

Business Breakthrough Barometer 2024

Power



World Business
Council
for Sustainable
Development

BAIN & COMPANY 

29 October, 2024

Key messages

1/2

- Across all sectors, businesses felt most positive about the prospects for the power transition, with 35% feeling the sector is “on track” (4%) or “mostly on track” (31%)
- Renewable generation is growing faster than historical forecasts anticipated
 - Sector leaders were most likely to see themselves as more ambitious than governments; Power was also the sector where there was most optimism on the direction of policy
 - 70% of sector leaders are “somewhat confident” that governments in markets they operate will provide sufficient support for the transition, among which 20% described themselves as “confident”
 - China was singled out as leading the way with more than \$130B invested in the solar industry in 2023 - Chinese solar modules now ~50% cheaper than in Europe and 65% cheaper than in the US
- In contrast, sector leaders were much less confident grid investments would keep pace with generation outside China
 - Companies report delays in grid connections and permitting as significant barriers slowing down the integration of new renewable capacity and the electrification of demand in Europe and the US
 - 61% of sectors leaders were either confident or very confident that China would build transmission and distribution investment needed to support the tripling renewables capacity by 2030
- In Europe, sector leaders pointed to a weakening in investor sentiment, though most remained confident that 2030 targets could still be met
 - Businesses are struggling to make the business case work given higher costs of financing, and lower revenues due to cannibalization and the reduction of electricity demand
 - Sector leaders remain concerned about the time taken in regulatory approval procedures, although several noted that this had improved over the last year
 - Overall, net annual capacity additions continue to grow at around 20% and Europe remains on track for a surplus, despite some reductions pipeline of planned capacity to 2030
- While the rates of progresses were strong at a global level, many sector leaders pointed to a slowdown in some developed markets – particularly the EU
- Businesses tended to be more optimistic about the U.S. market following the introduction of the IRA
 - US renewable energy investments increased by 12% last year and is now edging towards European levels
 - Several sector leaders emphasized how the IRA has shifted their focus toward the U.S., offering a simpler and more stable investment environment compared to other regions like Europe, where processes were seen as more bureaucratic
 - However, growing capacity queues remained a concern creating a significant bottleneck for deployment

Key messages

2/2

- In the US, projected planned capacity in wind and solar is edging closer to 2030 NDC-aligned targets
 - Projected renewable capacity additions through 2030 set to exceed incremental demand growth
 - Fossil fuel capacity reductions will be constrained by reliability concerns, but utilization set to decline, reducing the share of generation
- Most states are rapidly transitioning towards renewable energy with marked changes in renewable share over the past 3 years
- In developed markets businesses were concerned about maintaining public support through the transition
 - In the EU increasing electricity prices risk creating negative perceptions around renewable energy
 - In reality the costs of grid investments, effects of market design, and external shocks like rising gas prices have driven prices up in many regions, leading to scepticism about the transition, as consumers struggle to see immediate financial benefits
 - Several sector leaders emphasized the need for smarter pricing mechanisms based on market driven principles, and better grid integration to mitigate short-term rising costs
- Given recent challenges to the industry, sectors leaders were focused on doubling down on core markets, with only 4% considering new markets very attractive
 - Currently only 25% of investment in clean energy this year is happening outside the EU, US and China, despite 75% companies reporting increases in CapEx to accelerating the net zero transition over the last 3 years
 - There are signs this could change – as supply chain pressures ease and falling material prices– e.g., solar panel cost have reduced 30% in the last two years, offsetting increased cost of finance
- Effective policy in swing states is driving renewable energy investments faster than power sector growth
 - Where businesses are considering venturing further afield, changes in policy were often described as the critical factor driving investment
 - 47% of businesses thought overall they were more ambitious than government, while the remainder feel they are as ambitious as governments
 - Businesses frequently cited a selection of nations (e.g., Brazil, India, Japan, Singapore, UAE) as attractive for investment outside of key markets
 - Sector leaders point to a combination of natural resources and growing demand combined with adequate support and a stable business environment
- Given recent challenges to the industry, sectors leaders were focused on doubling down on core markets, with only considering 4% new markets very attractive

Across sectors, business was most positive about the prospects for the power transition



81%

81% were at least “confident” that Breakthrough Agenda goals would be met

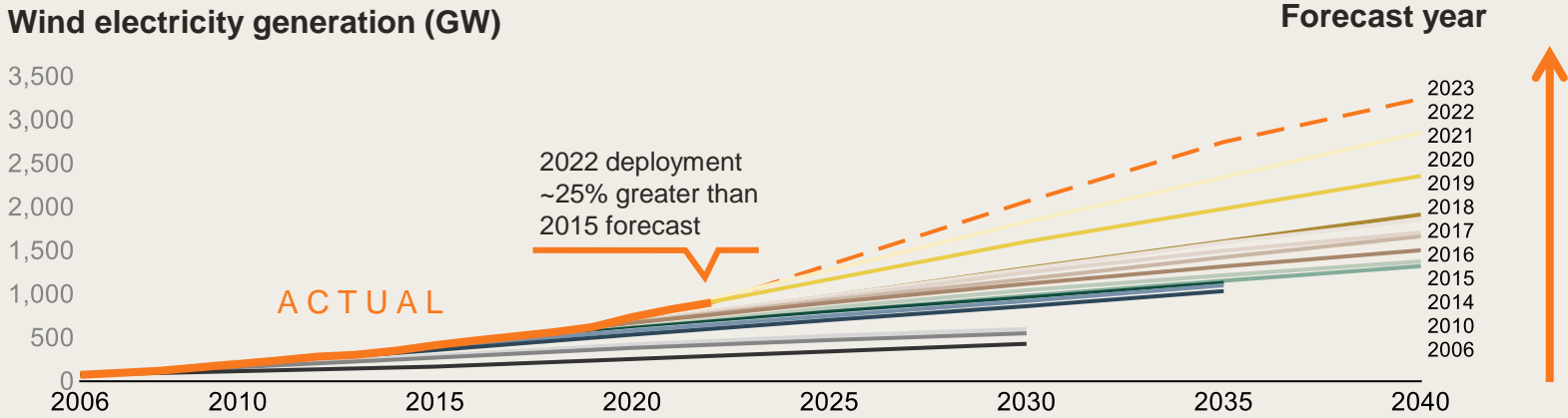
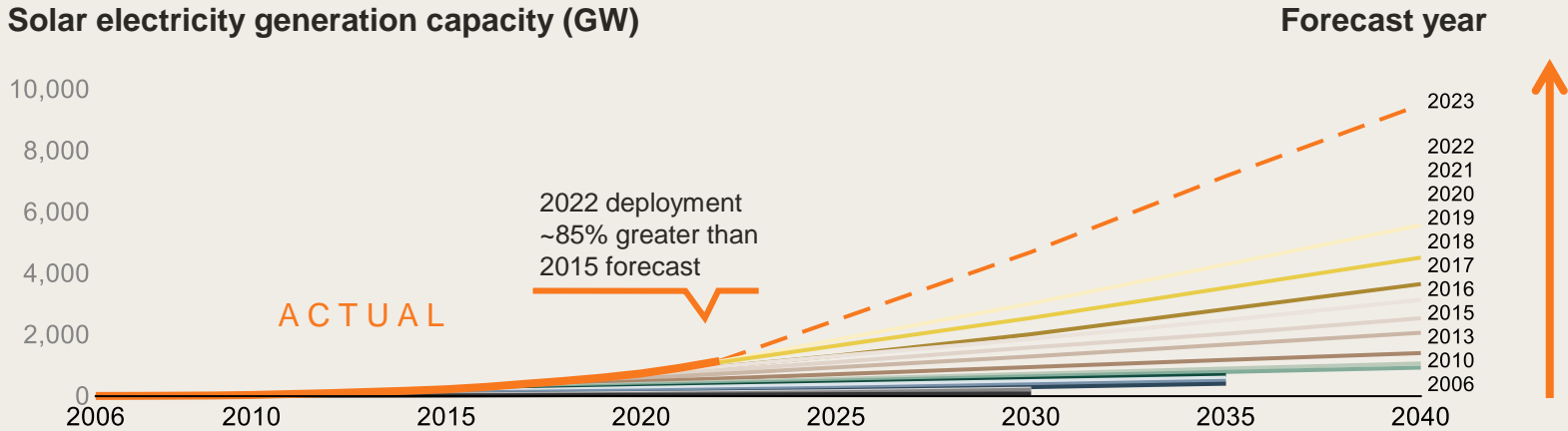


21%

Among these responses 21% were “very confident”

Source: Business Breakthrough Barometer Sector Survey (N=250)

Renewable generation is growing faster than historical forecasts anticipated



Note: 2010-18 new policies scenario; 2019-2023 stated policies scenario
Source: IEA World Energy Outlook 2006-23, Wood Mackenzie, Lit. search

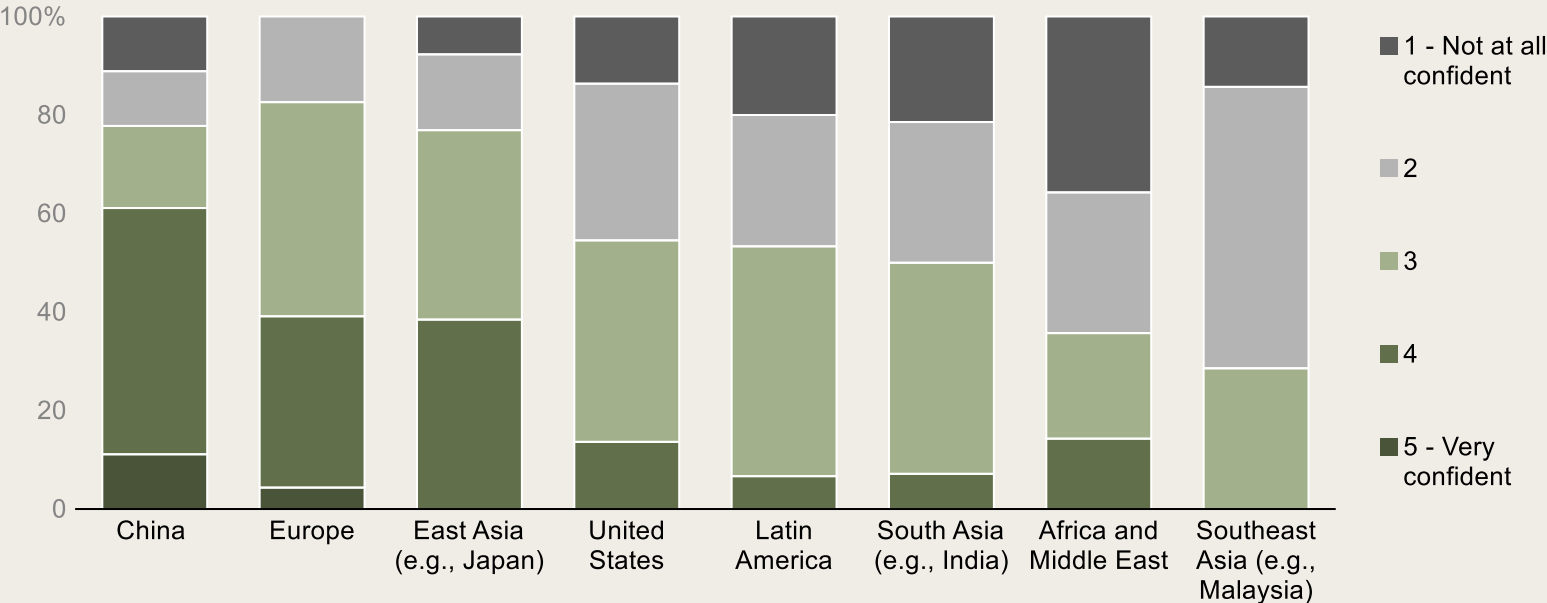
- Sector leaders were **most likely to see themselves as more ambitious** than government
- Power was also sector where there **was most optimism on the direction of policy**
- 70% of sector leaders are “somewhat confident” that **governments in markets they operate will provide sufficient support for the transition**, among which 20% described themselves as “confident”
- **China was singled out as leading the way** with more than \$130B invested in the solar industry in 2023 - Chinese solar modules now ~50% cheaper than in Europe and 65% cheaper than in the US

Sector leaders were much less confident grid investments would keep pace with generation outside China

How confident are you that transmission and distribution investment will support the target of tripling renewable energy generation capacity by 2030?

Please select your answer between 5 – Very confident to 1 - Not at all confident.

% share of respondents

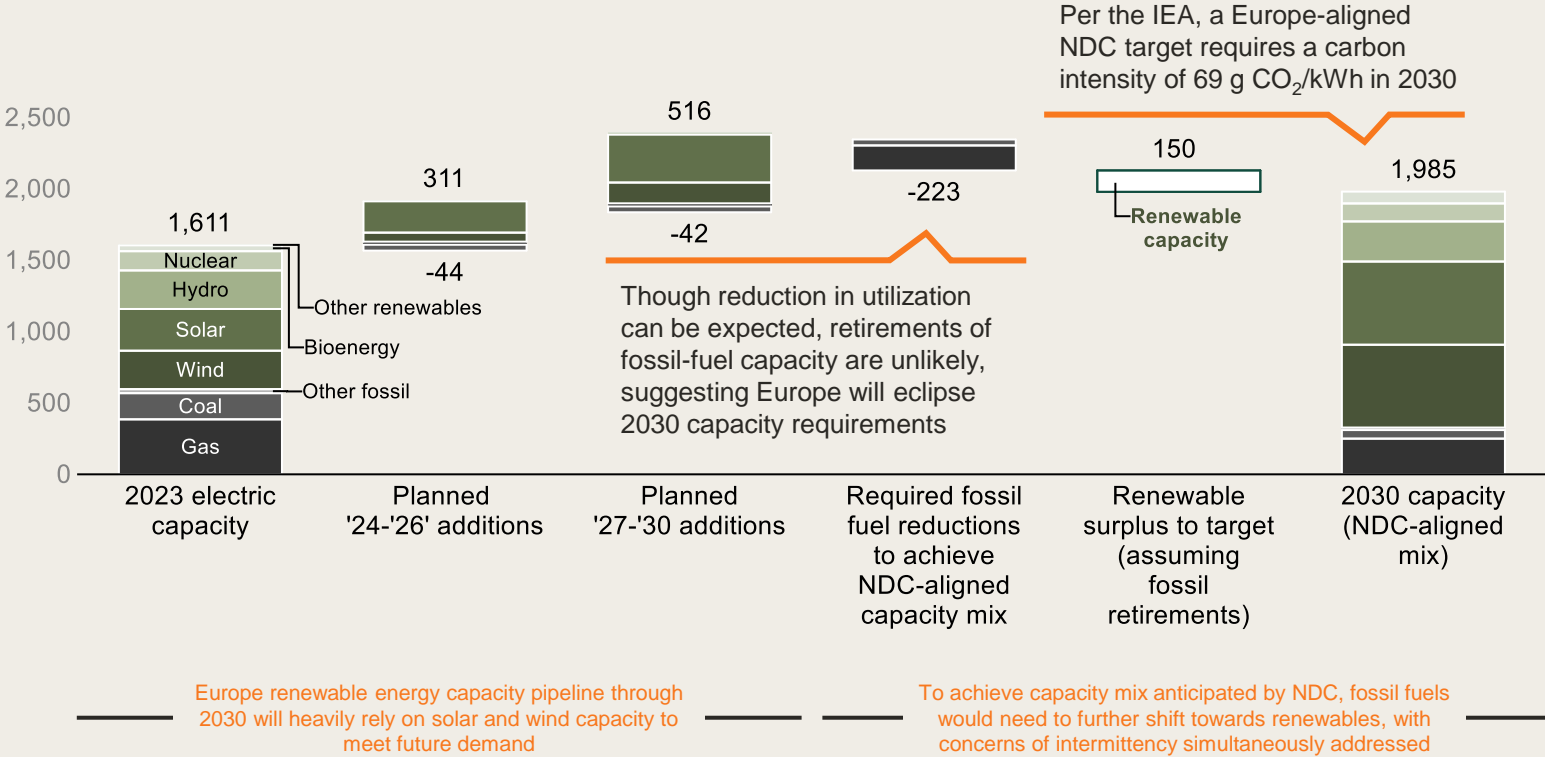


- Companies report delays in grid connections and permitting as significant barriers, slowing down the integration of new renewable capacity across regions like Europe and the US.
- 61% of sectors leaders were either confident or very confident that China would build transmission and distribution investment needed to support the tripling renewables capacity by 2030

Source: Business Breakthrough Barometer Sector Survey (N=250)

In Europe, sector leaders pointed to a weakening in investor sentiment, though most remained confident that 2030 targets could still be met

 Electric capacity by source (GW, Europe)

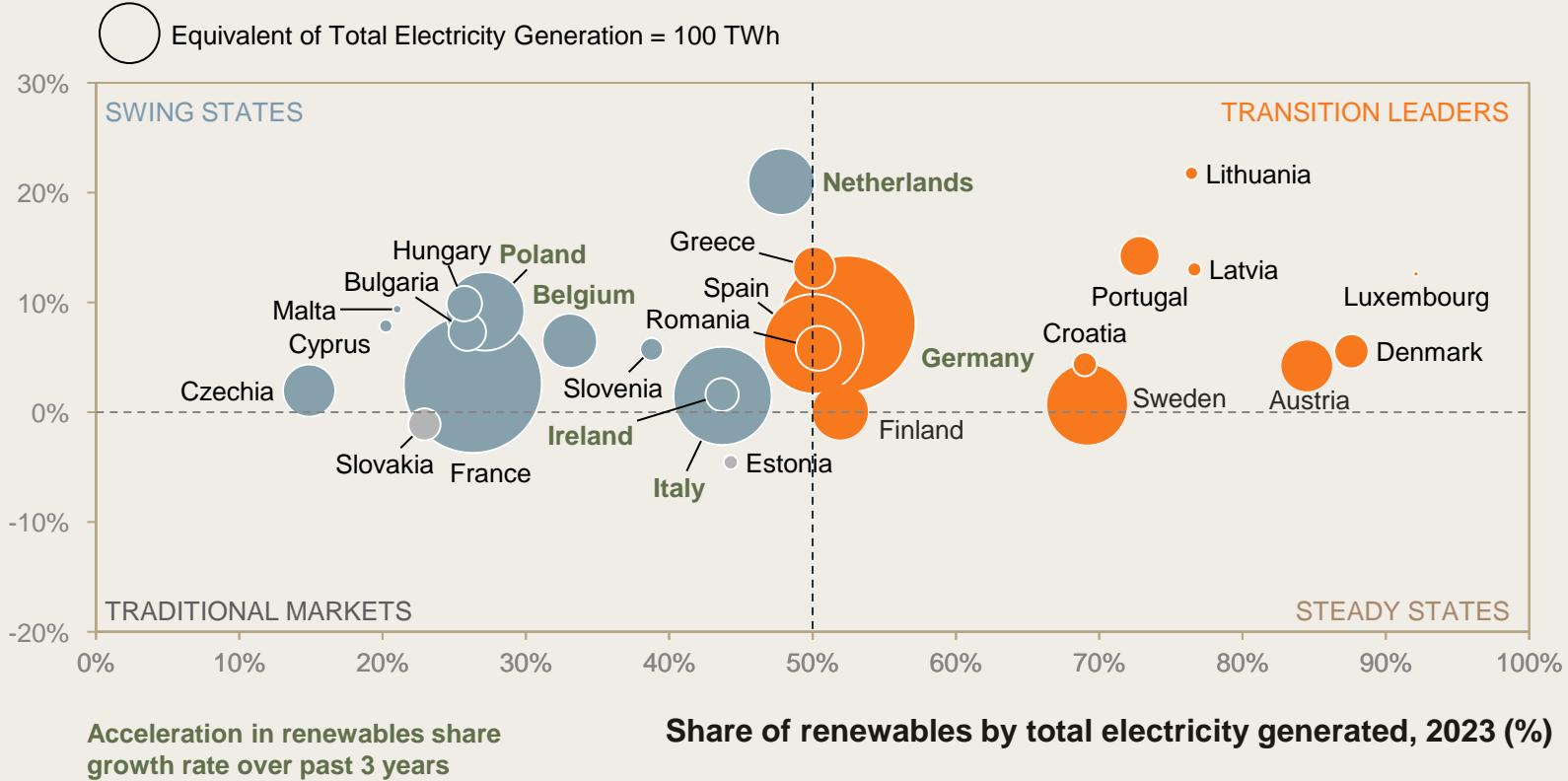


- Businesses are struggling to make the business case work given higher costs of financing and lower revenues due to cannibalization and the reduction of electricity demand
- Sector leaders remain concerned about the time taken in regulatory approval procedures, although several noted that this had improved over the last year
- Overall, net annual capacity additions continue to grow at around 20%
- Europe remains on track for a surplus, despite 13% reduction in pipeline of planned capacity to 2030, compared to last year

Note: 2030 capacity targets are according to the GEC APS model which projects that all commitments and policy that countries have proposed will be met in full; Fossil fuel CCUS capacity included within 'Other fossil' segment; Planned additions include projects in the 'announced, permitted, financed, or under construction' phases of development as defined by Global Data; 2030 capacity splits reflect increases in demand while maintaining typical utilization rates
 Source: Ember - Yearly Electricity Data (Capacity data aggregated from Global Energy Monitor, Global Data - Upcoming Power Plants; IEA – Global Energy and Climate (GEC) APS Model; UN Intergovernmental Panel on Climate Change – Average Life-cycle CO2 equivalent emissions; EIA – Carbon Intensity of Natural gas

Country spotlight: effective government policy is accelerating investment in Belgium, Poland, Germany, Italy, and Ireland

Renewable electricity generation share growth, 2020-23 (%)




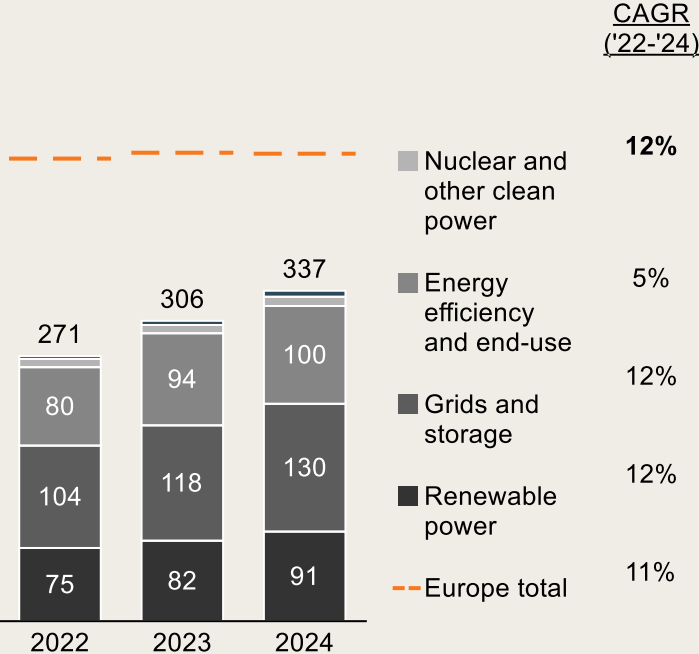
Note: Average of the renewable electricity generation : 7%
Source: IRENA and Our World in Data


Highest acceleration

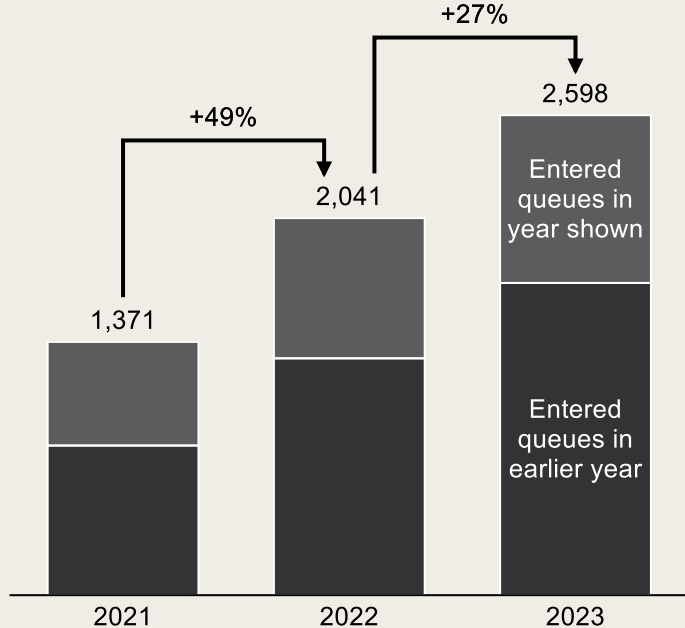
- **Belgium**
 - The Marine Spatial Plan supports offshore wind expansion, with cross-border collaboration and EU funding enhancing renewable projects
- **Poland**
 - Government-led auctions and EU funding have driven a surge in wind and solar, while the Poland Energy Policy 2040 targets 32% renewable by 2030
- **Germany**
 - The updated Renewable Energy Sources Act accelerated deployment, aiming for 80% renewable electricity by 2030, aided by reduced consumer fees
- **Italy**
 - Competitive auctions and the National Recovery and Resilience Plan are boosting new projects
- **Ireland**
 - The Renewable Electricity Support Scheme and strong offshore wind ambitions aim for 80% renewable electricity by 2030
- **Netherlands**
 - The Dutch Climate Agreement has sped up wind and solar, targeting 70% renewable by 2030, supported by subsidies and regulation

Businesses tended to be more optimistic about the U.S. market following the introduction of the IRA, but wary of growing capacity queues

 Investments in clean technology, in BUSD 2022-2024




 Cumulative capacity in queue, GW, 2021-2023

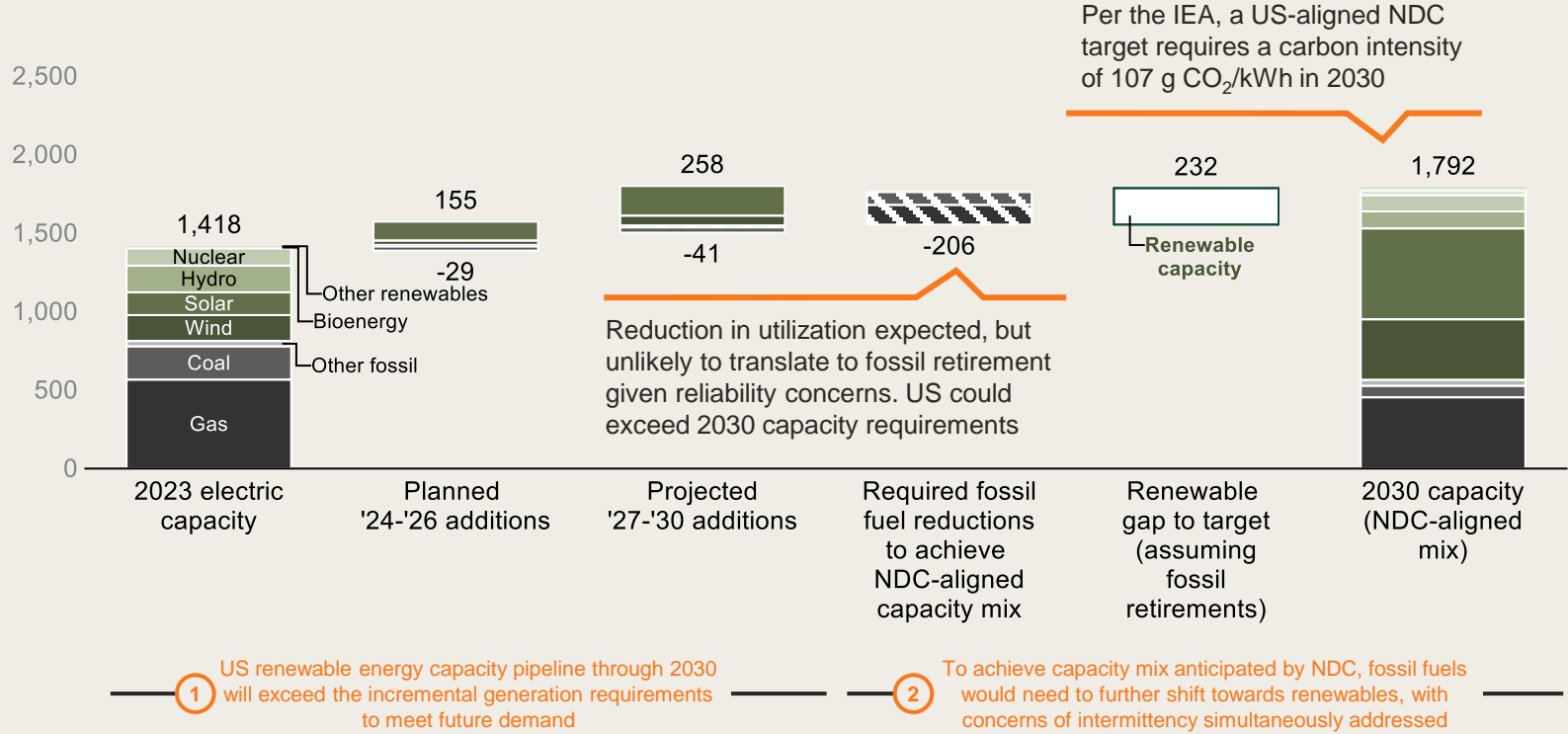


- US renewable energy investments increased by 12% last year and is now edging towards European levels
- Several sector leaders emphasized how the IRA has shifted their focus toward the U.S., offering a simpler and more stable investment environment compared to other regions like Europe, where processes were seen as more bureaucratic
- However, growing capacity queues remained a concern creating a significant bottleneck for deployment

Note: 1) Energy efficiency and end-use refers to investments focused on increasing the efficiency and end-use cases of electricity, e.g. electrification of transport (end-use-case) or building retrofits (efficiency gains) | Source: Global Data, IEA, Lit. search

In the US, projected planned capacity in wind and solar is edging closer to 2030 NDC-aligned targets, but there is still a gap to bridge

 Electric capacity by source (GW, U.S.)



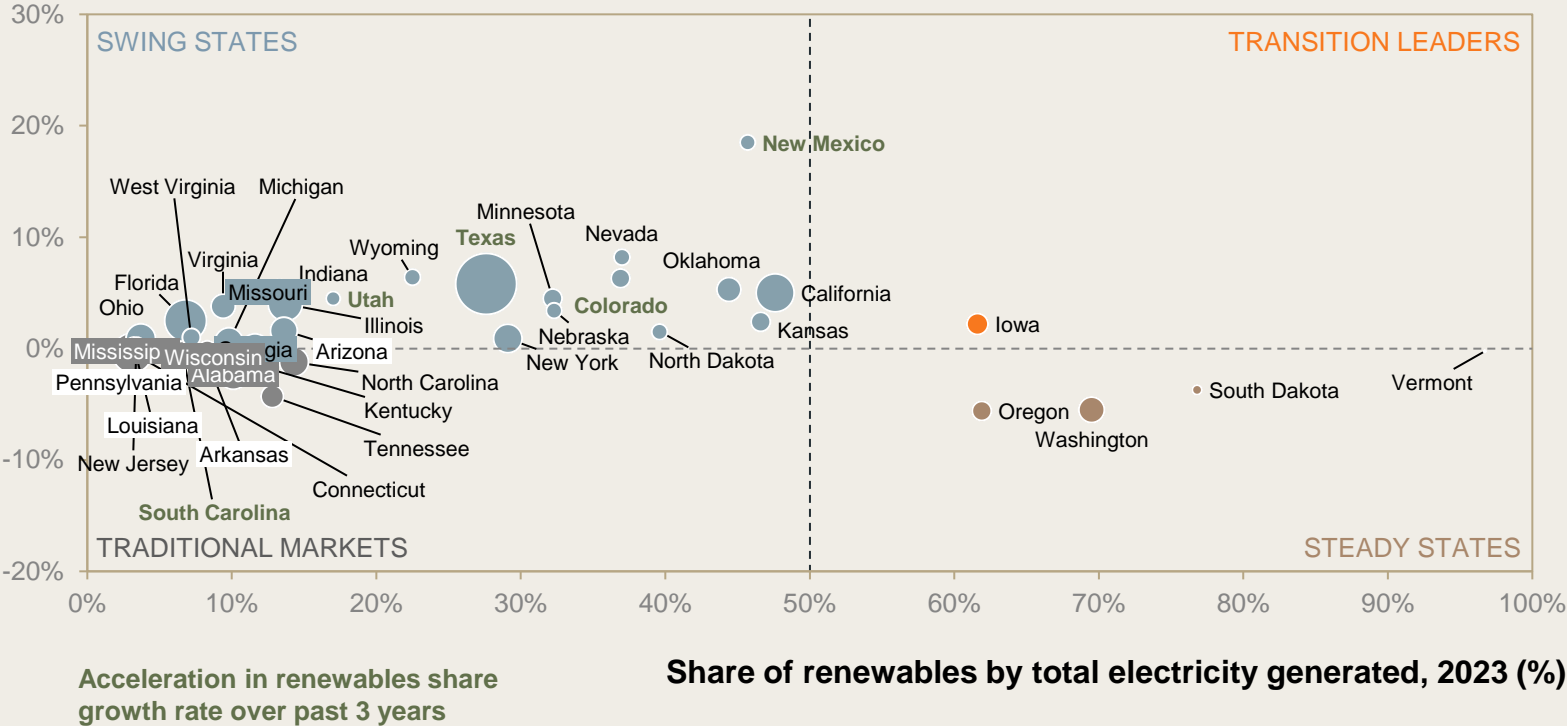
- Projected renewable capacity additions through 2030 set to exceed incremental demand growth
 - ~1480 GW of additional potential low-carbon capacity sits in US interconnection queues
 - During 2023, ~50 GW of wind and solar energy capacity were added, a historical high in the US
- Businesses note that reliability concerns may prevent the full retirement of fossil fuel capacity, even as renewable utilization expands
- Despite these challenges, sentiment remains cautiously optimistic, with leaders expressing confidence that renewable capacity will catch up with demand if regulatory and infrastructure barriers are addressed in time

Note: 2030 capacity targets are according to the GEC APS model which projects that all commitments and policy that countries have proposed will be met in full; Fossil fuel CCUS capacity included within 'Other fossil' segment; Planned additions include projects in the 'announced, permitted, financed, or under construction' phases of development as defined by Global Data; 2030 capacity splits reflect increases in demand while maintaining typical utilization rates
 Source: Ember - Yearly Electricity Data (Capacity data aggregated from Global Energy Monitor, Global Data - Upcoming Power Plants; IEA – Global Energy and Climate (GEC) APS Model; UN Intergovernmental Panel on Climate Change – Average Life-cycle CO2 equivalent emissions; EIA – Carbon Intensity of Natural gas, Berkeley Lab Electricity Markets & Policy – Interconnection queue capacity)

Most states are rapidly transitioning towards renewable energy with marked changes in renewable share over the past 3 years

🇺🇸 Renewable electricity generation share growth, 2020-23 (%)

○ Equivalent of Total Electricity Generation = 1 TWh



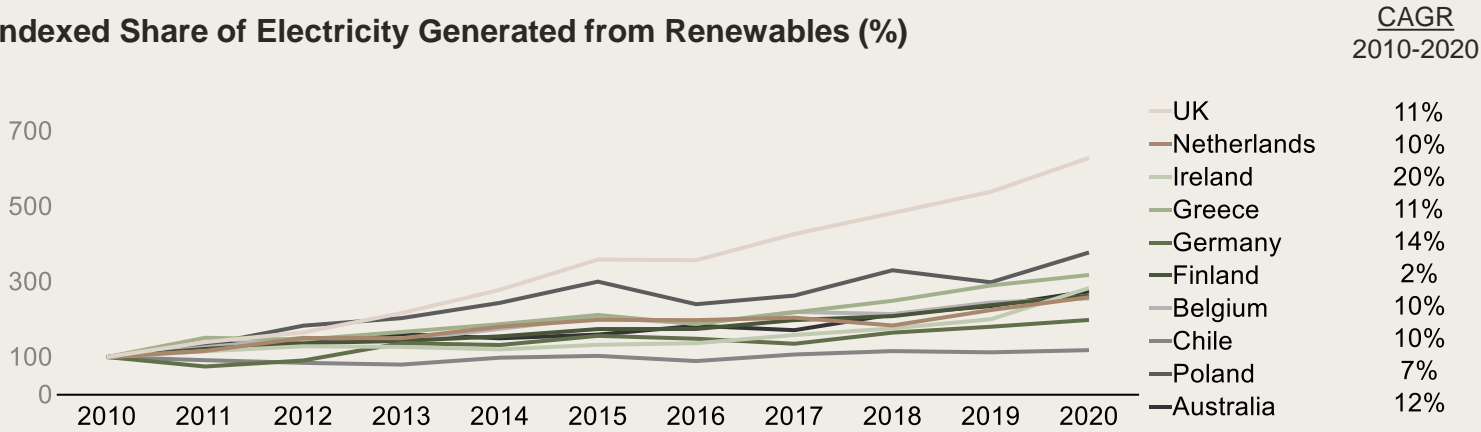
Highest acceleration

- **Utah**
 - Policies promoting voluntary renewable targets have supported expansion of solar, while utility programs are incentivizing development in wind and geothermal
- **Texas**
 - The Competitive Renewable Energy Zones initiative and private investment have boosted deployment of wind energy
- **South Carolina**
 - The South Carolina Energy Freedom Act has improved grid access which along with state-level incentives, has encouraged solar growth
- **Colorado**
 - Renewable Portfolio Standards (RPS), along with incentives for wind and solar, have driven renewable energy development
- **New Mexico**
 - Supportive tax incentives and abundant solar and wind resources have accelerated the state’s clean energy growth

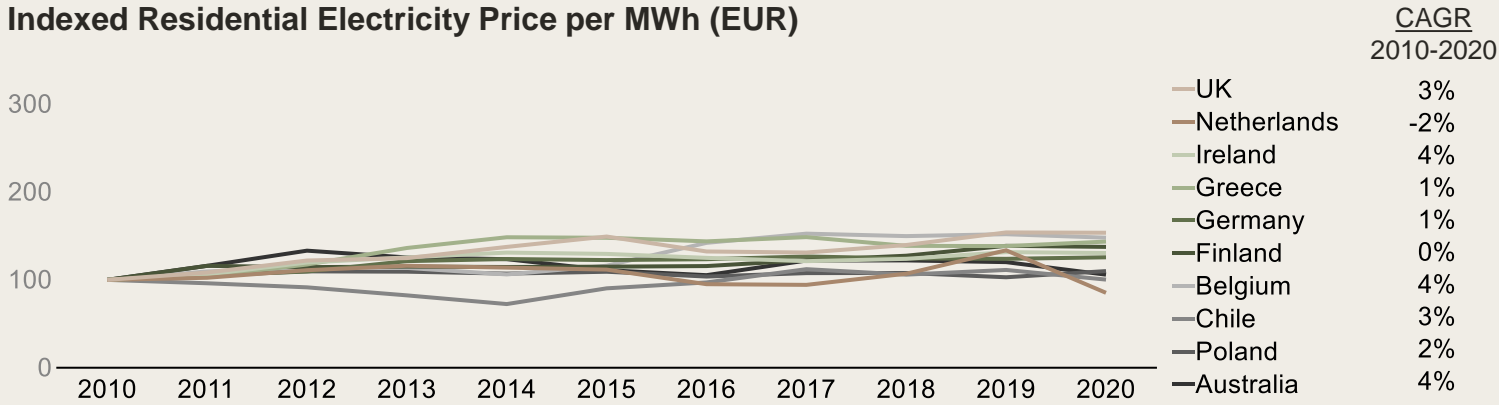
Note: Average of the renewable electricity generation : 0%
 Source: IRENA and Our World in Data

In developed markets businesses were concerned about maintaining public support through the transition

Indexed Share of Electricity Generated from Renewables (%)



Indexed Residential Electricity Price per MWh (EUR)

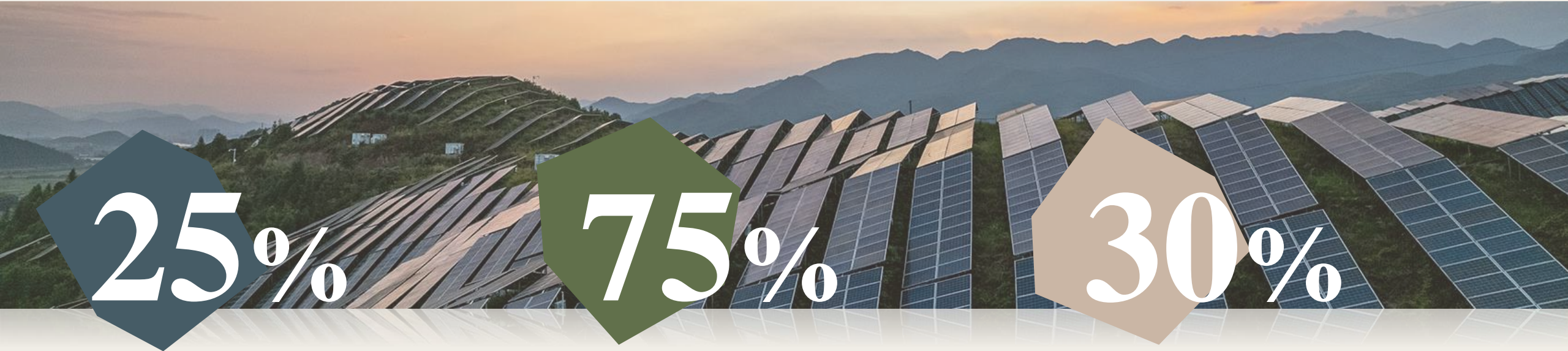


- In the EU **increasing electricity prices risk creating negative perceptions** around renewable energy
- In reality, the costs of **grid upgrades, market design issues, and external shocks** (e.g., rising gas prices) have driven prices up in many regions, leading to **scepticism about the transition**, as consumers struggle to see immediate financial benefits
- Several sector leaders emphasized the need for **smarter pricing mechanisms and better grid integration** to mitigate short-term rising costs

Source: IRENA and Our World in Data



Given industry challenges, leaders were focused on doubling down on core markets, with only 4% considering new markets very attractive



Currently only 25% of investment in clean energy this year is happening outside the EU, US and China

This is despite 75% companies reporting increases in CapEx to accelerating the net zero transition over the last 3 years

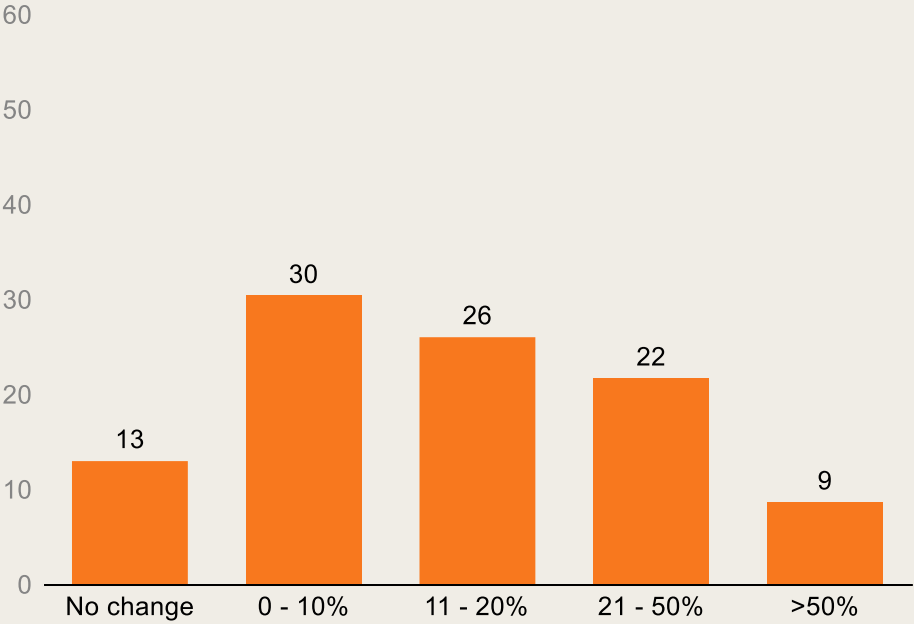
There are signs this could change – as supply chain pressures ease and material prices fall– e.g., solar panel cost have reduced 30% in the last two years, offsetting increased cost of finance

Source: Business Breakthrough Barometer Sector Survey (N=250)

Where businesses are considering venturing afield, changes in policy were often described as the critical factor driving investment

If governments acted on key policies, how much do you estimate this would increase your company's capital allocation to the net zero transition in the Power sector?

% share of responses



- 47% of businesses thought overall they were more ambitious than government, while the remainder feel they are as ambitious as governments in their key operating markets
- Businesses frequently cited a selection of nations (e.g., Brazil, India, Japan, Singapore, UAE) as attractive for investment outside of key markets
- Sector leaders point to a combination of abundant natural resources and growing demand combined with adequate government support and a broadly stable business environment

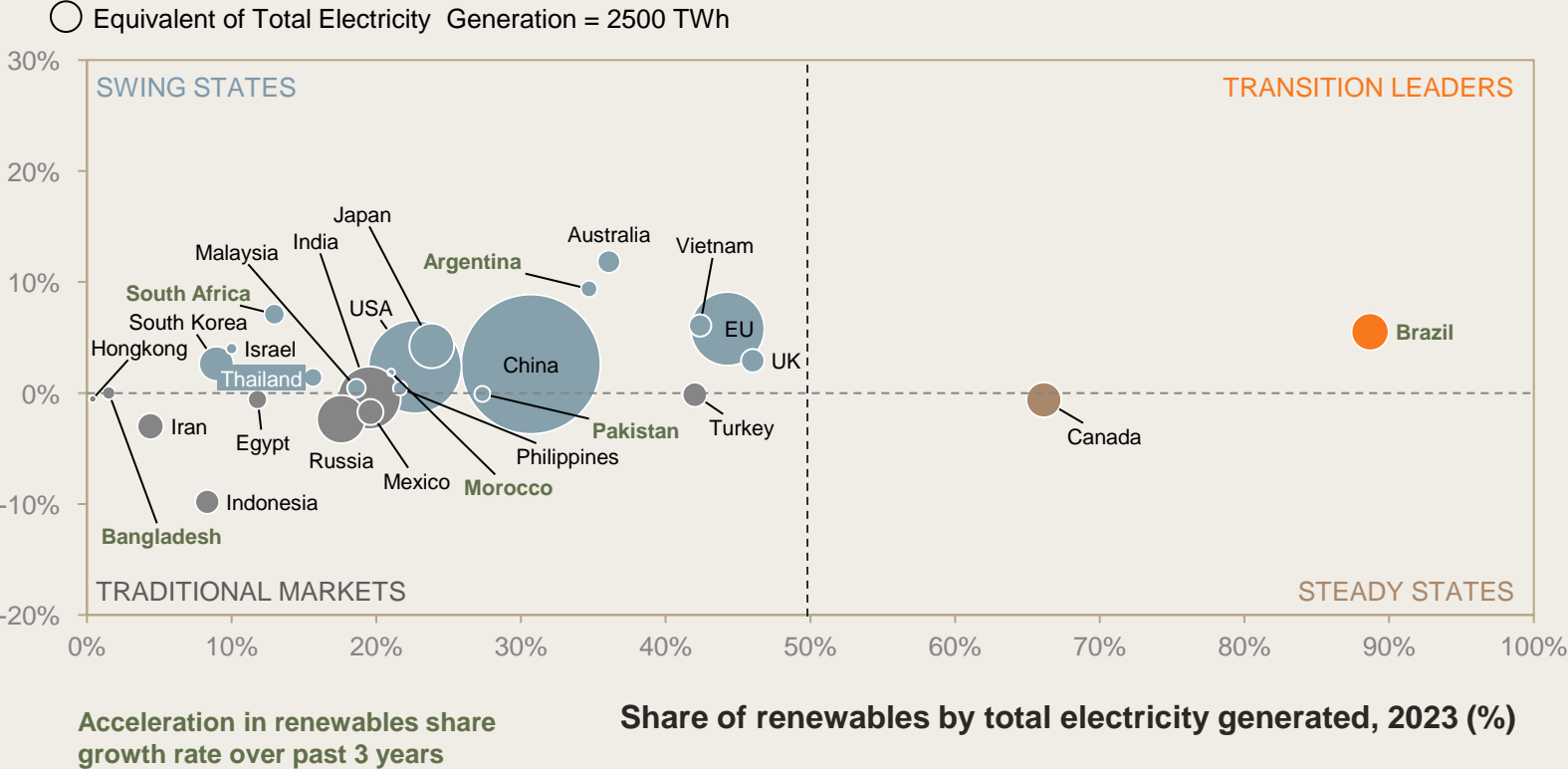
“Brazil is a very attractive market because power prices are very low, and the economy is growing, and the policy is in place, which is driving strong electricity demand.”

DIRECTOR, CLIMATE CHANGE,
POWER PRODUCER

Source: Business Breakthrough Barometer Sector Survey (N=250)

Effective policy in swing states is driving renewable energy investments faster than power sector growth

Renewable electricity generation share growth, 2020-23 (%)



Highest acceleration

- **Brazil**
 - Competitive auctions and the Distributed Generation Law (2022) have spurred large-scale wind, solar, and distributed renewable projects
- **South Africa**
 - Lifting cap on private energy generation has driven investment in wind and solar
- **Argentina**
 - Long-term contracts and tax incentives have attracted significant foreign investment
- **Bangladesh**
 - Incentives for rooftop solar installations has kickstarted significant renewable growth
- **Morocco**
 - A stable policy framework has attracted in investment large-scale solar and wind installations
- **Pakistan**
 - Solar and wind have been boosted by tariff incentives and support for public-private partnerships

Note: Tipping point - 40%
Source: IRENA and Our World in Data



Business leaders generally viewed regional coordination as important for power sector transition to succeed



45%

45% of Power executives ranked international coordination as “very important” for enabling the net zero transition in key markets

- Broadly, international coordination was not viewed as quite so critical compared to sectors such as Steel or Chemicals
- Business leaders highlighted the importance of regional coordination, particularly in regions like Southeast Asia
- Coordinated investments and infrastructure development across markets could significantly accelerate renewable deployment in these regions, which face limitations due to localized policy and financial challenges

“There needs to be a lot more regional cooperation between countries just like in Europe. Southeast Asia for example is one great example where there could be a lot more benefits if the countries worked together instead of by themselves.”

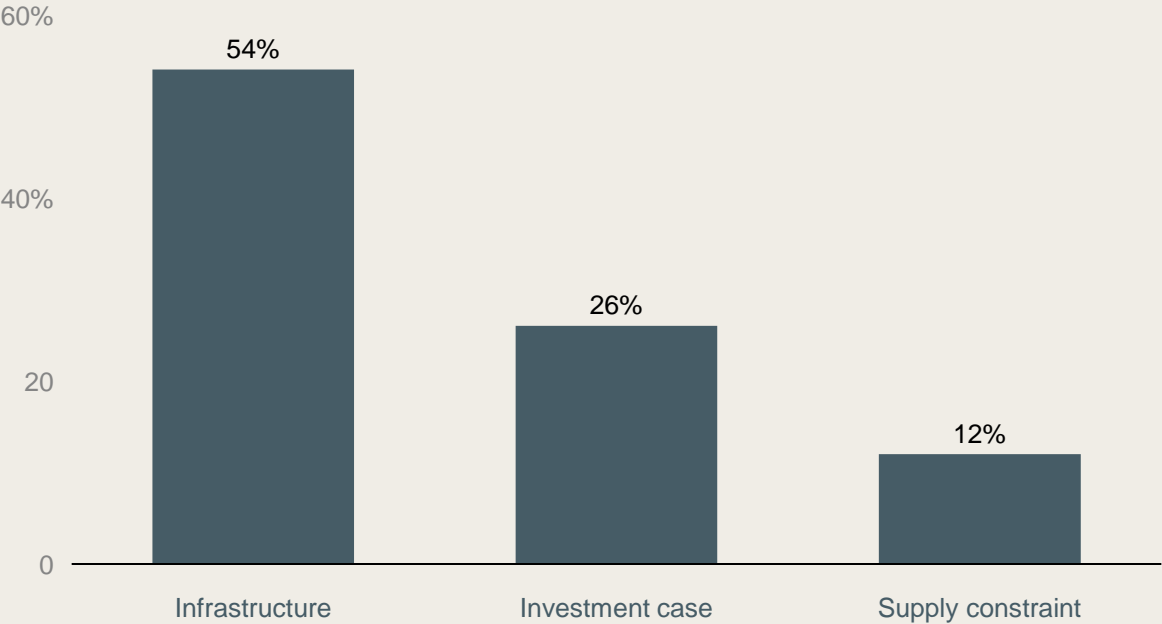
MANAGING DIRECTOR,
FINANCIAL INSTITUTION

Source: Business Breakthrough Barometer Sector Survey (N=250)

Power players cite infrastructure roadblocks, investment case, and supply constraints as key barriers

Which of the following do you view as the Power sector's largest barriers towards accelerating and investing in the development and deployment of clean energy technology?
Please select the top 3 most impactful barriers

Share of survey responding barrier in the top 3 (%)



Source: Business Breakthrough Barometer Sector Survey (N=250)



INFRASTRUCTURE

- Businesses, particularly in North America, point to physical grid limitations and growing capacity queues as key barrier
- In Europe, network gaps remain an issue, but sector leaders are more concerned that regulatory approval processes (e.g., permitting and siting) is stifling the pace of deployment



INVESTMENT CASE

- Businesses stress that investment uncertainty is a key barrier, as fluctuating electricity prices and the intermittent nature of renewable energy make it difficult to secure reliable returns, and that this price and supply volatility is discouraging long-term commitment



SUPPLY CONSTRAINT

- Industry leaders cite shortages in critical raw materials, such as rare earth elements and high-grade silicon, as limiting the production of next-generation renewable energy
- Sector also notes a growing shortage of skilled workers for installing and maintaining new and existing capacity

At national level, the power sector sees key focus as streamlining permitting, supporting developing communities, and building out grid

WHAT ARE THE TOP THINGS REGULATORS SHOULD FOCUS ON IN THE NEXT 12 MONTHS TO ACCELERATE INVESTMENT IN THE DEVELOPMENT AND DEPLOYMENT OF KEY TECHNOLOGIES AND SOLUTIONS TO ENABLE THE NET ZERO TRANSITION WITHIN THE POWER SECTOR?

NATIONAL



COMMENTARY

- Businesses feel that streamlining permitting processes is crucial to accelerating renewable energy projects
- Sector leaders emphasize the importance of demand-side incentives, like dynamic pricing, to promote greater flexibility in energy consumption, ensuring better alignment with renewable generation
- Sector leaders stress the need for broader electricity market reforms, particularly to improve pricing signals that incentivize the use of renewable energy when it is most available and ensure energy is directed where it's most needed

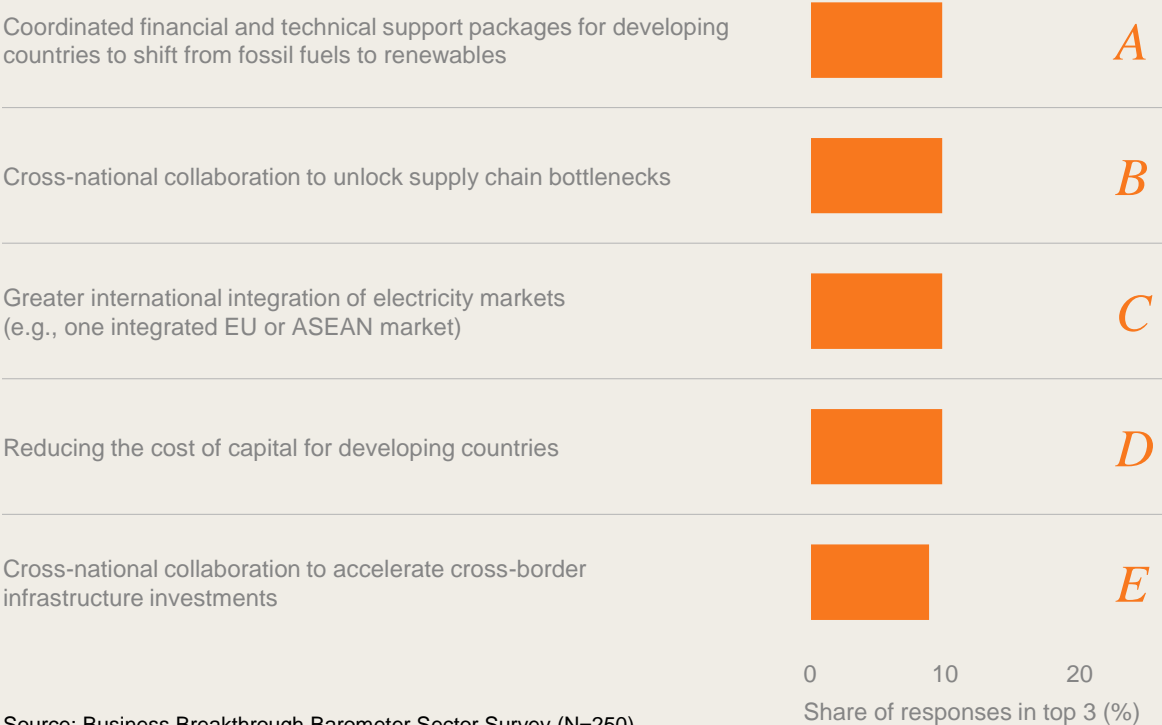
Source: Business Breakthrough Barometer Sector Survey (N=250)



Across borders, the sector sees urgent need for supporting developing countries, aligning markets, and cooperating to strengthen supply chains

WHAT ARE THE TOP THINGS REGULATORS SHOULD FOCUS ON IN THE NEXT 12 MONTHS TO ACCELERATE INVESTMENT IN THE DEVELOPMENT AND DEPLOYMENT OF KEY TECHNOLOGIES AND SOLUTIONS TO ENABLE THE NET ZERO TRANSITION WITHIN THE POWER SECTOR?

INTERNATIONAL



COMMENTARY

- International cooperation is seen as important in power – particularly in regions like Southeast Asia, though relatively less important than sectors
- Businesses stress the importance of coordinated financial and technical support for developing countries, enabling them to shift from fossil fuels to renewable energy sources more effectively
- Sector leaders see cross-national collaboration as essential to unlocking supply chain bottlenecks, which are hindering the timely deployment of renewable energy technologies
- Industry advocating for increased cross-national collaboration to speed up cross-border infrastructure investments, which are critical to building resilient energy networks and achieving net-zero goals

Source: Business Breakthrough Barometer Sector Survey (N=250)


Businesses all agree on key policy interventions by governments within permitting processes, grid upgrades, and market reforms

Policy focus

National  International 




Permitting and approvals





Grid upgrades





Market reforms


 Businesses stress that policy intervention in **cutting red tape and expediting permitting** is critical to accelerating renewable energy deployment and ensuring reliable returns

 Companies agree that **unified interconnection guidelines** will simplify grid integration and reduce delays

 Companies call for immediate investment in **grid capacity expansion** to manage intermittent renewables, cut curtailment, and secure a stable energy supply

 Businesses insist that **smarter grids are essential for real-time energy management** and accelerating the transition

 Businesses call for **stronger market integration** through cross-border connections and regulations to ensure fair and efficient energy trade

 Companies are urging policy intervention for **reformed energy pricing models that encourage dynamic pricing** and incentivize demand flexibility, to better reflect the availability of energy and reduce costs

Thank
You



World Business
Council
*for Sustainable
Development*

BAIN & COMPANY 

Geneva | Amsterdam | London | New York City | Singapore