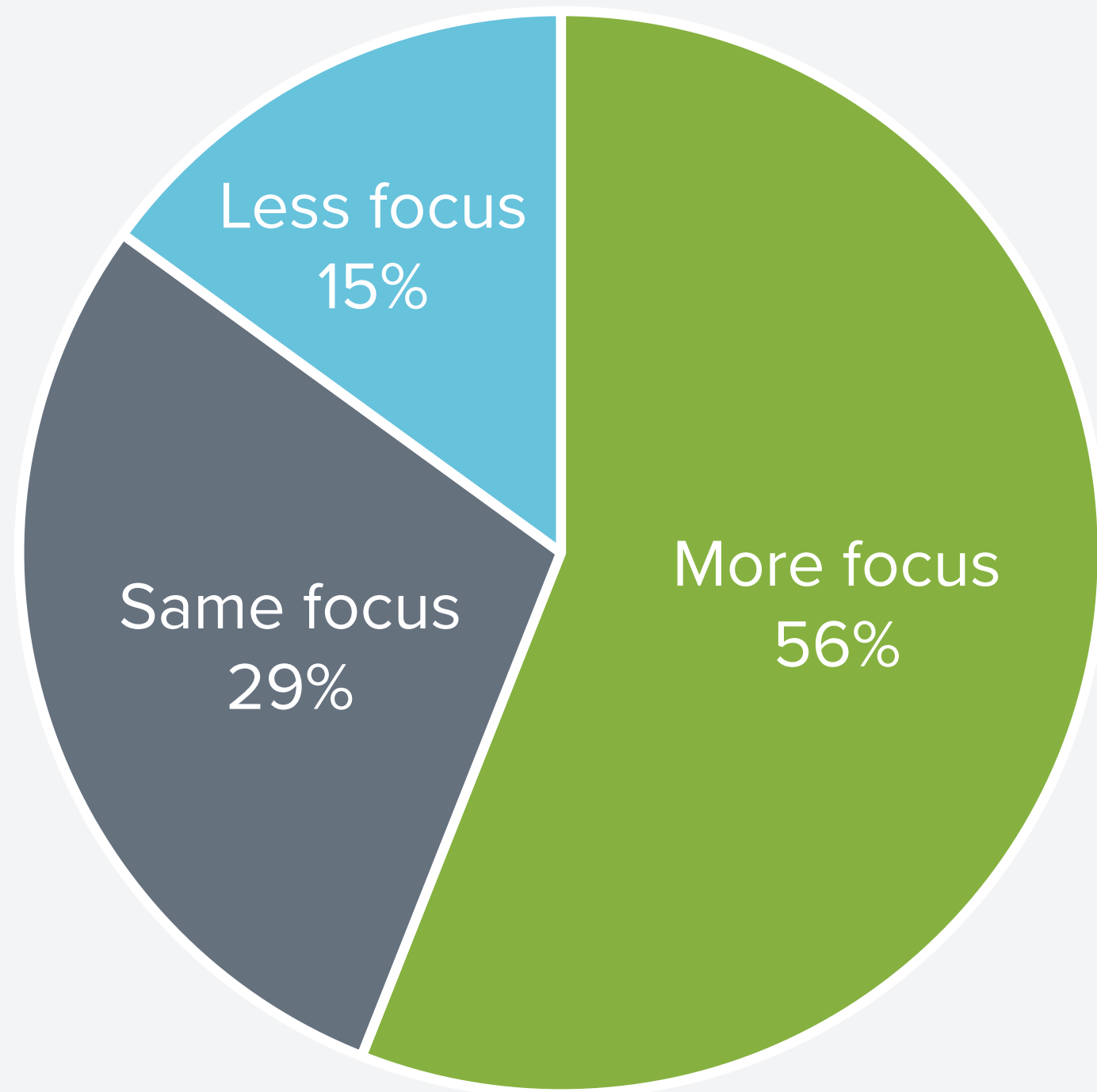
“This consolidation may, in part, be an indication that we are moving into a phase of the transition in which energy security is more of a priority. There seems to be a growing sentiment that fossil fuels will be a part of our energy mix for some time,” says **Jeff Whittle**, **Head of WBD’s Global Energy and Natural Resources Practice**.

instability. The need to ensure energy security is real, and global consumption is increasing. Based on a range of estimates of population growth and living standards, the U.S. Energy Information Administration (EIA) forecasts an increase in primary energy demand of between 16% to 57% by 2050.

Our third annual survey results indicate that despite economic, political and regulatory challenges, energy industry executives and investors continue to pursue more sustainable power sources while facing persistent hurdles tied to cost, grid and infrastructure issues. This report summarizes the key themes and challenges that were top of mind for our respondents. The scope of our questions extends beyond the topics covered herein. It should be emphasized that respondents showed significant optimism regarding the potential for low or no carbon resources and enabling technologies including hydrogen, carbon capture, biofuels, utility-scale storage, and EVs; we will be publishing additional content related to these technologies. Considerable innovation and investment will continue, and over time disruptive solutions will come to the fore. While the pathway to achieving net zero ambitions is currently challenged, commitment to a lower emissions future remains.

“The imperative of energy security and the striking growth in energy consumption highlight the pressing need to accelerate renewable energy developments,” says Richard Cockburn, Head of WBD’s U.K. Energy and Natural Resources Group. **“This will require streamlining approvals processes, addressing infrastructure bottlenecks and ensuring clear and stable regulatory regimes. Given the increased concern across all energy segments about the rising costs to reach Net Zero, every effort must be made to help industry control these costs.”**

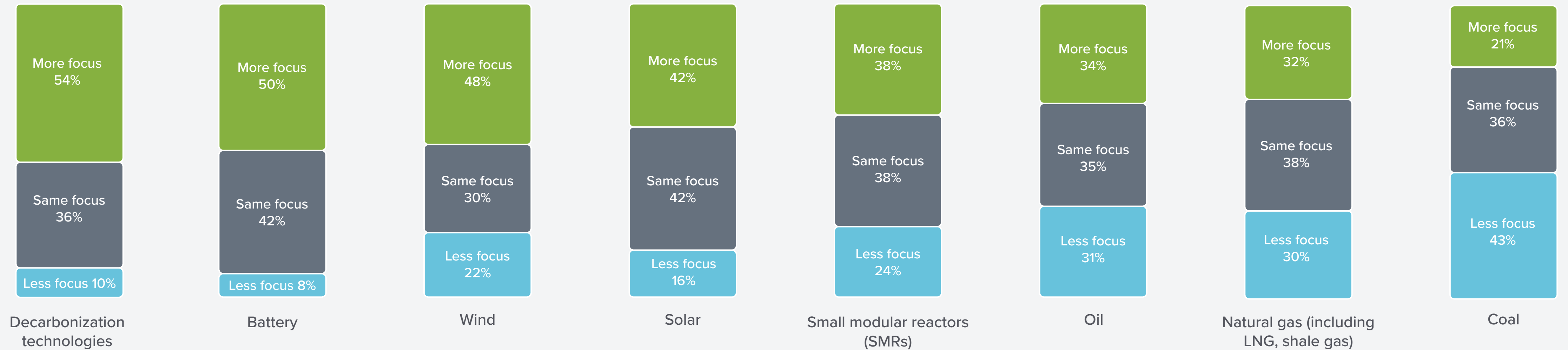
HOW, IF AT ALL, HAS YOUR COMPANY'S ENERGY TRANSITION STRATEGY (OPERATIONS OR INVESTMENT) CHANGED OVER THE PAST YEAR? (TOTAL OF THOSE WHO SELECTED "MORE FOCUS" FOR AT LEAST ONE TRANSITION FOCUS AREA)



ABOUT THE SURVEY

WBD's 2024 Energy Transition Outlook Survey Report expands the scope of our previous research to encompass perspectives from key regions around the world. Respondents included companies and investors with interests in renewable energy (76%), oil and gas (64%), utilities (39%), mining (33%), EVs (30%) and nuclear (18%). Participants were located in North America (23%), the U.K. and European Union (37%), Asia Pacific (11%), the Middle East (6%), and Latin America (22%). The survey incorporates 456 responses from CEOs, chief financial officers, chief operating officers, legal counsel, and business, operations, and project managers. More than a quarter (27%) of our responses came from investors. Data was analyzed in the aggregate on a regional basis. This survey was conducted between August 22 and September 28, 2023.

HOW, IF AT ALL, HAS YOUR COMPANY'S ENERGY TRANSITION STRATEGY (OPERATIONS OR INVESTMENT) CHANGED OVER THE PAST YEAR?



“It is interesting to note that the companies spending less time focusing on energy transition strategies are in coal, natural gas and oil,” says [Scot Anderson, Co-Head of WBD’s Metals & Mining Practice](#). “As noted above, some of those companies are reevaluating their net zero commitments. But even coal companies, which show the greatest percentage of respondents with less focus on energy transition, still show over half the respondents with the same or greater focus on the transition.”

KEY TAKEAWAYS

I. Cost and economic impact are key obstacles on the road to energy transition



II. Infrastructure and grid modernization pose significant challenges



III. Forward movement requires favorable regulatory and legislative policy and ongoing government support



IV. Biofuels and biomass (waste-to-energy), efficiency improvements, carbon capture, energy storage, and EVs are among the most appealing growth and investment opportunities overall



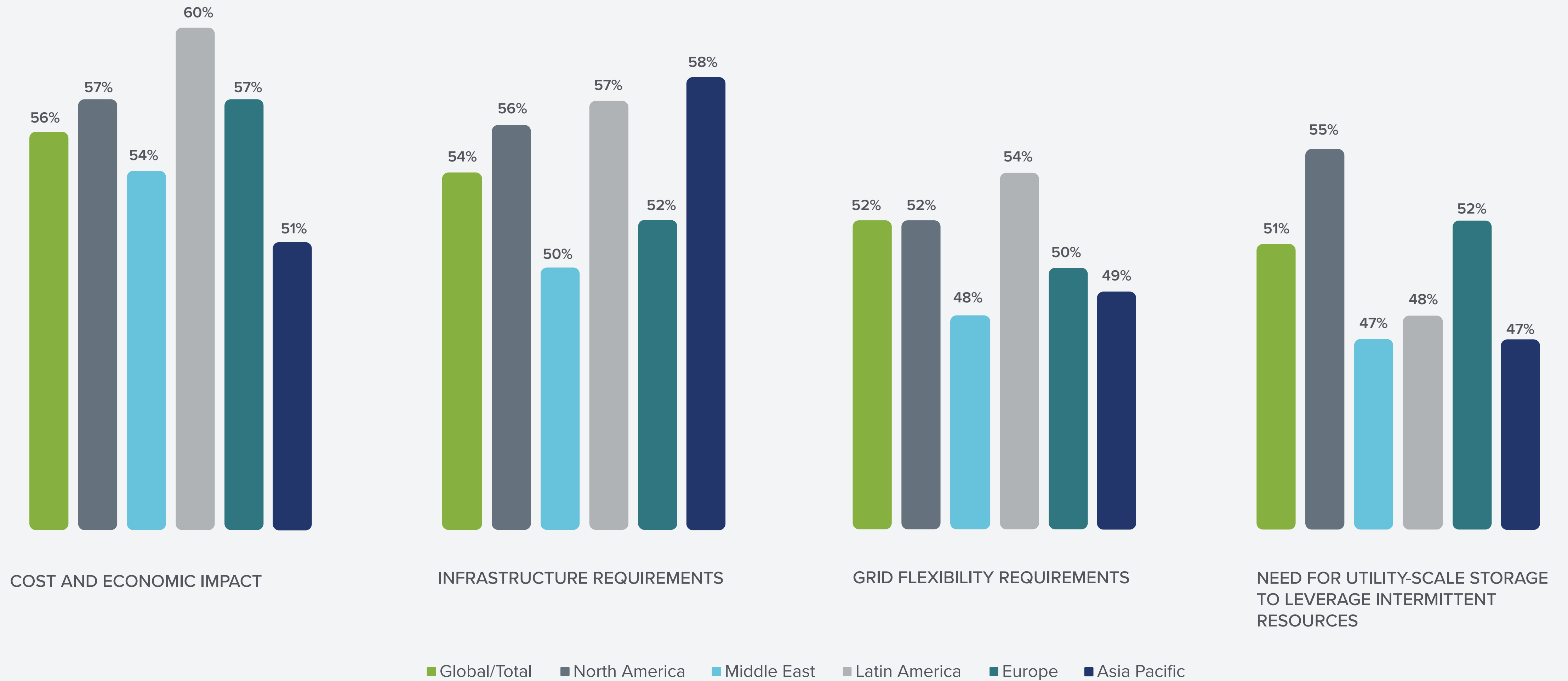
V. Politics is viewed as the key obstacle to net zero goals the world over



I. COST AND ECONOMIC IMPACT ARE KEY OBSTACLES ON THE ROAD TO ENERGY TRANSITION

Even as government subsidies stoke interest in clean energy and advances in technology expand resource options, the path away from fossil-fuel dependence faces challenges. Economic conditions are increasing the cost of clean energy investments as equipment prices rise, and evolving technologies place new demands on existing infrastructure.

IN YOUR OPINION, WHAT ARE THE GREATEST CHALLENGES CURRENTLY IMPACTING ENERGY TRANSITION?



Fifty-six percent of respondents said cost and economic impact was a leading challenge impacting energy transition, with 47% expressing concern about inadequate tax and incentive support. Cost concerns were slightly more pronounced in the developing economies of Latin America, selected by 60% of respondents, compared to 57% in North America who cited those challenges. Given the need to provide basic services in a cost-effective manner, it can be more difficult for developing economies to replace existing infrastructure with new systems that require substantial investment.

Money is no longer cheap, and that was clearly a top concern for our survey respondents. Central banks have raised interest rates significantly over the last two years and may well have to keep rates higher for longer. Policymakers have increased rates by 4% on average in developed countries since 2021 and 6.5% on average in developing economies, according to the International Monetary Fund (IMF). Return on investment is now more difficult to achieve than at any time over the last 10 years.

High costs also could slow digitalization, hailed as a key approach to improving grid reliability and driving efficiencies while lowering emissions. Forty-three percent of respondents cited capital and operating expense as a

hurdle to digital transformation, with the same percentage of utilities operators saying capital investment is the greatest challenge to meeting demand. More than half (53%) of those involved in offshore wind see capital and operating expense as the greatest challenge facing commercialization of wind resources.

We are seeing evidence of this in real time. In September, Mads Nipper, CEO of the world's leading offshore wind developer Ørsted, said that interest rates increasing from 0% to 4% was having a “very dramatic impact on renewables because the fuel of the renewable industry is capital.” We see the same sentiment among respondents involved in or considering hydrogen, who flagged low-cost renewable energy (56%) and low-cost financing (42%) as the top obstacles to deploying utility-scale green hydrogen projects.

While overall global inflation is expected to decline this year, it is a lagging economic indicator and 40% of respondents expect that inflation and economic shocks will have a “high impact” on the adoption of green technologies. Materials costs and supply-demand imbalances are top of mind. Forty-two percent cited the rising cost of raw materials as a “high impact” factor in the adoption of green technologies. Such materials, including critical

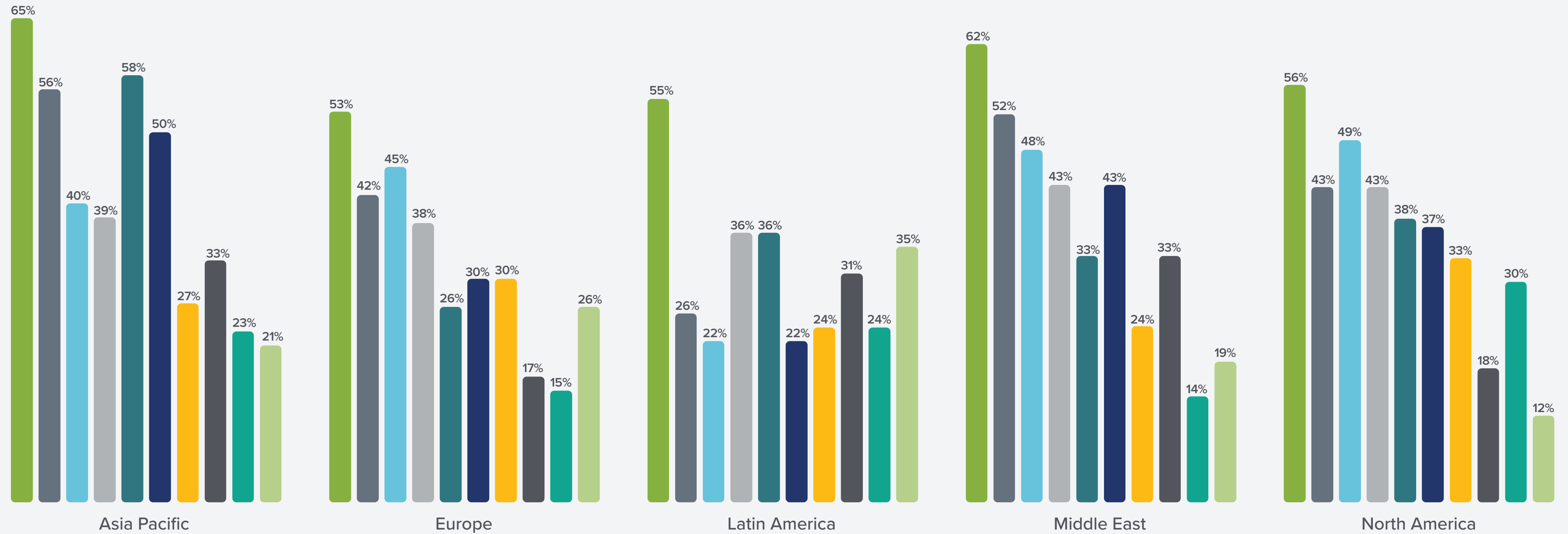
minerals, are essential to produce numerous renewable or renewable-enabling technologies, but supply falls short of anticipated demand, according to a recent IEA report. While cited by a lower number of respondents, concerns about workforce skill and availability (30%), and trade restrictions on green technology components (28%) speak to similar supply-demand imbalances.

Cost is also a barrier for those who haven't yet transitioned to renewables. Among that small group (just 7% of our total respondent group, or 30 respondents in total), one-third said the capital expense of doing so was prohibitive, a condition that is unlikely to improve in the near term, the IMF forecasts of declining inflation and growth next year notwithstanding.

EVs have captured the public's imagination—and a significant share of its income—as symbols of the energy transition. While we did not include consumer data in this survey, industry executives and investors perceive the high initial cost of EVs as the greatest challenge to widespread adoption. This is true in every region. However, initial vehicle investment is certainly not the sole cost-related hurdle to wider EV adoption. Material public and private investment is required to establish adequate infrastructure and grid stability.

“Higher interest rates make it more costly to borrow money and in turn can significantly increase project costs, raising the associated levelized cost of electricity (LCOE)—or the average of what it will cost to produce electricity in today’s terms incorporating everything from construction to fuel to financing fees,” says Lisa Rushton, Co-Head of WBD-US Energy and Natural Resources Practice. **“A 5% rise in interest rates would increase the LCOE from a natural gas plant only marginally, while it could increase the cost of electricity from wind and solar by a third, according to a 2020 IEA analysis. For capital-intensive renewable projects, rising interest rates are hugely expensive and may stymie development.”**

WHAT ARE THE GREATEST CHALLENGES TO WIDESPREAD ADOPTION OF EVs?



- High initial cost
- Access to and development of public charging stations
- Operating reliability/limited range
- Supporting infrastructure/insufficient charging capacity
- Battery durability
- Battery shortages (scarcity of raw materials)
- Grid capacity
- Sustainability concerns
- Need for battery R&D/innovation
- Incentives are not sufficiently compelling

II. INFRASTRUCTURE AND GRID MODERNIZATION POSE SIGNIFICANT CHALLENGES

In October the IEA issued a [report](#) that said the world needs to add or replace 49.7 million miles of transmission lines by 2040 to meet climate goals and achieve energy security. According to the report, global electricity use will need to grow “20% faster in the next decade than it did in the previous one” to achieve national climate goals. Multiple factors will drive growth in the coming years, including a rising need for [cooling energy](#), widespread deployment of heat pumps, and electrification of transportation and vehicles.

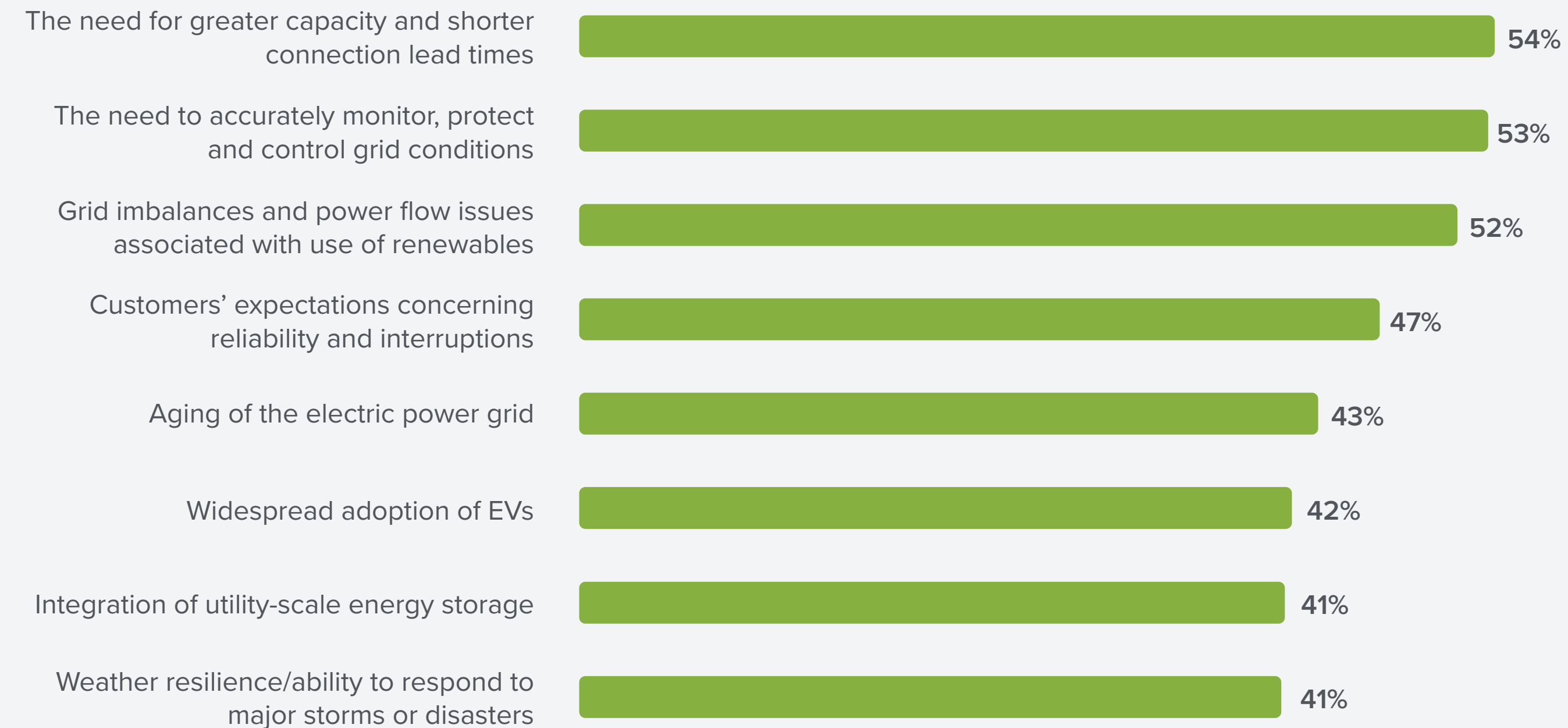
Infrastructure needs and grid flexibility requirements rank among the top challenges impacting energy transition, according to 54% and 52% of respondents, respectively. More than half (51%) cited the need for utility-scale storage required to leverage intermittent resources—suggesting that storage is a limiting factor—while 41% selected transmission/distribution system upgrades.

“The realization is spreading across the industry that creating a clean energy system requires more than deploying solar, wind and storage assets at scale,” says Belton Zeigler, Co-Head of WBD’s U.S. Regulated Utilities Team. **“It also requires modernizing and expanding the transmission grid so that it can serve customers efficiently and reliably as electrification proceeds and increasing levels of renewable resources are added to the system.”**

Amplifying the points mentioned above, respondents said key concerns in grid modernization include interconnection challenges; mitigation of grid instability resulting from renewable energy integration; and aging infrastructure, among other factors. The improvements could remedy a host of energy transition obstacles identified by respondents. Grid issues are also a top concern cited by executives who are not yet participating in energy transition.

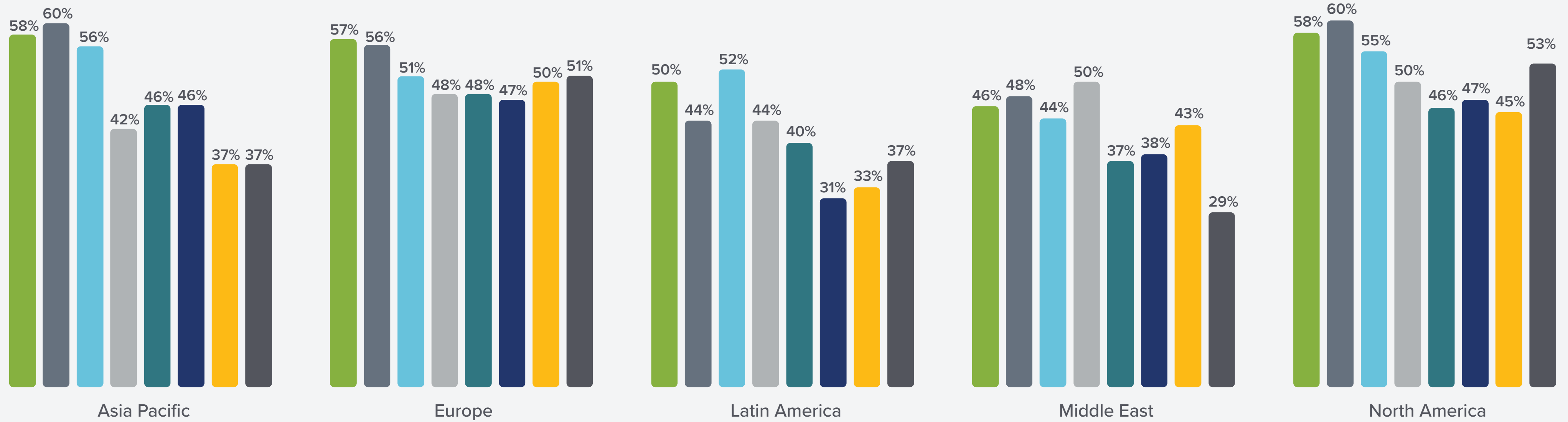
Examined regionally, the results are more revealing. More than half of respondents in North America (53%) and Europe (51%) cited weather resilience as a key requirement for aging electric grids, reflecting the extreme weather conditions both geographies have experienced in the past few years. The top concern in North America and in Asia Pacific was the need to accurately monitor and protect grid conditions. In 2021 a winter storm stressed the Texas power grid, causing massive power outages. This incident—coupled with recent wildfires that some attribute to grid failures in California and Hawaii—likely underpins that sentiment. A recent report by [Zero Carbon Analytics](#) suggests that wind and solar generated power will double in Latin America by 2027. In light of this, it makes sense that in that region, grid modernization was seen as most important for imbalances and power flow issues associated with the use of renewables.

WHAT FACTORS ARE DRIVING DEMAND FOR GRID MODERNIZATION?



“Whilst technologies such as onshore wind and ground mounted solar remain an attractive proposition, limited near term grid connection capacity is becoming an acute issue for new projects,” says Simon Hughes, a U.K. partner whose practice is focused on infrastructure development work. “That constraint is pushing some developers to consider reconfiguring or co-locating different technologies such as solar and battery energy storage.”

WHAT FACTORS ARE DRIVING DEMAND FOR GRID MODERNIZATION? (TOP 8)



■ The need for greater capacity and shorter connection lead times

■ Grid imbalances and power flow issues associated with the use of renewables

■ Aging of the electric power grid

■ Integration of utility-scale energy storage

■ The need to accurately monitor, protect, and control grid conditions

■ Customers' expectations concerning reliability and interruptions

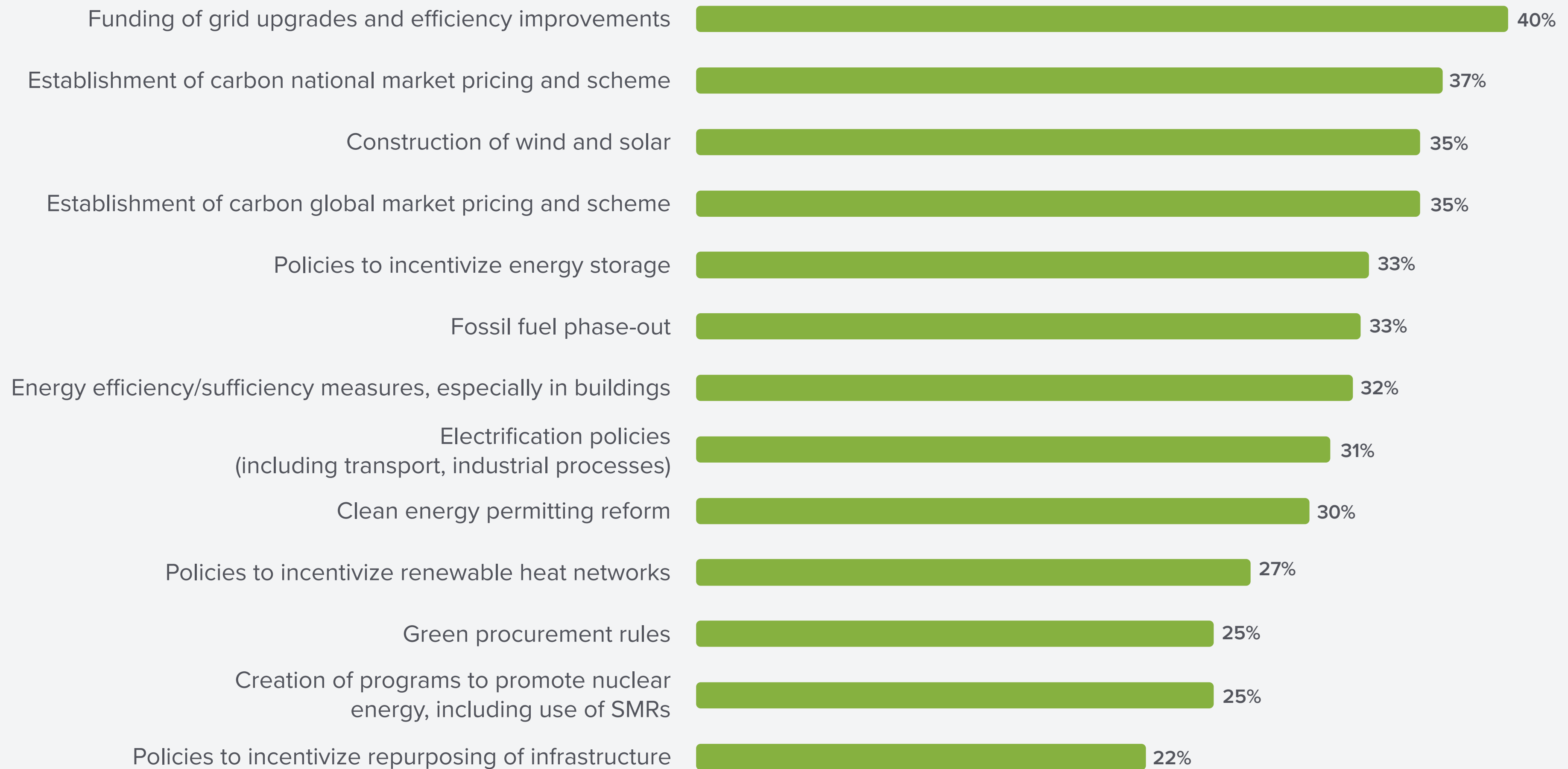
■ Widespread adoption of EVs

■ Weather resilience/ability to respond to major storms or disasters

III. ENERGY TRANSITION OUTCOMES HINGE ON GOVERNMENT SUPPORT

Successful infrastructure projects depend on government support. The Panama Canal; the U.S. interstate highway system; China's Three Gorges Dam; and the Channel Tunnel between the U.K. and France all benefited from considerable public sector funding and legislative initiatives. However, the multi-generational challenge of the energy transition dwarfs all of these when it comes to scale, impact and need. We have seen considerable public sector support in the U.S., but much more is required—both there and globally—in terms of capital mobilization, legislation and regulation.

IN WHICH AREAS COULD LEGISLATION, REGULATION AND/OR INCENTIVES BE MOST EFFECTIVE IN ACCELERATING THE ENERGY TRANSITION?



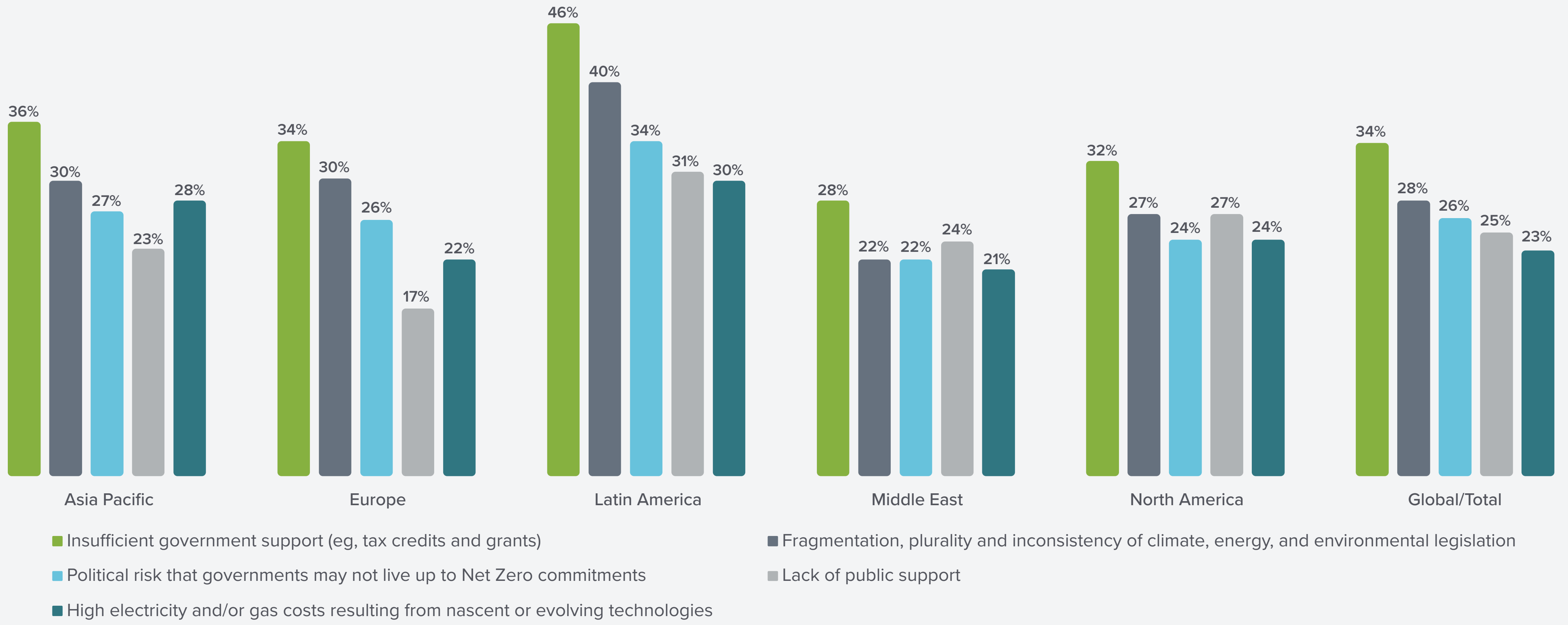
“The main threat to net zero goals highlighted here is insufficient government support. In the U.K., we have supported multiple projects requiring innovative funding solutions including a successful planning application for the tallest wind turbine in the U.K.,” said Vicki Redman, a U.K. partner and member of the firm’s Global Board whose practice focuses on infrastructure planning. **“The company did not have access to central government funding for locally owned wind power generation but was able to meet its funding requirements. This was an impressive example of navigating the multiple barriers to government support that exist in the U.K.”**

We asked respondents to select all areas in which legislation, regulation or incentives could be most effective in accelerating the energy transition. Forty percent of respondents chose funding of grid upgrades and efficiency improvements, 33% chose policies to incentivize energy storage, and 32% said such government support would be most effective in energy efficiency measures.

From a regulatory perspective, respondents suggested that the government should be proactive in the establishment of national (37%) and global (35%) carbon credit market schemes. (Note that national data requires further inquiry as our data was analyzed on a regional and not a national basis.) National carbon markets were of particular interest in Asia Pacific (60%) and the Middle East (57%). Beyond that, there was little regional consensus. European/U.K. respondents ranked funding of grid upgrades and efficiency improvements (53%) as the top area in which policy might be most effective, as did those in North America (41%). Latin America participants chose wind and solar construction (51%).

When it comes to achieving *future* net zero goals, more than one-third of respondents said insufficient government support (e.g., tax credits and grants) was one of their top three challenges. Regionally, this sentiment appears more acute in Latin America, where 46% chose the same response.

WHICH OF THE FOLLOWING ARE KEY CHALLENGES TO ACHIEVING STATED NET ZERO GOALS? (TOP 5)



Respondents viewed regulation and policy support as critical across a range of clean energy technologies, from utility-scale energy storage to nuclear and solar power generation, as follows:

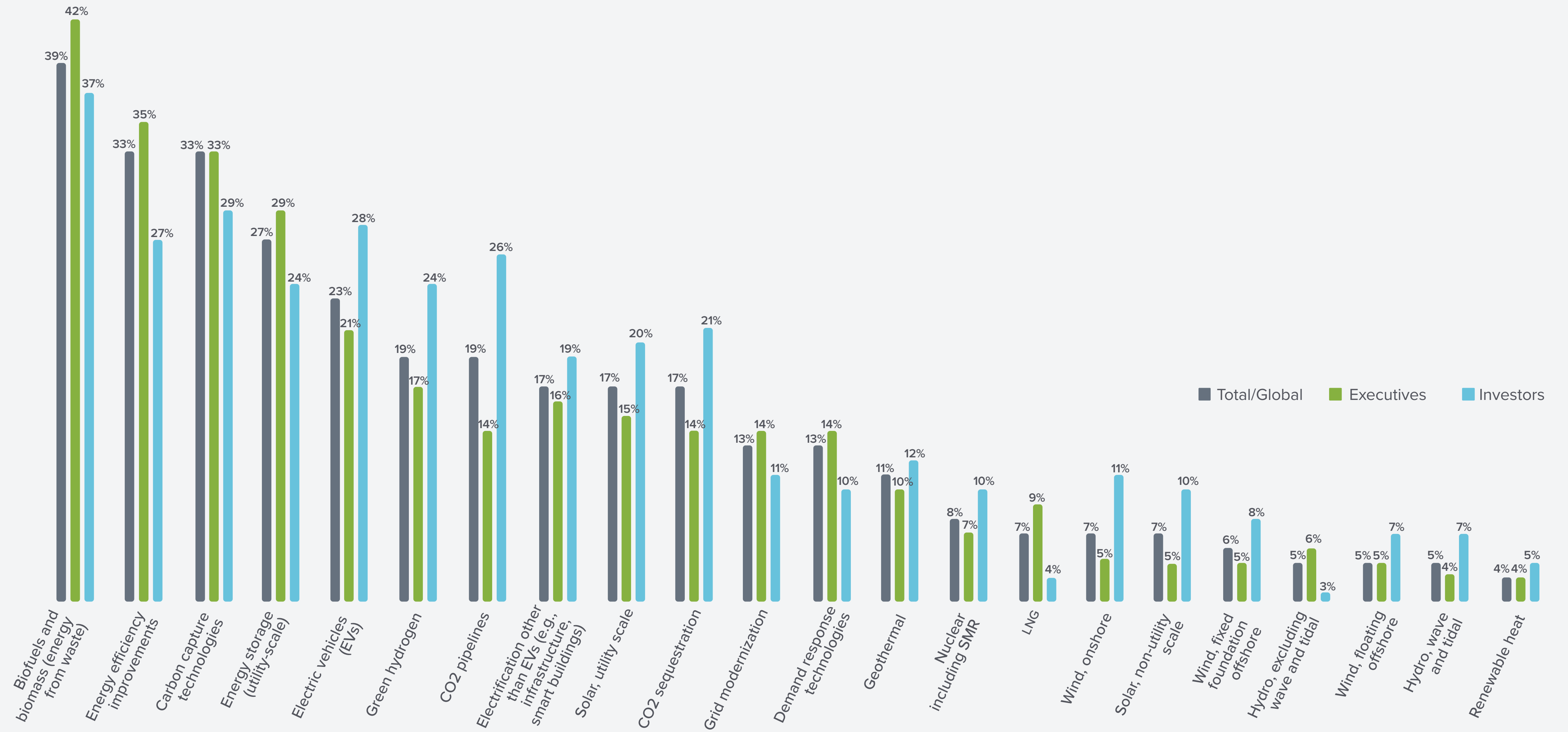
- Fifty-five percent say a supportive regulatory and policy environment is key to deployment of utility-scale energy storage.
- “Streamlined regulatory processes” outranks capital as an issue for the advancement of nuclear power. Of those who see it as an overall area of opportunity, 71% say a less complex regulatory climate would make nuclear energy more appealing to their organization.
- A favorable regulatory climate was the top condition (41%) respondents cited when we asked what was most important to optimize the grid’s role in maintaining or accelerating the energy transition.
- In the solar sector, 57% listed a favorable regulatory and policy environment as a principal factor in the development of next-gen solar technology.
- While capital and operating expense is of paramount importance to wind energy, a favorable regulatory and policy environment ranked as the second most important factor in future development, selected by 55% of those active in offshore wind and 55% of those in onshore wind.

TOP CONSIDERATION FACTORS	RANK #1	RANK #2	RANK #3	RANK #4	RANK #5
Green hydrogen and fuel cell development	Availability of low-cost renewable energy	Capital and operating expense	Operating reliability	Conversion efficiency	Favorable regulatory and policy environment
Nuclear	Environmental concerns	Favorable regulatory and policy environment	Negative public opinion/political opposition	Capital expense	Technological development (SMRs)
Next-gen solar	Scalability of technology	Interconnection costs and/or delays	Favorable regulatory and policy environment	Supply chain issues	Capital and operating expense
Onshore wind	Capital and operating expense	Favorable regulatory and policy environment	Interconnection cost and/or delays	Need for utility scale energy storage to leverage intermittent resource	Operating reliability
Offshore wind	Favorable regulatory and policy environment	Capital and operating expense	Operating reliability	Scalability of technology	Need for utility scale energy storage to leverage intermittent resource

IV. MOST ATTRACTIVE GROWTH AND INVESTMENT OPPORTUNITIES: BIOFUELS AND BIOMASS (WASTE-TO-ENERGY), EFFICIENCY, CARBON CAPTURE, ENERGY STORAGE AND EVS

As noted earlier, the overall investment picture is strong for clean energy heading into 2024. More than half (56%) of respondents increased their *investment or operational* focus on energy transition strategies over the past year.

OVERALL (BEYOND JUST YOUR OWN BUSINESS), WHICH OF THE FOLLOWING ARE THE MOST APPEALING INVESTMENT OR GROWTH OPPORTUNITIES IN ENERGY TRANSITION NOW? PLEASE SELECT UP TO FIVE:



We asked energy industry executives and investors to rank, beyond their own businesses, what they believe to be the most relevant energy transition investment areas today. Key areas of opportunity, according to our respondents, include decarbonization-focused solutions such as biofuels and biomass (more broadly characterized as energy from waste); energy efficiency improvements; carbon capture technologies; utility-scale energy storage; and EVs.

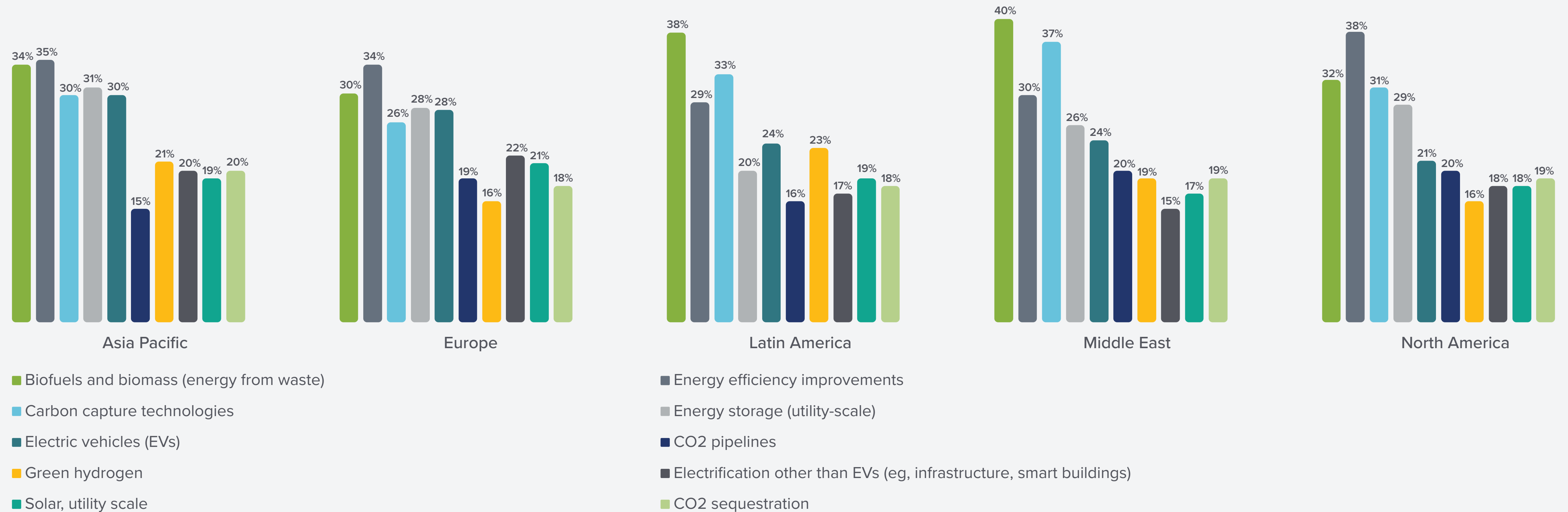
After biofuels and biomass (energy from waste), both constituencies clearly view energy efficiency—which has been described as the low-hanging fruit of the energy transition—as a priority. It tied with carbon capture as the second-ranked opportunity, selected by one-third (33%) of all respondents. Energy storage ranked fourth among all respondents (27%), and was fourth among executives (29%) and fifth for investors (24%), tied with green hydrogen.

Executives are generally more bullish on energy from waste inclusive of biomass and biofuels. It is worth noting here that 64% of our respondents participate in some way in the oil and gas subsector, which could be a driver of that result. Executives and investors both show interest in carbon capture infrastructure and technology. Nearly 70% of executives and investors expect commercial-scale carbon capture, transport and sequestration will be a reality by 2040.

“Despite the challenges outlined in this report, it’s no surprise that our research finds investments in renewable energy infrastructure are becoming more of a focus. That’s very much what we are seeing in our practice, particularly from our developer clients,” said U.K. partner Sebastian Briggs, who focuses on energy and natural resources.

Regional findings reflect similar priorities when it comes to investment and growth opportunities. These same technologies—biofuels/biomass (energy from waste), energy efficiency, carbon capture, energy storage and EVs—ranked in the top five across all geographies—except Latin America, where green hydrogen placed fifth (23%), with energy storage ranked sixth.

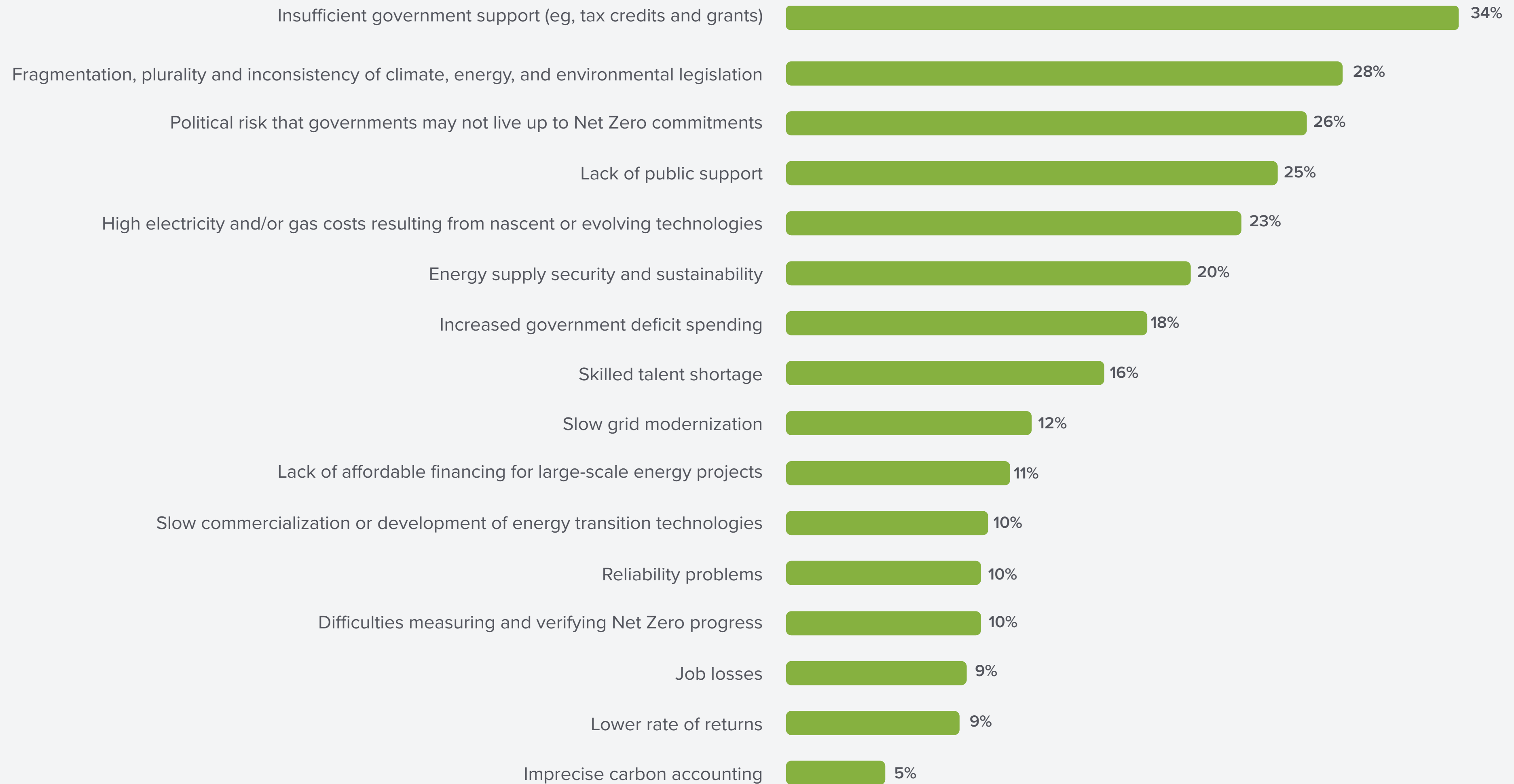
OVERALL (BEYOND JUST YOUR OWN BUSINESS), WHICH OF THE FOLLOWING ARE THE MOST APPEALING INVESTMENT OR GROWTH OPPORTUNITIES IN ENERGY TRANSITION NOW? PLEASE SELECT UP TO FIVE: (TOP 10)



V. POLITICS: THE KEY OBSTACLE TO NET ZERO GOALS

The multi-generational nature and global scale of the energy transition require significant support from individual governments, as well as international cooperation among developed and developing countries—whose priorities can differ widely. More than 190 countries are signatories to the Paris Agreement, the stated commitment to limit global temperature increases to well below 2 degrees Celsius, with a stretch goal of a 1.5 degrees Celsius limit. Over 90 countries have set net zero emissions targets, including the U.S., China, India and most of Europe.

WHICH OF THE FOLLOWING ARE KEY CHALLENGES TO ACHIEVING STATED NET ZERO GOALS?



When we asked our respondents to identify the threats to net zero goals, the top three choices are rooted in politics. These include insufficient government support (34%); fragmentation, plurality, inconsistency of legislation (28%); and general political risk that governments may not live up to net zero commitments (26%).

Those factors also ranked among the top five concerns across all regions surveyed. Latin America, as arguably the least developed economic region in our survey, showed the greatest concern regarding insufficient government support, with 46% of respondents citing it as a challenge.

Sustained societal and economic commitment to greenhouse gas (GHG) emission reduction cannot be taken for granted, either on a domestic or on a considerably more complex global basis. In the U.S., the 2024 election could usher in a new administration that may be less inclined to support future energy transition initiatives. While an outright repeal of the 2022 Inflation Reduction Act is unlikely, certainly the executive branch could take actions to limit its effectiveness. However, any decision to do so would have a negative effect on the jobs and tax benefits the bill has created.

From a global perspective, there has been some positive movement on coordinated action across geographies. Group of 20 (G20) countries account for nearly 80% of the world's GHG emissions. Since 2009, the group has adopted a range of coordinated climate-related initiatives, including voluntary peer reviews, fossil fuel subsidy programs, and the formation of multiple sub-groups to enhance green financing.

At the 2021 G20 summit in Rome, the intergovernmental Organisation for Economic Cooperation and Development provided specific recommendations on how a more “resource-efficient and circular economy” might be fostered. The theme of India's 2023 G20 Summit meeting was “One Earth One Family One Future,” reflecting a focus on helping vulnerable countries “set the right policies and create an environment conducive to climate-friendly investments.” And more recently, at the inaugural Africa Climate Summit, delegates focused on financial support for climate adaptation and clean energy investment.

The COP28 presents an opportunity to evaluate global advances and setbacks. Set to take place in Dubai from November 30 to December 12, the meeting will include the first assessment of progress—called the Global Stocktake (GST)—since the Paris Agreement of 2015. According to [July’s letter](#) from COP28 President Dr. Sultan Ahmed Al Jaber, “the global community already knows the GST will show we are off track.” The planned strategy to course-correct includes “an immediate response of real-world, inclusive policy, finance, and technology solutions that pushes new resources, partners and champions to coalitions in each sector...” The results of the GST may well bring new, and hopefully durable, resolve to world leaders and to the global community.

Today, it is clear that the will to tackle climate change remains, while the need must continue to be reinforced in the minds and hearts of the public. However, the global rise in populism and isolationist politics—which run counter to the concept of global coordination—poses a considerable challenge to coordinated action on climate goals. Geopolitical strife and the resulting impacts on energy markets and energy security present additional complications, as immediate crises distract from the long-term, and urgent, need for a transition to cleaner energy.

The concerns of our survey respondents are certainly valid. Sustained, focused and *global* commitment will be required to show meaningful progress toward 2050 net zero goals.

Overall, it appears that business leaders continue to increase their commitment to the energy transition. However, with that intention to move forward also comes a clear-eyed perspective that the global energy transition is fraught with risks and will require a greater-than-anticipated level of capital investment. Moving the energy industry forward will require sustained will, ingenuity and multifaceted solutions to seemingly infinite complex challenges.

Womble Bond Dickinson will continue to closely monitor the social, political and economic forces shaping the energy and natural resources sector. As noted above, the scope of our 2024 Energy Transition Outlook Survey Report findings extends beyond the key takeaways summarized here. In addition to timely thought leadership and client alerts, we will be providing ongoing insights into the specific technologies and related topics in which our clients expressed interest, including hydrogen, EVs, carbon capture and wind, as well as digital transformation and ESG.

In addition to the survey demographics referenced in our Executive Summary, we note:

- Exactly half of the companies surveyed employed more than 5,000 people. Respondents reported their organization’s estimated 2022 revenue with 7% of the sample reporting less than \$10 million; 26% of the sample reporting between \$10 million and \$500 million; 27% reporting between \$501 million and \$5 billion; 34% reporting more than \$5 billion; and 6% electing not to disclose.
- Participation was anonymous. Due to rounding, as well as cases of questions where participants were asked to select all that apply, total percentages may exceed 100%.

PARTICIPATION BY COUNTRY

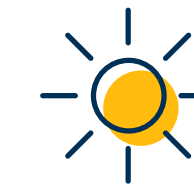
COUNTRY	REGION	COMPLETES
U.S.	NORTH AMERICA	79
CANADA		28
JAPAN	ASIA PACIFIC	25
AUSTRALIA		26
UAE AND SAUDI ARABIA	MIDDLE EAST	25
ISRAEL		1
BRAZIL	LATIN AMERICA	26
ARGENTINA, CHILE, COLOMBIA AND MEXICO		51
PERU AND ECUADOR		25
U.K.	EUROPE	67
FRANCE		25
GERMANY		26
NORWAY		2
ITALY		25
SPAIN		25
TOTAL		456

ENERGY AND NATURAL RESOURCES SECTOR

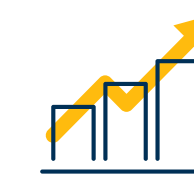
Womble Bond Dickinson's Global Energy and Natural Resources team has been immersed in the sector for decades. With a multi-disciplinary group of more than 100 attorneys, we serve clients globally so that they can successfully navigate the opportunities and challenges connected with the energy transition.

Our work covers the broad spectrum of energy and natural resources subsectors including oil and gas, renewables, all types of electricity generation and transmission infrastructure. We address the full range of client's project development, transactional and advisory needs.

Womble Bond Dickinson's diverse client base includes integrated energy entities and established industry players, as well as those entrepreneurs and early-stage companies who are at the forefront of change as they innovate, monetize and commercialize the technologies of our green(er) energy future.



CLEAN ENERGY AND RENEWABLES



COMMODITIES AND TRADING



METALS AND MINING



MOBILITY & TRANSPORTATION TECHNOLOGY



OIL AND GAS



REGULATED UTILITIES AND MARKETS



WATER AND WATER INFRASTRUCTURE

ENERGY SECTOR LEADERSHIP



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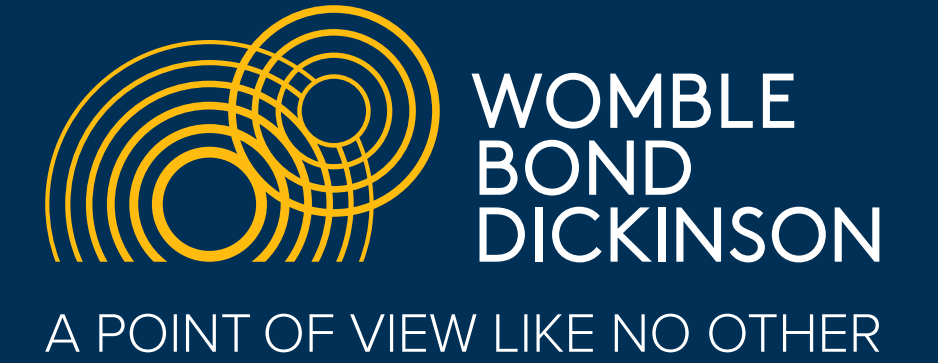


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WOMBLE BOND DICKINSON AT A GLANCE

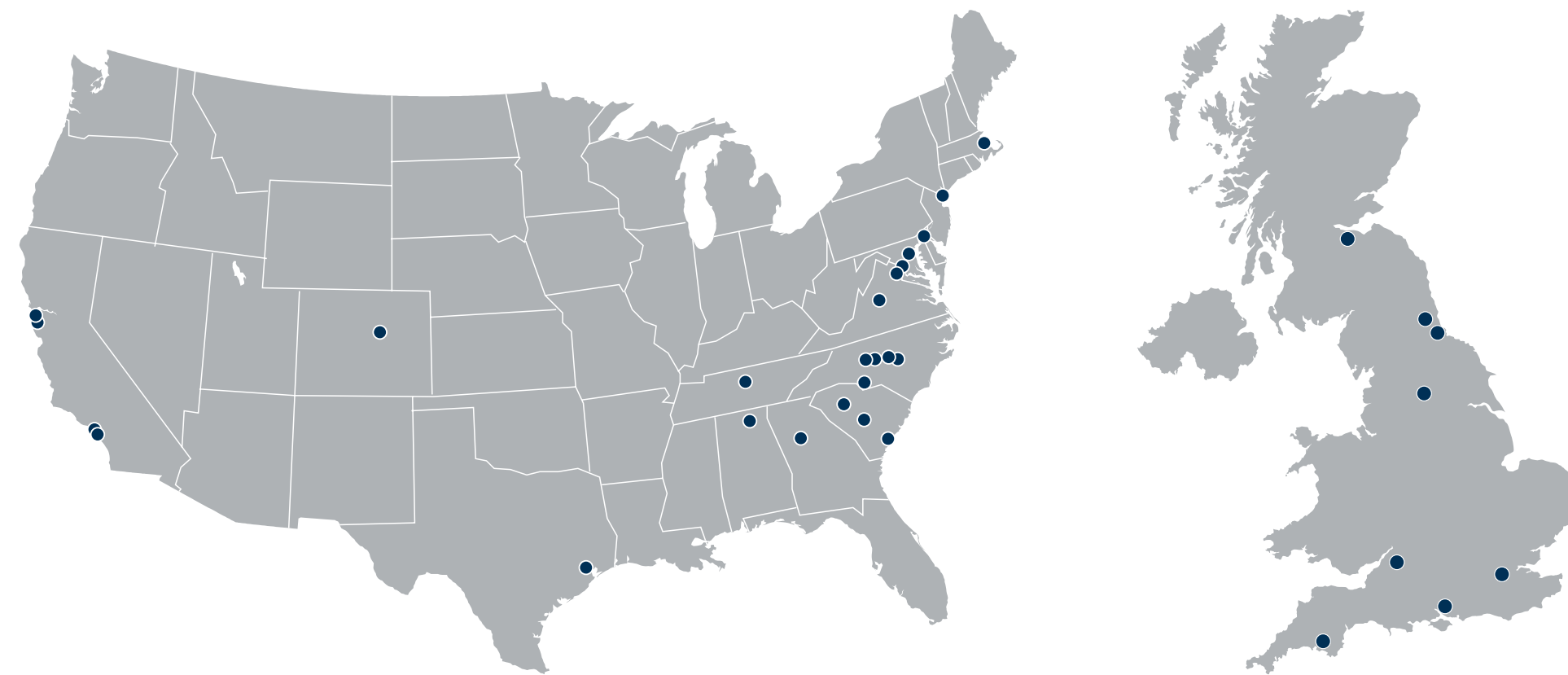


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