

SOLVING THE ENERGY TRANSITION PARADOX

A sector-by-sector
look at challenges
and opportunities:
the chemicals sector



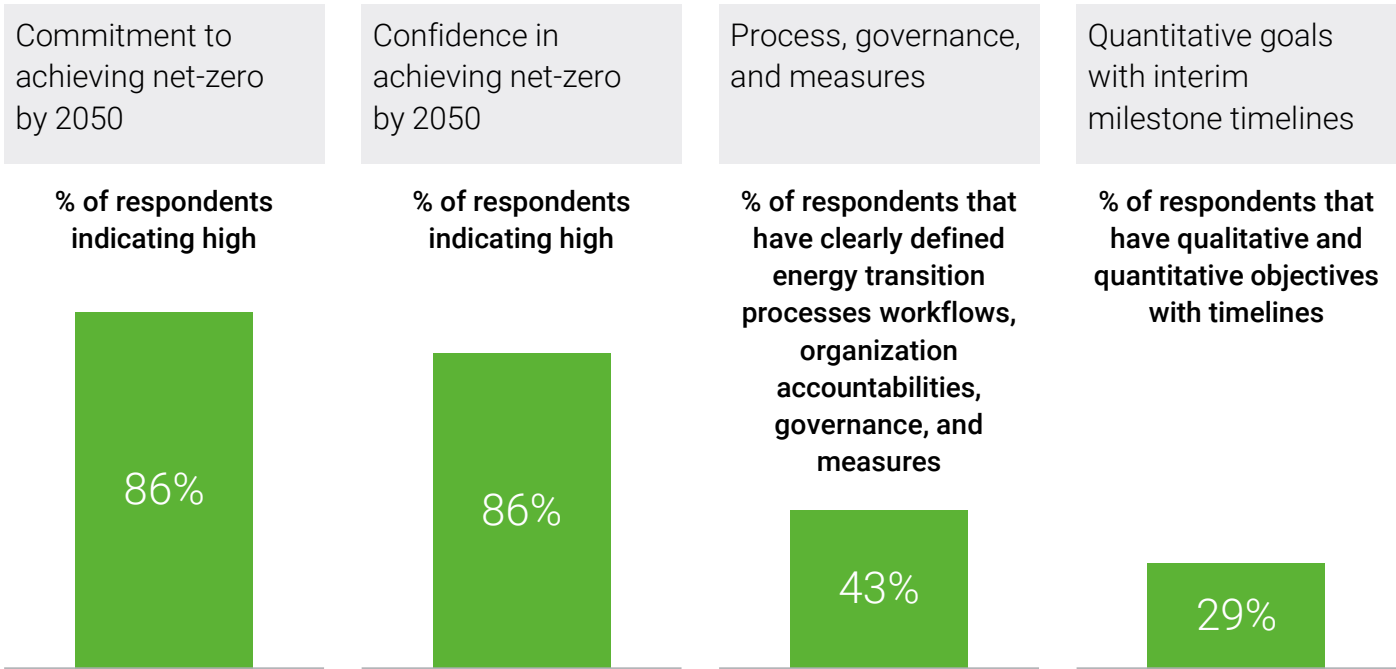
In Q1 2025, AlixPartners released our inaugural [Energy Industries Transition Report](#), drawing upon a global survey we conducted of nearly 400 executives working across the energy value chain. Our key point of inquiry lay in gauging the depth of their conviction in meeting the demands of the energy transition, which we defined with the top-line goal of achieving net zero emissions by 2050.

Across energy and process industries (E&P), their responses were illuminating but contradictory. Over 80% of E&P executives surveyed have high confidence in their ability to realize net zero ambitions by 2050. Executives agree: the energy transition is inevitable. At a moment of varied governmental responses to climate change, they are making a bold statement.

But conviction is not execution. Successfully navigating the challenges of the energy transition hinges on corporate planning that will be resilient over a quarter-century journey, marked by technological transformations, ongoing regulatory uncertainties, and unrelenting economic pressures. Few companies have detailed plans in place. Only 29% of respondents said they had clear timelines, with set quantitative goals, for achieving net zero. Given E&P industries’ broad dependence on complex infrastructures, and on assets with lifetimes measured in decades, this absence of planning is particularly striking.

FIGURE 1: THE CHEMICALS SECTOR HAS HIGH COMMITMENT BUT LIMITED PLANNING

Percentage of respondents indicating high commitment and confidence in achieving net zero by 2050, compared to those with defined planning processes and measurable goals



Note: High commitment = 8 or higher on a scale of 10

A paradox emerges: While there is a broad commitment to achieve net zero carbon emissions by 2050, few energy and process industries executives have articulated a clear and actionable plan to achieve it.

Over the coming months, we will dig deeper into specific opportunities by industry, beginning here with the chemicals sector.

The challenges of decarbonization in the chemicals sector

Decarbonizing the chemicals industry will not be easy. The sector spans markets including consumer products, agriculture, building products, and pharmaceuticals, along with a sweeping range of industrial inputs, from polymers to petrochemicals. These markets all face two major challenges: (1) a dependence on energy-intensive processes, and (2) carbon-intensive feedstocks, a combination that makes decarbonization doubly challenging. Most chemical plants use a significant amount of energy and must tackle the challenge of securing power from clean sources. Some require very high temperature process heat, driven directly by gas, oil, or coal – and technological alternatives are not yet available. Additionally, the feedstocks used in these processes are often themselves carbon-intensive fossil fuels. On top of these foundational process challenges, carbon footprints are driven up by the transportation needs of global supply chains. This inertia is visible across the sector: It is common to see 50-year-old chemical plants with machinery and processes poorly adapted to change.

Legacy assets, lagging plans

The durability of these foundational factors might suggest a tendency in the industry toward long-term, forward-looking plans, but our survey shows otherwise. Fewer than half of survey respondents in the chemicals sector have clearly defined energy transition process workflows, organization accountabilities, governance, and measures. Only 29% have quantitative goals and interim milestone timelines. In that tension between inertia and change is an opportunity for a broad range of energy transition actions. Any company that deftly accelerates into the future will have a competitive advantage – and likely a barrier to entry with which to defend it. While some companies have, over the last two decades, addressed the challenge of decarbonization as a social and moral imperative, we are now at an inflection point where pursuing decarbonization strategies is advantageous in the marketplace, and ignoring them becomes a business risk.

The green premium

Our survey respondents have started to recognize the opportunities the energy transition presents, with 69% of them expecting customers will pay a 6% or higher premium for sustainable solutions (Figure 2). In an industry defined by commodity offerings and weighed down by thin margins, green products can command premiums that reshape market dynamics. For a cosmetics company, that might mean differentiating the supply chain by replacing fossil fuel ingredients with plant oils and sugar derivatives. For industrial products like adhesives and polymers, adopting bio-based alternatives may require a more careful analysis of the end-to-end value chain to ensure the overall impact on the business. And yet in both cases the top line message is clearly apparent: If you believe customers understand the challenges of creating green offerings and are willing to pay a premium for them, it becomes imperative to not only adopt those new processes, but to message them strongly.



FIGURE 2: MAJORITY OF RESPONDENTS EXPECT A GREEN PREMIUM

Breakdown of expected price premiums customers are willing to pay for sustainable products, as reported by industry executives

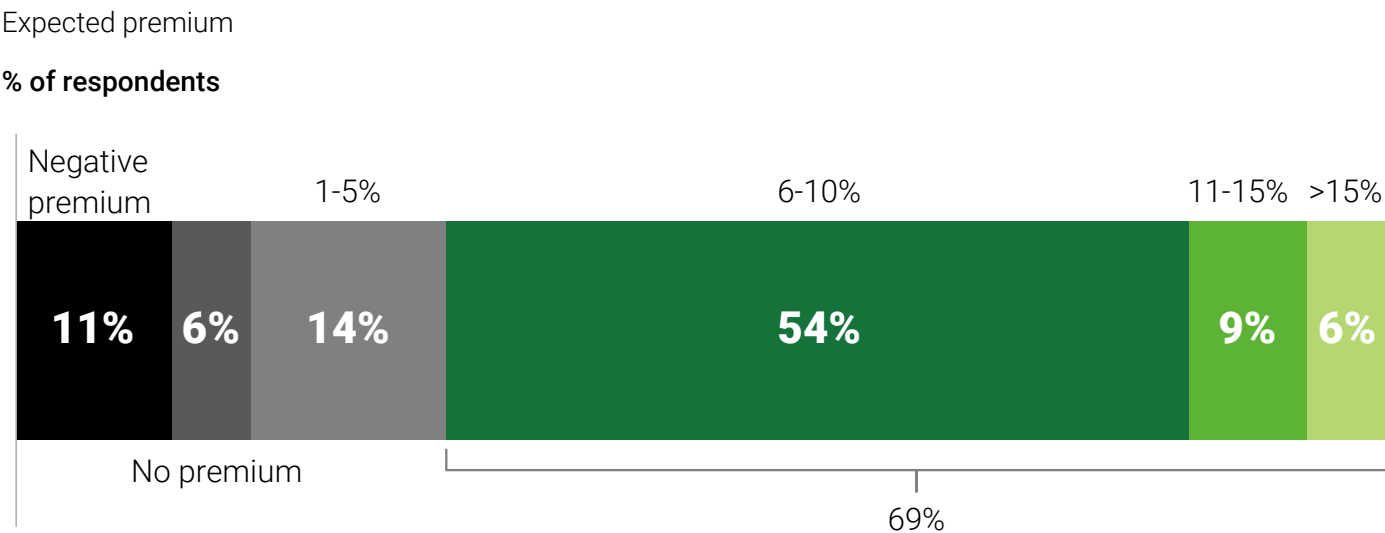
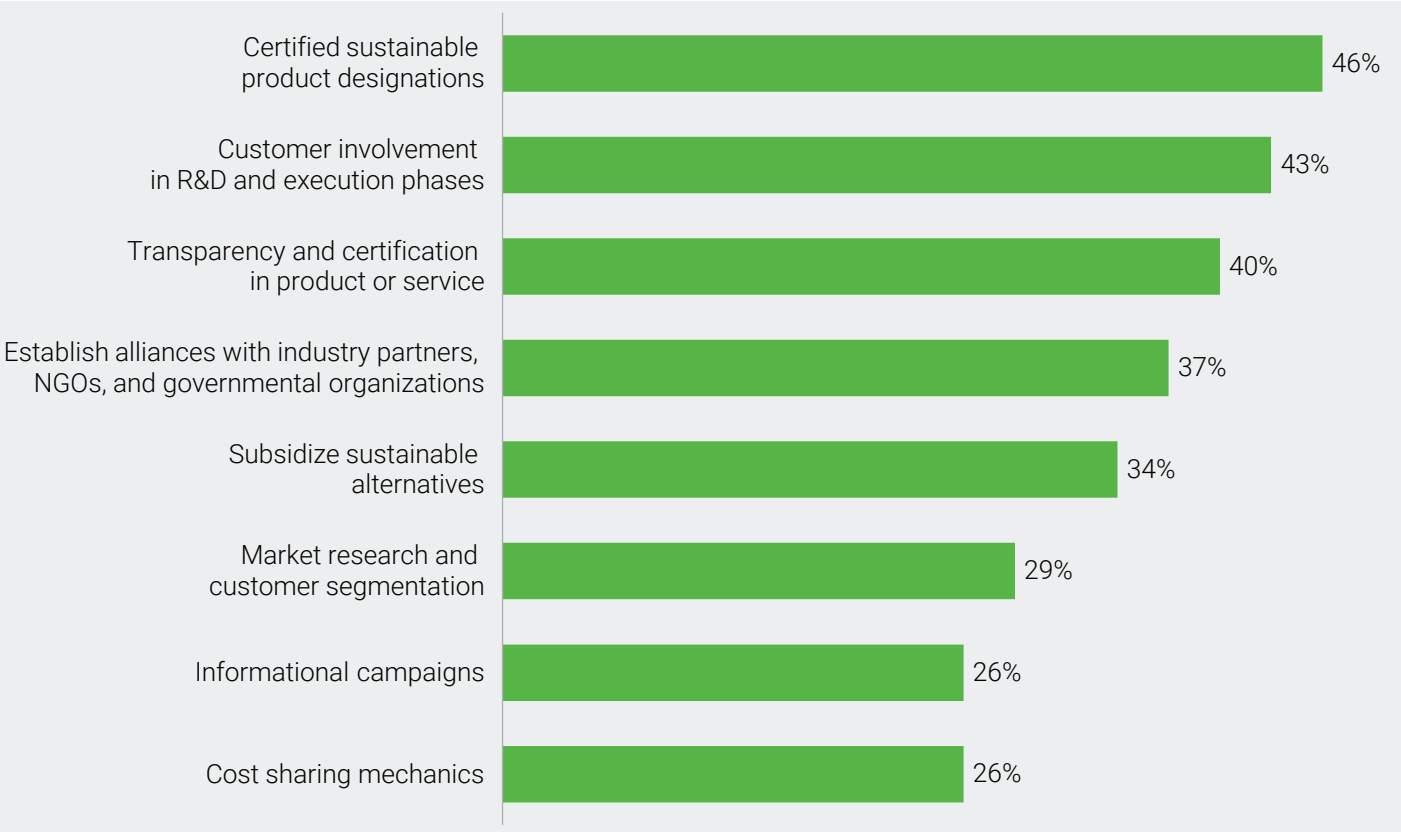


FIGURE 3: STRATEGIES TO BOOST WILLINGNESS TO PAY FOR SUSTAINABLE SOLUTIONS

Top strategies implemented by companies to increase customer willingness to pay for sustainable energy solutions. Chemicals segment has high expectations that customers understand the challenges of, and will pay a premium for, sustainable solutions, which is reflected in efforts to communicate sustainable solutions at or before purchase





Process efficiency: a profitable decarbonization strategy

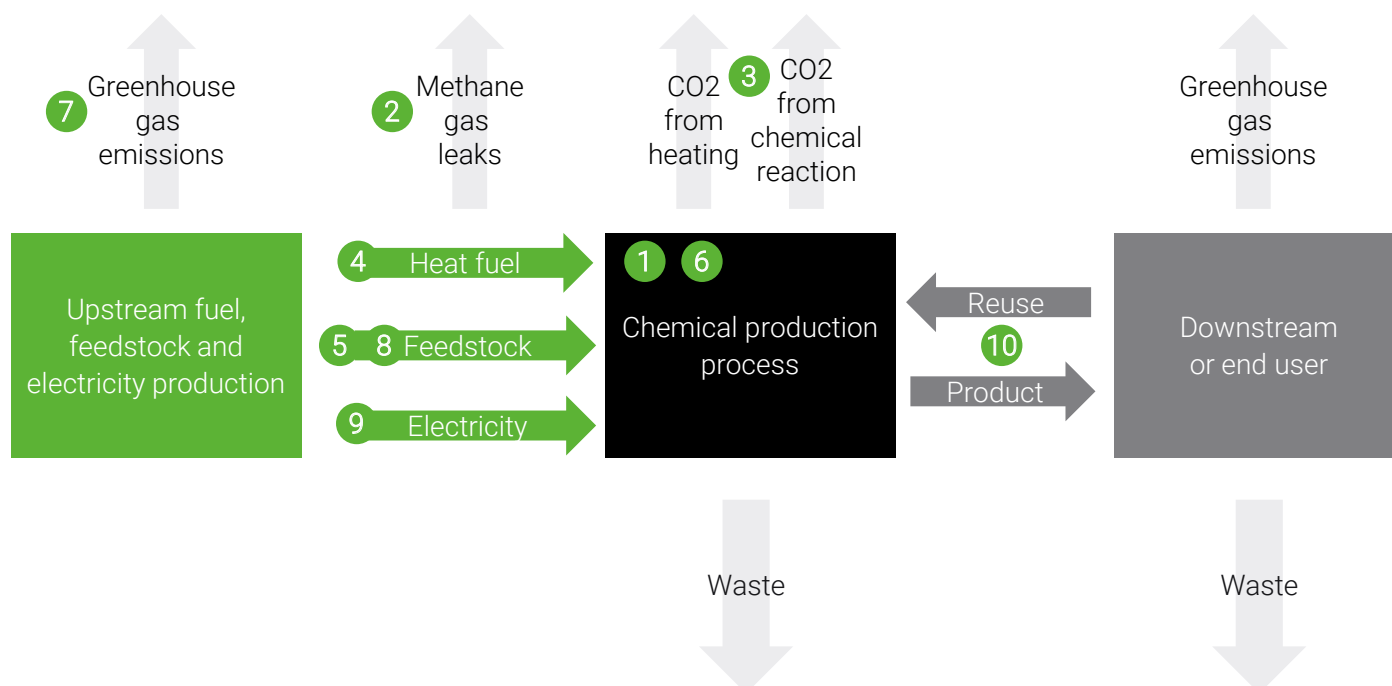
Process efficiencies create additional opportunities for improving profitability under the banner of decarbonization. The convention has traditionally been reduced to symbolic gestures like energy-efficient lighting. But a far broader range of operational upgrades, tighter engagement with suppliers, and localizing supply chains can lead to reductions in costs and emissions across the value chain. Fundamentally, any action that reduces the energy used to run a complex process – including transporting intermediate products back and forth around the world before final product formulation – is inherently a cost reducing action. For an oil and gas producer, that may mean the electrification of its upstream facilities; for a pharmaceutical manufacturer, that could come from upgrading containment systems and re-sourcing local components; and for an agricultural fertilizer company, an innovative catalyst could unlock process and energy efficiencies. The challenge for complex chemical businesses is properly identifying the levers, risks, and impacts of these efficiency actions.

FIGURE 4: TOP 10 ENERGY TRANSITION ACTIONS CHEMICAL COMPANIES ARE TAKING TODAY

ACTION	DESCRIPTION
1 Energy intensity (efficiency)	Upgrading plant technology to use less energy for the same output, e.g., replacing distillation columns with membranes for separating chemicals and using next-generation catalysts to save energy and increase yield.
2 Natural gas methane leak mitigation	Reducing methane emissions to the atmosphere during extraction, processing, and transport of natural gas by implementing better pollution controls and operating practices.
3 Carbon capture – high purity	Capturing CO2 emitted directly from some chemical reactions, e.g., the steam methane reforming (SMR) reaction for hydrogen, and the fluid catalytic cracking (FCC) reaction for propylene.
4 Hydrogen fuel – blue or green	Blue hydrogen is made via steam methane reforming with carbon capture of the resulting CO2. Green hydrogen is via electrolysis of water using renewable or nuclear energy sources. The hydrogen can then be used as fuel to provide the energy needed to run chemical facilities, or it can be used as raw material feedstock for synthesizing chemical products.
5 Hydrogen feedstock – blue or green	
6 Process heat decarbonization	Switching to zero-emissions heat sources used in processes, such as direct process electrification and heat pumps for low temperature processes.
7 Upstream CO2 emissions mitigation	Reducing carbon-dioxide emissions to the atmosphere during extraction, processing, and transport of natural gas and feedstocks by implementing better pollution controls and operating practices.
8 Bio-based feedstocks	Bio-based feedstocks are feedstocks that come from plants, animals, fungi, and microorganisms instead of fossil fuels. Ideally these feedstocks are drop-in replacements for their fossil fuel counterparts.
9 Renewables for existing electrical load	Replacing gray electricity (which is produced from fossil fuels) with electricity produced from renewables for existing process requirements, either through purchase power agreements (PPAs), purchasing renewable energy assets off site, or building renewable energy generation on site.
10 Circular economy	A circular economy is a model of production and consumption that keeps materials in use instead of letting them become waste, either through chemical or mechanical recycling or biodegradability.

Source: RMI, AlixPartners analysis

FIGURE 5: CHEMICALS DECARBONIZING CHALLENGE IS TWO-FOLD – FOSSIL FUEL FEEDSTOCKS AND FOSSIL FUEL HEAT AND ENERGY RELIANCE – BUT COMPANIES ARE TAKING ACTIONS TO ADDRESS BOTH



Regulation is coming – ready or not

Government regulations and incentives are another surface of both vulnerability and opportunity. Across geographies and between administrations, governments continue to address the energy transition with a complex mix of incentives and penalties. Though policies remain fluid, most chemical companies nevertheless feel the steady heat of government oversight. The European Union, for example, saw the adoption of the the Net-Zero Industry Act in 2024, and is expecting the Industrial Decarbonisation Accelerator Act in 2025. This has led several companies to pursue emerging technologies that are not yet scalable – the most popular being carbon capture. With no single pathway to success, it is critical to develop a holistic, quantifiable decarbonization strategy that aligns technical feasibility with cost efficiency.

Innovation is late – but so is everyone else

Transformative innovations are visible on the horizon, but many remain in early stages of development. Process heat, for example, is a bedrock of the chemicals industry but has stubbornly resisted decarbonization. Electric heaters, one of the most promising alternatives, struggle to reach the extreme temperatures required by certain chemical processes – posing a major barrier to large-scale electrification, as electrodes can fail and containment systems often require re-engineering. The companies that are forging ahead now with pilot programs will be well positioned over the next decades, as the technology matures and the commercial potential political pressure to decarbonize increases. The same dynamic can be seen in the growing interest in e-fuels, for applications including aviation, shipping, and agriculture. They are another example in which enthusiasm has outpaced commercial scale-up, creating a different set of challenges from the buildout of solar and wind power, for example. The companies investing in pilot projects recognize that achieving net zero by 2030 may no longer be realistic, even as they can see a clear path to 2040.



Forward-thinking companies are moving now

All the while, the risk of inaction grows. We can learn from past examples of legacy companies which failed to react to new technologies and paid a heavy price, such as Blockbuster and video streaming, BlackBerry and smart phones, or Kodak and digital photography. These are reminders that energy transition actions are not speculative.

Fundamentally, these transformations wouldn't be happening unless they had a line of sight to the the businesses advantages. This often requires acknowledging the century-long legacy of past innovations, and having the discipline to look beyond short-term payback periods. The most forward-thinking companies prefer moving early – and they undoubtedly are.










The chemicals industry is notching a growing list of substantial projects:

- Pfizer leveraged Siemens technology to increase energy efficiency by 40% at its new plant in Freiburg, Germany.
- DuPont is capturing carbon emissions created during manufacturing at its James River Gypsum plant, in Richmond, Virginia.
- Lanxess aims to reduce Scope 3 emissions by 59% within its upstream and downstream supply chains by 2030 – and eliminate them entirely by 2050.
- Corteva and BP announced a joint venture to develop low carbon intensity biofuel feedstock.
- NOVA Chemicals created a knowledge, research, and development hub in Alberta, Canada, to advance the circular economy of plastics.

These initiatives are part of broader sustainability programs, which have now moved beyond assessment to encompass long-term plans, actual infrastructure improvements, and potential new business lines. Leading companies have moved from benchmarking to building.

FIGURE 6: TOP 10 ENERGY TRANSITION ACTIONS CHEMICAL COMPANIES ARE TAKING TODAY BY CHEMISTRY – NOT EXHAUSTIVE

Click each row for the full related story from each company

ACTION	AGRICHEMICALS	COMMODITY CHEMICALS	CONSUMER CHEMICALS	PAINTS, COATINGS, AND PIGMENTS	PETROCHEMICALS	PHARMACEUTICALS	SPECIALTY CHEMICALS
1 Energy intensity (efficiency)							
2 Natural gas methane leak mitigation							
3 Carbon capture – high purity							
4 Hydrogen fuel – blue or green							
5 Hydrogen feedstock – blue or green							
6 Process heat decarbonization							
7 Upstream CO ² emissions mitigation							
8 Bio-based feedstocks							
9 Renewables for existing electrical load							
10 Circular economy							

Source: Company releases, AlixPartners analysis



AlixPartners stands ready to support the chemicals industry as it moves beyond strategy and compliance, and into the emerging era of operational transformation.

Our energy transition service offerings include:



Assessing full-facility waste and energy spend to develop strategic prioritization roadmaps.



Capability mapping, organization design, and strategic partnership identification to shape the low-carbon transition strategy and long-term value creation plans.



Supplier landscape assessment to develop supplier emission profiles and identify opportunities for supplier engagement, along the way to significant Scope 2 and 3 emission reductions.



Utilizing digital twins to provide end-to-end value chain visibility for new products and create end-to-end margin visibility.



Developing buildout strategies and negotiating with suppliers to increase return on capital employed.

In all these efforts, AlixPartners brings its cross-functional teams and deep industry expertise to help chemical companies commit to an enduring energy transition.

CONTACT THE AUTHORS:

Matt McCauley

Global Co-Leader of Energy and Process Industries
Partner & Managing Director
mmccauley@alixpartners.com

Vance Scott

Global Co-Leader of Energy and Process Industries
Partner & Managing Director
vlscott@alixpartners.com

Eric Nelsen

Partner & Managing Director
rnelsen@alixpartners.com

Olivier Assaf-chauvin

Senior Vice President
oassafchauvin@alixpartners.com

Simon Bernick

Senior Vice President
sbernick@alixpartners.com

ABOUT US

For more than forty years, AlixPartners has helped businesses around the world respond quickly and decisively to their most critical challenges—circumstances as diverse as urgent performance improvement, accelerated transformation, complex restructuring and risk mitigation.

These are the moments when everything is on the line—a sudden shift in the market, an unexpected performance decline, a time-sensitive deal, a fork-in-the-road decision. But it's not what we do that makes a difference, it's how we do it.

Tackling situations when time is of the essence is part of our DNA—so we adopt an action-oriented approach at all times. We work in small, highly qualified teams with specific industry and functional expertise, and we operate at pace, moving quickly from analysis to implementation. We stand shoulder to shoulder with our clients until the job is done, and only measure our success in terms of the results we deliver.

Our approach enables us to help our clients confront and overcome truly future-defining challenges. We partner with you to make the right decisions and take the right actions. And we are right by your side. When it really matters.

The opinions expressed are those of the author(s) and do not necessarily reflect the views of AlixPartners, LLP, its affiliates, or any of its or their respective professionals or clients. This article Solving the energy transition paradox: a look at challenges and opportunities in the chemicals sector ("Article") was prepared by AlixPartners, LLP ("AlixPartners") for general information and distribution on a strictly confidential and non-reliance basis. No one in possession of this Article may rely on any portion of this Article. This Article may be based, in whole or in part, on projections or forecasts of future events. A forecast, by its nature, is speculative and includes estimates and assumptions which may prove to be wrong. Actual results may, and frequently do, differ from those projected or forecast. The information in this Article reflects conditions and our views as of this date, all of which are subject to change. We undertake no obligation to update or provide any revisions to the Article. This Article is the property of AlixPartners, and neither the Article nor any of its contents may be copied, used, or distributed to any third party without the prior written consent of AlixPartners.