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Accelerating energy
transition through
joint ventures

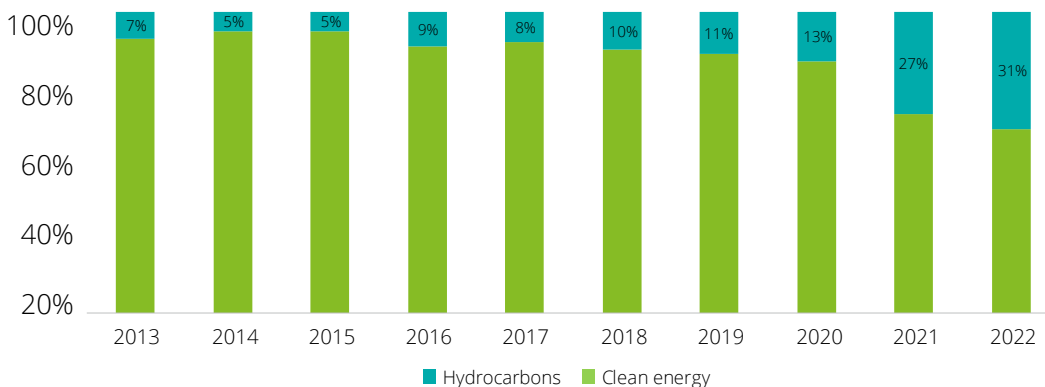
Introduction

Global investment in the energy transition reached an all-time high in 2022, including a near tripling of investment into emerging markets such as hydrogen and carbon capture and sequestration (CCS). Now with governments around the world injecting significant capital into these fledgling industries (including the multibillion-dollar 45V and 45Q credits for hydrogen and CCS within the Inflation Reduction Act), companies are looking to capitalize on reduced costs to enter these markets of the future. Additionally, regulations such as the European Union's Carbon Border Adjustment Mechanism or the recently proposed Greenhouse Gas Standards and Guidelines for Fossil Fuel-Fired Power Plants from the United States Environmental Protection Agency (EPA) are creating significant end markets for energy transition services.

However, these newer markets bear substantial strategic risk associated with rapid technological innovation and disruption, as well as market ecosystem immaturity and uncertainty. These risks are heightened by the capital-intensive nature of the energy industry and the scale often required to compete without government incentives.

Eighty percent of energy and chemical (E&C) executives believe that their traditional capital investment approach is ill-equipped for the energy transition.¹ This push has contributed to a shift in clean energy joint ventures (JVs), which now account for one-third of JVs and strategic alliances by E&C companies, the largest share being in hydrogen.²

Figure 1. Clean energy JVs as a % of total M&A deals in energy transition



Source: Chronis et al., *Oil and gas M&A outlook 2023: Pivoting for change*, 2023.

Challenges to energy transition opportunities

Even with government subsidies, new energy markets are inherently capital-intensive, requiring substantial investments in infrastructure, equipment, and research and development (R&D).

Capital requirements heighten strategic risks companies face in selecting and investing in different energy transition growth pathways. As a result, investments can prove to be difficult to justify in the short term. Companies must balance their investment plans while also ensuring their traditional operations remain competitive, as those operations will likely continue to play an important role in the energy mix over the next several decades.

Emerging energy transition markets such as hydrogen and CCS require development throughout the market ecosystem to be commercially successful and sustainable for end markets.

Several energy transition opportunities involve multiple interconnected industries—from renewable energy generation to vehicle manufacturing. The security of value chains and the requirement for co-development for both practical and economic scale are significant challenges for companies looking to enter growth markets—but necessary, in many cases, for sustainable use in end markets.

Advancements in applicable and competing technology will determine winners and losers.

The industry is characterized by rapid technological innovation, which presents both challenges and opportunities. The fast pace of change and uncertainty of outcomes require companies to continuously evaluate new technologies and employ an agile strategy that allows strategic adjustments and optimizations.

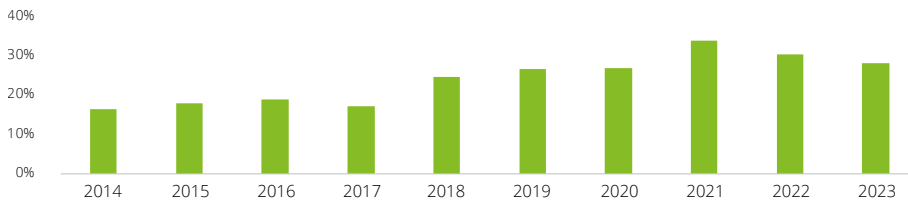
JVs and alliances: Harnessing partnership advantages

Companies must determine where they can create the most value within the ecosystem of an emergent market and what pursuit strategies are suitable for the market segment's maturity level. In the energy transition, these strategies have included the entire corporate toolbox including acquisitions, alliances, JVs, long-term partnerships, internal R&D, and organic growth. There has also been an increase in corporate venture capital as companies seek to gain exposure and insight into nascent technologies.

Of these approaches, **JVs have emerged as an integral part of corporate dealmakers' strategies to capture growth in mid-maturity markets.** This is particularly seen in areas such as green hydrogen, CCS, advanced chemical recycling, and sustainable chemicals where the strategic risk can be significant with traditional investments due to the step-up in capital intensity, high green premiums for acquisitions, and considerable uncertainty of the technology and market winners.

With the help of government investment and regulation, several energy transition opportunities are moving rapidly into the mid-maturity space where projects are becoming shovel-ready but still possess significant strategic risk. The most notable of such markets for E&C companies are the hydrogen and CCS markets.

Figure 2. Joint ventures as a % of total deals in energy transition over time

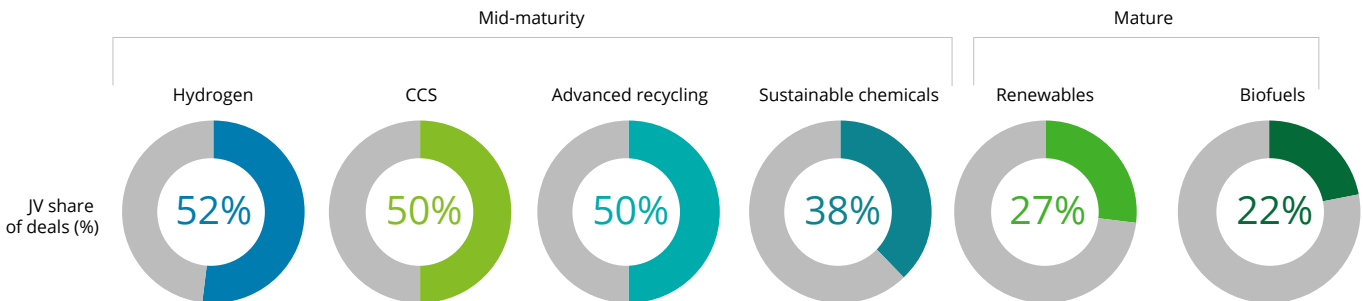


Source: Deloitte analysis of data from PitchBook.com

JVs are heavily utilized by deal teams in energy transition deals.

Figure 3. Announced deals by energy and chemical companies since 2021

Industry average: 13%



Source: Deloitte analysis of data from PitchBook.com

In the context of the energy transition, JVs offer three major strategic advantages over traditional merger and acquisition (M&A) practices.

Technology and expertise pooling

Many energy transition markets are emerging at the nexus of established industries—for example, renewable energy and chemical production in hydrogen and waste management and hydrocarbon processing in advanced recycling. JVs enable energy companies to pool resources (for example, capital, technology, transportation infrastructure) and expertise (for example, access to human capital with specialized knowledge of the industry and alternative business models) leading to greater innovation, efficiency, and speed to market.

• **Example: Hydrogen**

An industrial gas and chemical seller and a renewable energy developer recently announced plans to build, own, and operate the largest green hydrogen facility in the United States. The JV is expected to leverage the former's industrial gas expertise and technical capabilities by making it the exclusive distributor and marketer of the green hydrogen by relying on the latter for the development of more than 1 gigawatt (GW) of wind and solar assets to power the hydrogen electrolyzers.

• **Example: Advanced recycling**

A downstream energy company and plastic chemicals company formed a JV to build an industrial facility for chemical recycling with the intent of expanding activities worldwide. The partnership combines the chemical company's plastic waste preparation capabilities with the energy company's hydrocarbon processing expertise.

Ecosystem security

Due to the considerable interdependent investment requirements for new markets, JVs can also provide security to invest in complementary, capital-intensive parts of the value chain. CCS has seen several JVs emerge to connect the transportation and sequestration operations at major industrial centers. Similarly, green hydrogen producers and end users are creating alliances to provide confidence and align interest in their joint investment.

• **Example: CCS**

Four energy companies (including a pipeline operator and an energy infrastructure owner) formed a partnership in 2022 to develop one of the largest offshore hubs in the Gulf of Mexico for permanent carbon dioxide (CO₂) storage and gain access to a 110-mile CO₂ pipeline. Similarly, three energy giants formed a JV that provides ship transportation of CO₂ to onshore terminals and injection wells.

• **Example: Hydrogen**

One of the largest global chemical companies and a major South Korean industrial conglomerate formed two JVs in their hydrogen pursuit—one for a hydrogen production facility and another for a liquified hydrogen sales and distribution company.

Geographic advantages

Geography can play a critical role in the energy transition. First, national governments are providing incentives for advancement of clean energy growth. Foreign companies can partner with domestic companies to gain established access, assets, and expertise in these local jurisdictions. Second, the ecosystem of these emerging industries can be highly dependent on geography, whether related to carbon emission sources and geologic basins for carbon capture, utilization, and storage (CCUS), or proximity to burgeoning hydrogen hubs—gaining partners.

- **Example: CCS**

A Norwegian carbon capture company has established JVs in several key offshore storage basins with local partners in the Norwegian continental shelf and an American energy corporation in the Gulf of Mexico.

- **Example: Advanced recycling**

A major European chemicals company has partnered with recycling and waste management companies in India and China to create new advanced plastic recycling operations.

Successfully executing energy transition JVs

Deal teams need to prioritize strategic partner diligence, flexible strategies for partnership, and synergy capture without innovation impairment.

Increased focused on strategic partner diligence

Areas of focus	Key considerations
Brand	A partner with a poor environmental or ethical record may harm the venture's reputation, making it harder to attract customers and investors. Additionally, a weak brand may also hinder competition in the marketplace as customers seek known reliable brands.
Geographies	Corporate and asset location will be critical differentiators in energy transition markets as JVs look to achieve regional expertise in areas such as hydrogen and CCS hubs, leverage existing proximate infrastructure to these areas, and access government grants, credits, and other subsidies. Understanding the local competition for geographic benefits and the policy outlook for favorable or adverse government actions is critical in the diligence process.
Technology	Selecting a JV partner in the energy transition requires heightened focus on technological capabilities. This involves not only evaluating the commercialization potential of the combined technology but also understanding the risk of emerging advances and innovations that could render the existing partnership moot and turn a competitive advantage into a burden.
Cultural compatability	Partnering companies often develop a shared vision and must effectively communicate critical information, both good and bad. When partnering companies share similar values, ethics, and approaches to decision-making, it promotes quicker resolution of roadblocks and helps effectively optimize efforts.
Growth potential	Companies must assess opportunities in both the near and long term. Partnering companies should develop their own "deal thesis" with a preliminary road map of growth opportunities. Having early alignment in growth expectations could help streamline the objective of the partnership and avoid unnecessary friction.

Longer and flexible partnership strategies

Given energy transition in an evolving market, a longer horizon may need to be factored in with clear milestones for operations and performance metrics and contingencies. Partnerships in the energy transition should also have provisions to evolve with the market by enabling the addition of new partners and orderly exit of current partners that are tailored to both the planned trajectory and foreseeable changes and disruptions.

Capturing synergies without impairing innovation

The nascency of energy transition markets requires synergy planning with an eye toward innovation. Realizing these synergies, particularly in IP, supply chains, and talent with market expertise, requires thoughtful considerations to reduce potential frictions and incentivize continuous technological improvement and strategic agility.

The energy transition is growing rapidly and maturing quickly, and it is unquestionably fraught with strategic risk. The ideal strategy to pursue growth opportunities will ultimately depend on factors such as capital requirements, ecosystem maturity and sustainability, the value of control and market share ownership, and the likelihood of commercial success. As opportunities mature, JVs are emerging as an increasingly popular way for companies to pursue energy transition opportunities. JVs that are designed to account for the dynamic environment of energy transformation and optimize partner contributions can enable valuable investment in the future of energy.

Case studies



A large-cap American energy corporation took a 50% stake in a JV originally established by a relatively smaller Texas-based O&G company and a CSS project development company that had recently won carbon storage leases from the Texas General Land Office. The energy giant was able to enter with cash and capital obligations to carry 10 million tonnes per annum (MTPA) CO₂ capture, transport, and storage hub to project final investment decision (FID). The change kept the O&G company as an operator and retained the expertise of the CSS company.



Two midsize alternative energy companies partnered to form a JV to integrate supply chains and leverage brand equity. The JV faced high levels of external competition and soon became unprofitable. Primarily due to the lack of planning for marketplace shifts and a failure to establish a contingency plan, the JV was not able to recover and eventually ended in one partner buying out the other. The remaining JV partner then reorganized the company and shifted focus to a different strategy.

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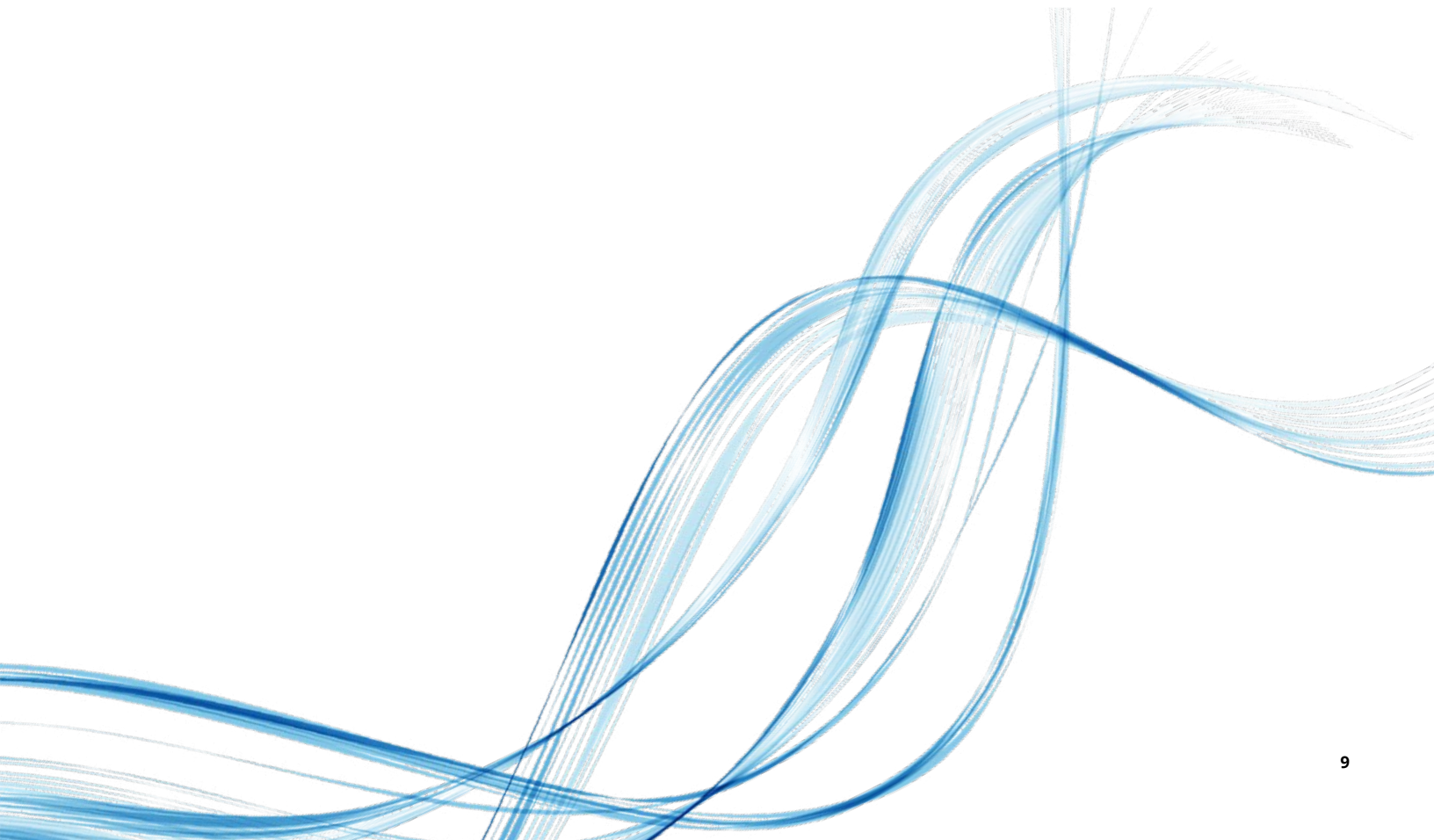
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Endnotes

1. Shishir Bhargava and James Bamford, "[Research: Joint ventures that keep evolving perform better](#)," *Harvard Business Review*, April 12, 2021.
2. Amy Chronis et al., [Oil and gas M&A outlook 2023: Pivoting for change](#), Deloitte, 2023.



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