

Beyond Renewables: Financing US Sustainability in 2024 and Beyond





A truly transformative energy transition requires innovation in sustainable finance.”

Britta Von Oesen, Partner & Managing Director, CRC-IB



FOREWORD

The US energy transition market in 2023 was defined by two opposing dynamics: the significant potential momentum created by policy, particularly the Inflation Reduction Act (IRA), and the ongoing issues created by an uncertain macroeconomic and geopolitical environment.

For ten years, the renewables market experienced steady reductions in project costs and consistently low cost of capital. That changed, beginning in 2021 and continuing through 2023, as rising capital, equipment and labor costs caused significant issues for projects.

As we enter 2024, the macroeconomic environment is starting to look more positive for investment in the sector. With inflation showing signs of settling down and the Fed signaling multiple rate cuts in 2024, costs should decrease.

At the same time, there is growing recognition that creating a more sustainable economy in the US will require a pivot to an all-in approach involving not just pure-play renewables like wind and solar but also energy storage, hydrogen, and carbon capture, utilization and storage (CCUS). This opens up a broad new playing field for investment.

The outlook for low-carbon projects is therefore fundamentally positive. However, uncertainties and hurdles remain, both globally and domestically. Geopolitics are impacting global energy demand and the international supply chain, as well as challenging energy transition momentum around the world.

Domestically, labor availability (and thus cost) will continue to be a major constraining factor. The tax credits available under the IRA have prompted a race between developers to secure suitable sites for solar, wind and energy storage. However, sponsors and financing parties have been slow in both digesting the guidance related to the legislation and in developing financial structures to optimize the use of the newly available transferability feature. Meanwhile, the biggest hurdle for most sustainable energy projects continues to be permitting and interconnection.

Currently, there is a lack of tax capacity to fulfill the exponential growth in tax credit demand created by policy incentives. Transferability should help with this, but the supply of new investors needed to monetize the credits is growing slowly. This will be a constraining factor on sustainability sector growth in 2024.

The proposed adoption of international Basel III banking rules in the US is also a concern, since it theoretically removes the ability of big banks to provide much of the tax equity on which the low-carbon sector relies to grow.

The new market paradigm calls for the development of novel products and structures, as well as a redefined approach to risk underwriting, particularly for new participants. Hybrid transfer partnerships help widen the field of sector participants and are becoming the norm for tax credit monetization structures.



As the broader industry has hit an inflection point, evolving beyond pure-play renewables to embrace emerging carbon reduction sectors, so too have we as a firm. **Our name change from CohnReznick Capital to CRC-IB reflects this.**

We believe the market-leading tax equity expertise we have honed since inception makes us uniquely positioned to provide unparalleled investment banking solutions as the market evolves.

To find out more about how CRC-IB can be your partner for success in this new energy landscape, [visit our website](#).



Heading into 2024/2025 the sustainable energy market and the tax capital market therein will mature, and deals will get more time efficient.”

Gary Durden, Partner & Managing Director, CRC-IB



SHORT-TERM ISSUES ARE HAMPERING HEALTHY MOMENTUM

The long-term prospects for low-carbon energy demand in the US are healthy. With the energy transition gaining momentum and the IRA providing tax credits and transferability for low-carbon technologies through at least 2032, there are strong drivers for both demand and supply.

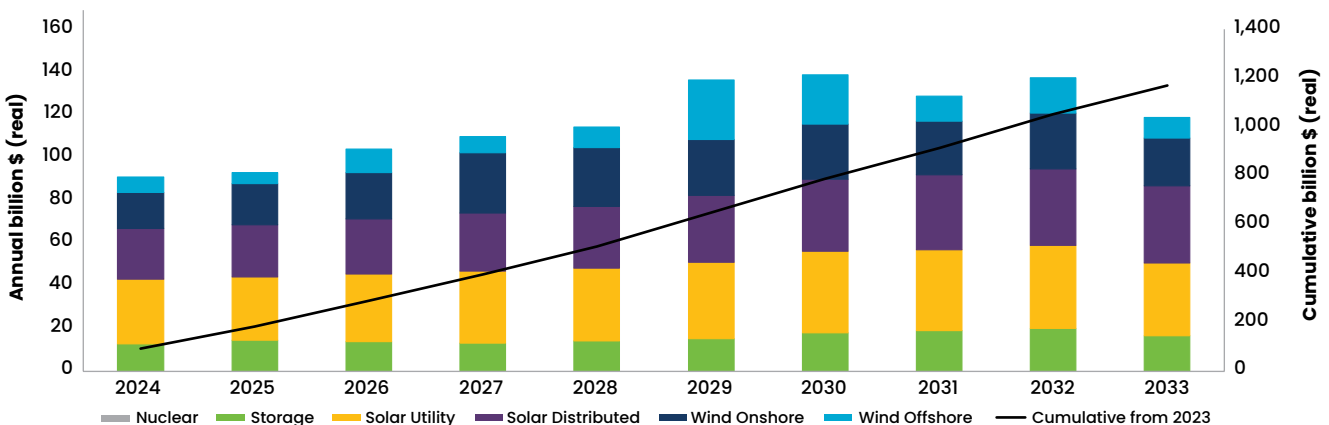
In its base case, Wood Mackenzie expects total power demand to double by 2050. Much of the new supply to meet this demand will come from low-carbon sources. Wood Mackenzie estimates low-carbon’s share of US power generation will rise from 42% today to 78% by 2050, with wind and solar’s share increasing from 13% today to over 53%.

In terms of how the supply increase will meet lean energy demand, on a national level, there

is no set target, but the IRA provides investment tax credit/production tax credit (ITC/PTC) extension until the US meets 75% emission reduction levels over 2022 baseline. We do not meet that in this base case, as we get to about 70% reductions over 2022 levels by 2050. As a result, the ITC and PTC persist in perpetuity in our base case.

In the short term, however, despite the huge potential boost to the sustainability sector provided by the IRA, a range of issues are hampering the buildout of an adequate project pipeline. These issues are making it harder for regional RPS programs to meet timelines and schedules for compliance mandates, with near-term Tier 1 renewable energy credit (REC) prices trading at a significant premium

Projected US renewable power generation capacity additions and annual investment through 2033



Note: CAPEX generally provided as ‘overnight costs’, including generation, BOP, development and interconnection costs. The total investment amount is then the annual CAPEX installed capacity.

Source: Wood Mackenzie

as a result. While the most severe near-term shortages will eventually subside, they still pose lingering longer-term compliance questions. Regulatory uncertainty, inflation, higher interest rates, infrastructure bottlenecks, labor shortages and deal delays all highlight these current headwinds.

Regulatory uncertainty

The previous tax credit system for renewable energy expired at the end of 2021; the nearly eight-month gap before the IRA was signed into law in August 2022 caused uncertainty and a subsequent lull in projects. Even now, continuing questions around the details of how the IRA will work for some sectors is delaying final investment decisions.

The impact of inflation and higher interest rates

Ongoing inflation and supply chain constraints have resulted in high equipment costs, while the domestic content requirement under the IRA is a further issue, since domestic manufacturing is ill-equipped to cope with the sudden increase in demand. The cost of capital has also increased materially, both due to higher interest rates and because of the level of security deposits required by regulators earlier in the development process – this makes it difficult for small-to-midsize developers to carry large development pipelines through the lifecycle. With project costs spiraling, developers have had to renegotiate power purchase agreements (PPAs) to make projects economic again.

Infrastructure bottlenecks

Permitting and interconnection issues are causing significant bottlenecks and creating an uncertain environment that discourages investment into new projects. The nascent CCUS industry is challenged by the pace of pipeline and Class VI well permits. Even established technologies, such as wind and solar, are not immune. Regional location plays a big role; ERCOT stands out as a positive example of an independent system operator

(ISO) where permitting is dealt with efficiently, while MISO and PJM have severely backed up connection queues. These issues are likely to continue as grid-scale renewable capacity additions surge over the next few years.

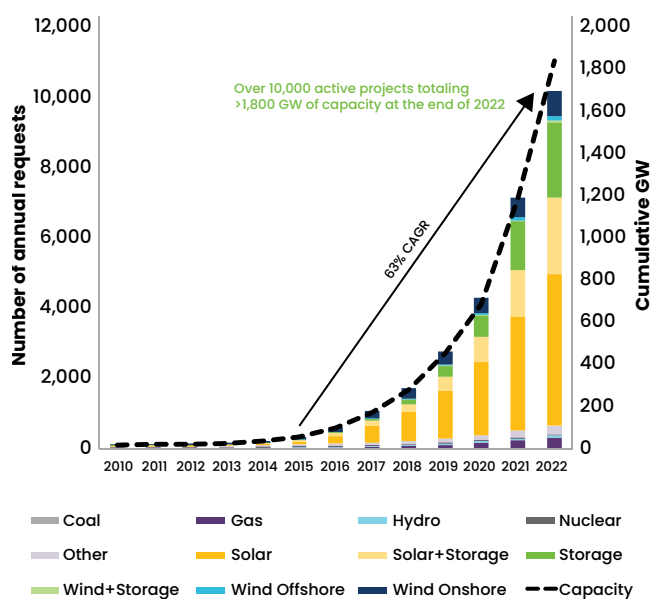
Labor shortages

The shortage of skilled workers to build and operate new energy infrastructure is the elephant in the room. High demand and low supply are causing delays and adding to overall project costs, with the issue exacerbated by the IRA's prevailing wage and apprenticeship requirements for projects over one megawatt in generating capacity. Given the size of the skilled workforce required, this is a structural problem that will take years to fully resolve.

Delays in dealmaking

One impact of the IRA and transferability has been that deals that might otherwise have closed with a traditional tax equity investor were delayed in the first half of 2023 as market participants explored financing alternatives. Moreover, when transfer deals were pursued, the necessity for parties to adjust to the new frameworks resulted in longer transaction completion times.

Cumulative US queue requests and capacity

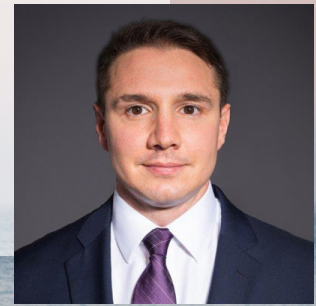


Source: Wood Mackenzie



Long-term corporate and multinational decarbonization goals serve as catalysts for M&A dealmaking.”

**Conor McKenna, Partner & Senior Managing Director,
CRC-IB**



FUTURE INDICATIONS OF AN IMPROVED SUSTAINABLE FINANCING LANDSCAPE

With inflation stabilizing and interest rates set to fall, lower equipment costs and falling cost of capital should start to improve the investment landscape for projects in 2024.

Investors across the capital stack are excited by the prospect of more sustainability-focused opportunities. With both established and new sponsors developing projects at an accelerating pace over the next decade, more assets should come to the market for either full acquisition or a partial-stake sale.

Historically, sponsors preferred to buy projects from developers that were in their later stages. However, industry consolidation has meant that the major developers are holding and managing assets instead of selling them to infrastructure funds and IPPs. Given the somewhat limited supply of attractive projects available, acquisitions are increasingly happening earlier in the development process, sometimes even from the point of a developer simply having control of a suitable site.

However, we continue to see strategics selling passive memberships in portfolios to optimize their return on equity and investors.

While M&A has been sluggish across the industry, forecasts suggest that the landscape will undergo positive change.

Conor McKenna, Partner & Senior Managing Director at CRC-IB, said,

“Renewable energy M&A is expected to pick back up in the near-future, driven by federal and state policy, an easing of macro factors, and a strong continued interest in renewable assets.”

By comparison, tax capital investments – a very important piece of the project capital stack – have remained relatively strong, with new and increasing interest.



Tax credit transferability is the biggest catalyst for change. This opens up the clean energy market to segments of corporate America that have had difficulty with traditional tax equity investments in the renewables space.”

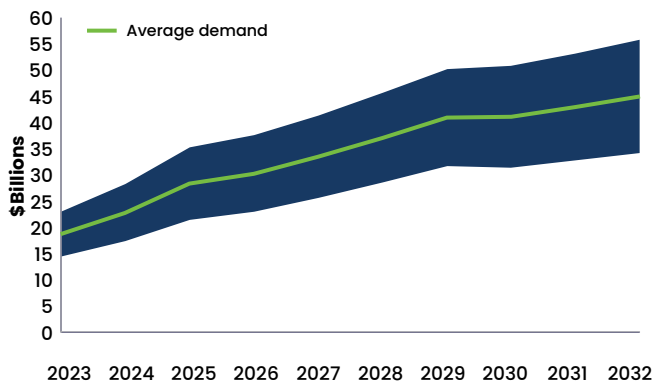
Nick Knapp, Partner & Senior Managing Director, CRC-IB



TRANSFERABILITY AND HYBRID STRUCTURES: THE NEW TAX CAPITAL VEHICLE

Wood Mackenzie estimates demand for tax credit financing, that is traditional tax equity as well as tax credit transfers, to top \$45 billion per year by 2032. However, to grow the project pipeline at the rate required, this massive tax credit demand needs to be met by an equally high level of tax capacity. That will become perhaps the most significant constraining factor for project development in 2024 and beyond.

Annual demand for tax credit financing more than doubles by 2032



Source: Wood Mackenzie

The ability created by the IRA to transfer tax credits generated from low-carbon projects represents an important opportunity to boost investment in the sector. Simply put, tax capital is the story, and transferability is the mechanism to expand the market.

“CRC-IB estimates that CCUS tax credit demand could reach \$30Bn annually by 2028, according to internal forecasts and market discussions. CCUS is not included in this graph as there remains material uncertainty over how many CCUS participants will elect Direct Pay instead of tax credits.”

Traditionally, large banks have been the main tax equity investors. More recently, non-traditional participants including corporations and insurance companies have entered the market, many of them looking to purchase tax

credits under a transfer structure. Some are purely interested in tax liability management, others want to demonstrate progress towards their published environmental, social, and governance (ESG) goals.

Often these businesses seek to purchase renewable energy credits (RECs) that can be counted towards their decarbonization goals and ESG reporting and are willing to offer tax equity in return. However, in many cases project owners have already sold their RECs to a third party.

TAX CAPITAL STRUCTURES

Making the most of the opportunities offered by the IRA requires a clear understanding of the various tax capital vehicles now available to the marketplace. Aside from traditional tax equity and tax credit transfer, the market has evolved to include hybrid structures aimed at increasing the supply of tax credit counterparties and thus the number of entities that can execute on renewable energy projects. The most suitable structure varies by project to some extent.

Traditional tax equity

This remains the most accretive strategy if the goal is a structure typically provided by partnering with one of the large tax equity banks. It steps up the ITC amount and helps monetize the accelerated depreciation the project generates.

Tax equity hybrid

The sponsor forms a partnership with a tax equity investor, who monetizes the tax benefits provided by the project's accelerated depreciation. All or a portion of the tax credits are sold to a third-party buyer, with the sale proceeds allocated per a negotiated agreement between the sponsor and the tax equity investor.

Cash equity hybrid

Under this structure, the sponsor forms a partnership with another institution; the parties

split the project's cash distributions per a negotiated agreement and typically allocate the project's taxable income/losses on a pro-rata basis. The partnership sells the tax credits to a third party under a tax credit transfer transaction.

Tax credit transfer

In this structure, the sponsor enters into an agreement with a buyer. When the project enters service, the buyer makes payment, and the credit is transferred to them.

Looking ahead, we see a growing role for the hybrid approach, since it allows the traditional large tax equity banks to spread their limited tax appetite over a larger number of projects. Putting these types of investments together requires a depth of specialist experience and expertise, but as the market matures, we expect deals will be executed more efficiently.

One potential issue that could impact low-carbon project financing is the adoption of the Basel III international banking rules by US regulators. This would increase the risk capital banks must set aside in relation to tax equity deals to 400%. That would make the tax equity product offered by large commercial banks prohibitively expensive, effectively limiting them to transfer deals.

DELIVERING A LOW CARBON FUTURE: THE PIVOT TO AN ALL-IN APPROACH TO SUSTAINABILITY

Energy sector stakeholders increasingly recognize the need for an "all of the above" approach to decarbonization. While minimizing emissions continues to be the key goal, sponsors and investors alike will employ a range of technologies and approaches to accomplish this. This shift is supported by the IRA, which offers funding mechanisms and incentives across a broad swath of energy technologies.

RECORD INSTALLATIONS BUT MULTIPLE FACTORS ARE CONSTRAINING GROWTH



Solar

The solar sector accounted for 48% of all new electric generating capacity in the first nine months of 2023. Improvements in the module supply chain helped add 6.5 GW of capacity in Q3 2023, a 35% year-on-year increase. However, in the short term, utility-scale solar faces multiple headwinds to growth, including elevated financing costs, transformer shortages, the IRA's domestic content requirements, and interconnection bottlenecks. As a result, despite huge potential, Q3 2023 saw the lowest level of new contracts signed since 2018, and capacity growth is likely to slow down in 2024.



Wind

As with solar, huge potential for wind is being hindered by near-term headwinds. Growing pains in the US offshore wind market mean Wood Mackenzie recently downgraded its 2023–2032 outlook for the segment by 10.9 GW, with roughly half the government's 30 GW target for 2030 expected to be achieved. Major project owners blame spiraling costs and supply delays. However, long-term market fundamentals for the combined onshore and offshore US wind sector remain strong.



Energy storage

The US storage market will form the backbone of a low-carbon grid, providing the essential flexibility needed to scale up the use of renewables. Capacity is growing rapidly, with the 13,518 megawatt-hours (MWh) installed in the first nine months of 2023 surpassing the full-year total for 2022 of 11,976 MWh. However, roughly 80% of projects expected in Q3 2023 were delayed. A volatile near-term pipeline, supply and permitting issues and interconnection delays mean Wood Mackenzie lowered its forecast for installations between 2023 and 2027 to 63 GW, a 5% reduction.



Hydrogen

The final US treasury rules on 45V tax credits for low-carbon hydrogen (introduced in the IRA) will determine the future of the US hydrogen sector. Some industry stakeholders want more restrictive regulations to ensure hydrogen growth really reduces emissions. Others favor widening eligibility to boost the pace of buildout. Wood Mackenzie believes the proposed rules would keep costs higher for longer, as EPC contractors would take longer to learn how to deliver projects.



CCUS

Wood Mackenzie is tracking 1,400 million tons per annum (Mtpa) of proposed global CCUS capacity in different types of projects; a third of this capacity is in the US. Its research strongly indicates that developers are reallocating resources and banks are exploring new finance approaches to capture the opportunity. However, there is an urgent need to start building rather than holding out for potential cost reductions, while permitting also poses a challenge.



Renewable natural gas

A smaller segment with significant potential is renewable natural gas (RNG) or biomethane, which can be created from byproducts including landfill gas, animal manure, food waste and wastewater. Investment interest is strong, with midstream gas operators and other firms seeking to finance and expand their RNG networks. Wood Mackenzie is tracking 324 projects across the US and Canada and estimates North American RNG supply at 398 million cubic feet per day (mmcf/d) in 2023.



Large oil and gas majors are increasingly focused on sustainability, but the pace of progress is slow. The most effective way for these massive energy companies to demonstrate that they are decarbonizing is CCUS.”



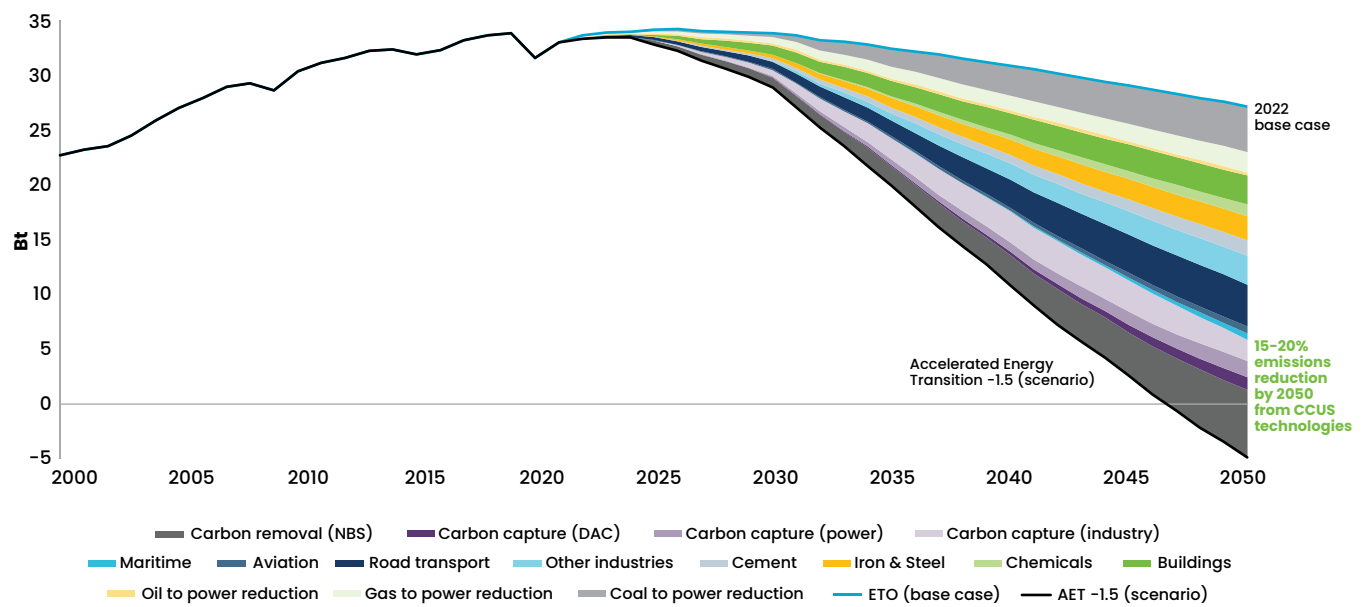
Nick Knapp, Partner & Senior Managing Director, CRC-IB

CCUS: A GATEWAY TO OTHER EMERGING TECHNOLOGIES

For many companies and sectors, reducing the amount of carbon dioxide their activities produce is a significant challenge. Building out CCUS infrastructure to remove and potentially reuse the CO2 their operations produce is a relatively achievable and scalable way to

meet sustainability targets. For the oil & gas majors this is a particularly attractive strategy, as they can leverage existing expertise and capabilities. By providing this technology and capability to other emitters, CCUS can become a profit center.

CCUS could deliver over 15% of emissions reductions towards net zero targets



Source: Wood Mackenzie

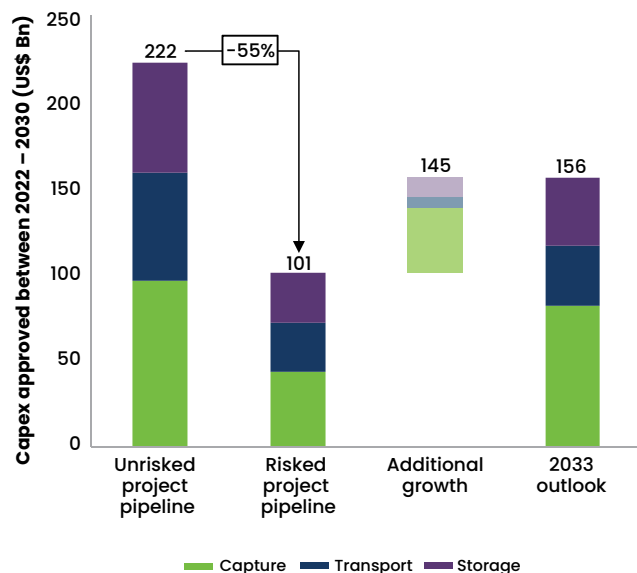
Although still in its nascency, CCUS undoubtedly has a key role to play in decarbonization. Under Wood Mackenzie's accelerated energy transition (AET1.5) scenario, which limits global warming to the 1.5-degree target in the Paris Agreement, CCUS would contribute over 15% of the necessary emissions reductions to deliver on climate targets. Aside from big energy, other hard-to-abate sectors that can benefit most from CCUS technology include iron and steel, cement and chemicals – a good specific example is the potential for low-carbon ethanol to be converted into sustainable aviation fuel (SAF).

While the interest is there from emitters, achieving these CCUS-driven reductions will require an investment of over \$150 billion over the next ten years. Of this, \$80 billion will be for capture equipment, mostly in high-cost

industries such as power generation, oil refining and cement. The remaining \$70 billion will go to transport and storage projects – primarily hub developments. US transportation networks and offshore storage in the North Sea will also account for a significant proportion of this spend. CCUS infrastructure needs to be built quickly to meet these targets, but unfortunately, progress on the initial wave of large projects is being slowed down by concern around ensuring capture and avoiding leakage.

Delivering on the 10-year outlook for CCUS will require \$150 billion of investment.

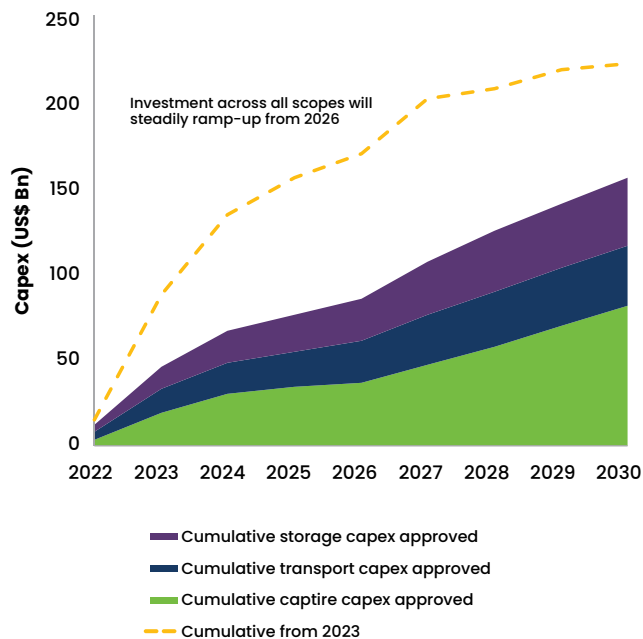
Investment build-out to 2033 outlook



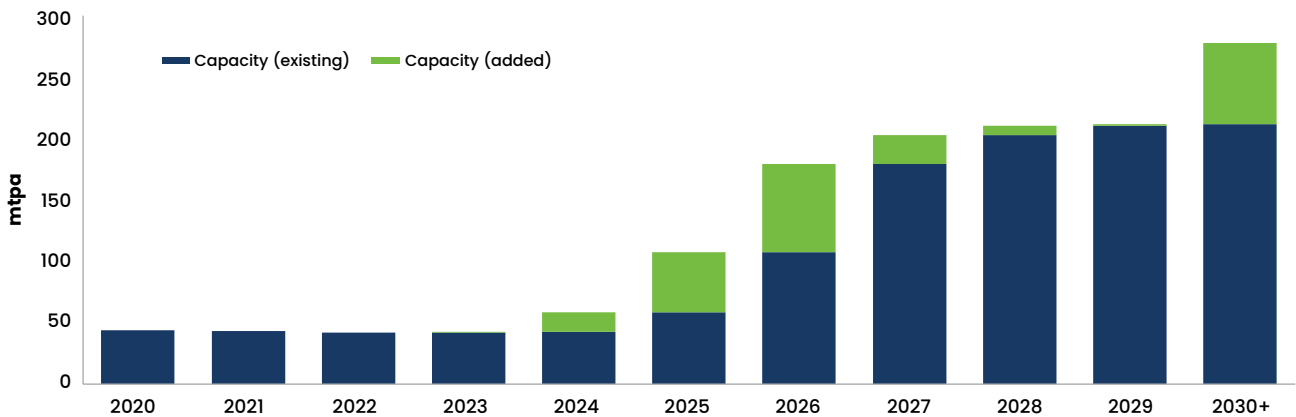
Cumulative investment by scope and FID year

Source: Wood Mackenzie

Cumulative investment by scope and FID year



US CCUS project capacity outlook based on announced projects



Source: Wood Mackenzie

Building out the infrastructure is just one part of the challenge for CCUS. Often the biggest hurdle for projects is the need to obtain a special Class VI permit to use a site for carbon storage. As of November 2023, there are 187 wells that are either currently under review or have been given Class VI permits.

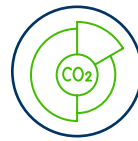
One tactic aimed at accelerating this process is primacy, by which the US government grants enforcement authority to individual states, territories, or tribes to administer certain well classes in accordance with federal standards. Currently, only North Dakota and Wyoming have primacy. Permitting for transportation of the CO₂ can be an even more complex issue, since pipelines can pass through multiple jurisdictions. With the need for well permits in particular creating a binary risk for these projects, which may be multibillion dollar, multiyear initiatives, more resources need to be focused on the issue.

CCUS adoption will be strongest where five key conditions are met:



Emission sources:

Demand will be highest in areas where CO₂ point-sources with a long life ahead of them are concentrated.



Storage destinations:

CO₂ can be stored on or offshore, in either saline aquifers or depleted hydrocarbon reservoirs.



Policy, regulation and funding:

In most cases, government support will need to be available to help meet the cost of CCUS.



Competitive investment:

Locations with competitive energy, labor and materials costs will see higher CCUS activity.



Industry readiness:

Synergies with existing operations and a viable supply chain will help drive investment in CCUS.



Moving from concept to execution in a policy and technology driven environment requires tax and financial strategies that are flexible and creative to address the complexities as well as the constant changes in the market.”

Gary Durden, Partner & Managing Director, CRC-IB



THE NEED FOR FLEXIBLE AND CREATIVE FINANCIAL STRATEGIES

The complexity of today’s energy landscape, coupled with an uncertain economic environment and the range of issues covered in this report, is clearly challenging for the sector. However, despite these challenges, opportunities abound in the broader energy transition landscape that is emerging.

Savvy market participants are leveraging business, tax, and regulatory strategies that address market nuances and capture the significant environmental and financial rewards offered by the energy transition.

To learn more about how CRC-IB can be your partner for success in this new energy future, [visit our website.](#)

In this new and rapidly evolving space, strong financial expertise and a robust understanding of the market will be essential to success.

ABOUT CRC-IB

CRC-IB is a full-service investment bank providing industry-leading financial services across the energy transition spectrum. We leverage our capital markets and sector technology expertise to provide innovative project finance, capital raising, and M&A solutions, optimizing client outcomes in an ever-shifting sustainable energy landscape. Our belief since inception is that every transaction is a catalyst for change, every closing a step towards a cleaner future. To date, we have executed 305 project and corporate transactions for sustainable energy assets, valued at \$55.1 billion in total. To learn more, visit www.crc-ib.com and connect with us on [LinkedIn](#).

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