Best of 2021 Energy Insights

A collection of the top energy research, points of view, opinions and insights published by Accenture's energy thought leaders.

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A year of action. A year of insights.

"Energy companies are now launching or accelerating transformation plans to maintain profitability and relevance during the energy transition while playing a critical role in alleviating energy insecurity. I'm pleased to share the insights we developed to help them navigate their reinvention journeys in 2021 and the years ahead."

— Muqsit Ashraf,
Energy Industry Sector Lead

With the energy transition gaining speed, the 2020s are shaping up to be the make-or-break decade for oil and gas companies. Industry challenges that have been years in the making persisted in 2021. These included growing interest in alternative energy sources, dwindling cashflows, weak returns and investor apathy. Then there was COVID-19. While the unprecedented demand contraction and concurrent ramp-up in supply we witnessed in 2020 subsided somewhat in 2021, the impact of the pandemic continued to disrupt markets and economies.

In this uncertain environment, oil and gas companies spent much of 2021 charting their courses to 2030 and beyond. They developed strategies to simultaneously tackle three aspects of the energy transition simultaneously: sustainability, security and fundability. They started giving serious thought to navigating the structural shifts that are permanently changing the industry. And they began taking actions to address issues ranging from new energy sources and solutions to environmental accountability to talent scarcity.

We have been with them every step of the way. This collection of insights presents just a sampling of the research and thought leadership we developed in 2021 to help them navigate their journeys to relevance and growth.

Contents

Reinventing the energy industry

01

As oil and gas companies look to navigate the energy transition, they face a set of structural shifts that will permanently change what they do and how they do it. Competition from new energy sources, market volatility, environmental accountability, talent scarcity and investor apathy are all on the rise with no signs of slowing.

In this environment, most companies have accepted the fact that they need to undertake big changes to achieve profitability and relevance in the years ahead. Unfortunately, change—even big change—will not be enough. Radical reinvention is needed.

Necessity is the mother of (re)invention: Oil and Gas Reinvention Index 2021 →

Fast forward: Accelerating the journey to reinvention →

Oil and Gas 2030: Let there be change →

Necessity is the mother of (re)invention: Oil and Gas Reinvention Index 2021

Accenture believes reinvention for oil and gas companies must be anchored in "5C" actions: Competitiveness; Connectivity; Carbon; Customers; and Culture.

In 2021, we surveyed executives from 179 energy companies around the world to understand the actions they are taking in each area, their progress toward reinvention, and the outcomes they expect to achieve. From this group, we identified 18 companies as reinvention trailblazers. Their approach to transformation stand in stark contrast to the "laggards," whose transformation agendas are less mature. Here is what leaders are doing to drive 5C change.

In the area of **Competitiveness**, leaders are rethinking their business models and operating models. They are expanding to new geographies and asset classes, introducing low-carbon products and services, and developing new capabilities to deliver on their new business ambitions. Importantly, leaders are no longer competing on the volumes of oil and gas they produce, but on environmental, social and governance (ESG) criteria and the returns they generate on capital employed (ROCE).

In the area of **Connectivity**, leaders are focusing on digital transformation, not experimentation. They are building collaborative environments that enable innovation. And they are implementing cloud, Internet of Things (IoT) and mobility solutions to achieve their financial and carbon-related objectives.

In the area of **Carbon**, leaders are setting ambitious ESG targets. They're also elevating the importance of their low-carbon solutions. Finally, leaders are taking decisive and practical near-term actions by, for example, investing in energy management solutions, driving process efficiencies, and deploying better carbon-detection and management technologies.

When it comes to **Customers**, leaders understand the need to pivot from being businesses that meet energy demand to businesses that solve problems. To this end, they are keenly focused on creating differentiated experiences by actively responding to preferences and improving customer segmentation.

More than **90%**

of oil and gas companies recognize the need to change. But only 21% are undertaking true reinvention. Here's what the leaders are doing.

Necessity is the mother of (re)invention: Oil and Gas Reinvention Index 2021

In the area of **Culture**, leaders know that reinvention won't happen without the buy-in of those charged with executing it. They are working to ensure the entire organization rallies behind the change, aligns to a reformulated purpose, and embraces new ways of working. Their c-suites are actively involved, creating environments in which a new culture of collaboration and new levels of productivity can flourish.

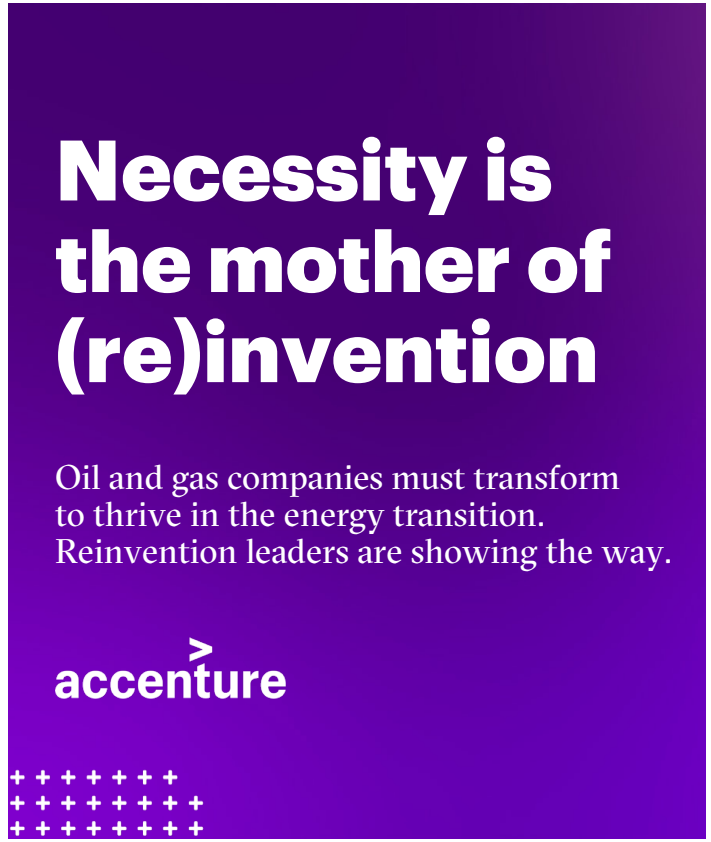
Reinvention leaders are confident that their 5C actions will deliver significant results. We believe they have good reason to be optimistic. And we believe there is also good reason for other oil and gas companies to follow their lead by:

- Focusing on ROCE and ESG performance, not volumes, as drivers of future value
- Embracing enterprise-wide challenges and ambitiously transforming everything
- Using cloud and digital platforms as critical enablers for reinvention
- Making carbon a source of competitive advantage
- Taking a holistic view of both customer and employee engagement

But our research also highlighted missed opportunities. For example, even leaders are not as focused as we believe they should be in the areas of ecosystem partnerships, cybersecurity, data management and innovation.

The bottom line is that industry players in all segments of the oil and gas value chain can learn from what the leaders are doing—and what they are not.

Read more to understand not only the right course of action to take in the areas of Competitiveness, Connectivity, Carbon, Customer-centricity and Culture, but also the gaps and blind spots to avoid.



Fast forward: Accelerating the journey to reinvention

To address the structural shifts, challenges and disruptions roiling the oil and gas industry, companies have no choice but to reinvent. This means reconsidering what they do, what they stand for, how they compete, and how they measure and deliver value to customers, investors and employees.

A strategy for reinvention

We believe an effective strategy for reinvention must be grounded on three building blocks:

Purpose: The journey starts with a clear purpose—one that drives relevance by balancing critical elements: energy equity, energy sustainability and energy fundability. These elements serve as a north star for reinvention. Regardless of the course the journey may follow, all companies will need to do their part to deliver reliable energy to all, achieve carbon net neutrality by 2050 and deliver competitive returns to investors.

Archetype: Oil and gas companies must also identify the archetype they aspire to become. We believe there are three end states from which to choose—The Energy Major, The Oil & Gas Specialist and The Low-Carbon Leader. Each archetype will play a critical role in the world's energy future. Each will require a different path to reinvention.

Solving for the 5Cs: Finally, our research shows that reinvention must anchor on five key areas we call the "5Cs": Competitiveness, Connectivity, Carbon, Customer and Culture. While every oil and gas company will need to prioritize and address the 5C dimensions of change, the specific actions needed to achieve their reinvention will differ, depending on the archetypal role they hope to play in the future energy system.

Reinvention leaders expect to achieve:

2.3X margin growth

1.8X revenue growth

3X ESG improvements

Fast forward: Accelerating the journey to reinvention

An action plan for reinvention

We believe that there are nine transformational bets every company should make regardless of the archetype they choose. Each activates two or more of the 5C dimensions of change. Each has the potential to help companies unlock new value and deliver the promise of reinvention. They include:

- Re-platforming and enabling the intelligent enterprise with cloud
- Integrating and optimizing the value chain
- Transforming cost structures
- Connecting and optimizing operations
- Rebalancing and restructuring portfolios
- Securing data and infrastructure
- Delivering on the energy transition
- Reinventing customer experiences and offerings
- Reimagining the workforce

Collectively, these are no-regret actions that will position oil and gas companies for success in the years ahead.

Learn more about the nine actions that will accelerate the future industry leaders' journey to reinvention—and set them apart for years to come.

Oil and gas 2030: Let there be change

While prices have averaged more than $70 per barrel over the last 10 years, free cash flow from core oil and gas operations has been insufficient to maintain shareholder returns above the cost of capital.

The leverage ratio of total debt to total liquidity has more than doubled since the depths of the 2008 financial crisis, and the industry's share of the S&P 500 has been cut by more than half over the last 10 years.

The writing is on the well. Industry players must reinvent themselves to remain relevant and profitable during and after the energy transition.

One essential component of reinvention in the oil and gas industry is the ability and willingness to challenge established paradigms. That mandate is forcing industry leaders to ask two fundamental questions:

- What should our portfolios look like?
- How can we win by investing in the right capabilities and ways of working?

Accenture has some answers.

Where to play in the energy ecosystem of 2030+

Oil and gas companies still have a fundamental role in the energy future—particularly when it comes to enabling nearly a billion people to access secure, affordable and sustainable energy. But oil and gas will no longer be the undisputed energy leaders, as other sources will assume dominant positions.

As a result, oil and gas companies (as well as their supply chain partners) face a crucial choice when it comes to crafting their future portfolio strategies. In a decarbonizing economy, and in an industry where profit pools are shifting downstream away from fossil fuels, incumbents must decide what to offload, where to diversify, what to optimize and which new market opportunities to target.

Broadly, we believe three different portfolio strategies are emerging: The Oil & Gas Specialist; the Energy Major; and the Low-Carbon Solutions Leader.

To succeed with their reinventions, oil and gas companies must set aside long-standing orthodoxies in five areas to make room for the innovations that will power the energy future.

Oil and gas 2030: Let there be change

How to win in the next decade and beyond

Once they decide the roles they want to play in the future energy ecosystem, oil and gas companies need to consider how they can maximize their chances of success. Affirming their relevance will require new behaviors and new mindsets. Long-standing orthodoxies in five areas must be set aside to make room for the innovations that will power the energy future. These five areas include:

- Capital allocations
- Operations
- Offerings
- Industry collaboration
- Ways of working

Learn more about these five areas of change and the steps oil and gas companies can take to turbo-charge their transformations.

Optimizing portfolios

02

To compete in the energy future, oil and gas companies need a new approach to understanding demand dynamics and returns on capital allocations. New insights in these areas will enable them to make better decisions, more effectively balance their portfolios and develop the service offerings that industry partners and new energy consumers crave.

The "crown joules" of the energy industry →

Energy portfolio restructuring: Charting the future →

Diversification in action: How OFES businesses can reinvent themselves →

The “crown joules” of the energy industry

As the world moves toward decarbonization, we will see a more heterogeneous energy system that takes different energy sources and demand of different regions into consideration.

This marks a big change from what has long been a relatively homogenous system—one in which hydrocarbons supplied the world’s energy needs.

Several factors will drive even more heterogeneity in energy markets over the next decade. Country regulations, technological advancements and investor pressure are just a few. There are also changing consumer preferences, which arguably will have the biggest impact and create a unique demand-driven transition.

The primacy of capital allocations for energy portfolios

To compete in the energy future, companies across the value chain will need to understand market-by-market demand dynamics. They will also need to have granular visibility into returns on their capital allocations.

Only then can they effectively adjust their asset portfolios to the most economical plays, while also offering the supply sources that tomorrow’s energy consumers seek.

This is new territory for many players. While the industry has accepted that carbon abatement programs or digital transformation affect the entire enterprise—from back-office operations to corporate culture—they haven’t paid the same attention to capital allocations and portfolio rebalancing. Tools have been introduced to accelerate calculations; but few changes to the capital-allocation approach have been made.

In a heterogeneous energy system, old methods of allocating capital won’t work. Companies must look at the entire energy system, not just a limited set of variables. And they need to assess the profitability (vs. the cost-effectiveness) of asset classes (vs. assets only). To do that, they must be able to compare different segregated asset classes on common metrics: Joules (J) and dollars (USD).

The Accenture Energy System Model (patent pending) allocates capital in a way that best meets energy demand and generates the most value from assets and asset classes.

The “crown joules” of the energy industry

The Accenture Energy System Model

This radical shift in thinking gives rise to the Accenture Energy System Model, a portfolio evaluation methodology that is analytics-based and scenario-driven. The methodology looks at two metrics—profitability per joule (USD/J) and capital turnover or joule delivered per unit of capital (J/USD)—to weigh asset investments on their absolute value creation. These metrics are particularly valuable because they encompass all the variables that the converging energy system of the future introduces.

We believe this approach should be considered when modeling energy portfolios going forward. There are three reasons:

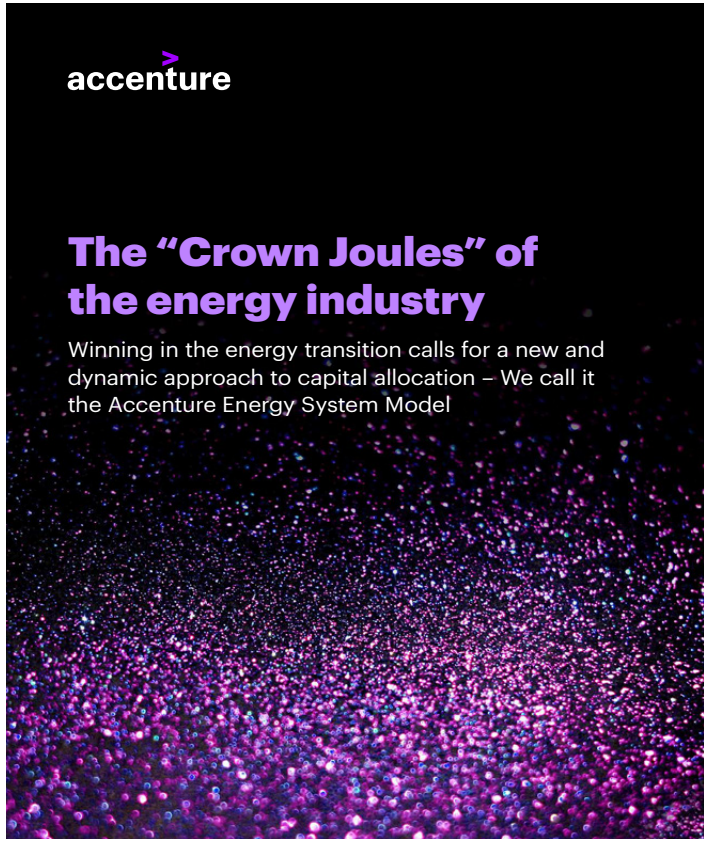
1. It enables a like-for-like comparison of different asset classes and energy sources, thereby providing insights into the level of optionality that is possible.
2. It ensures a focus on capital returns.
3. It enables companies to incorporate fluctuating variable such as subsidies, taxes and product premiums into their value assessments.

Only the start of the energy transition

Leading in the energy transition requires not only optimizing capital allocation and portfolios, but also infusing performance excellence throughout the company’s day-to-day operations.

To manage operational complexity and operational expenditures, companies must equip their key decision makers with a modern and powerful decision platform—one that allows the correlation of these variables in real-time and the discovery of new trade-offs to optimize margins. Why? Because allocating capital to the right assets is just one part of the equation. Equally important is ensuring that those allocations generate high returns over time and value across different variables.

Find out why combining capital allocation and operational decision platforms can help energy companies navigate the transition with confidence and emerge stronger in the energy system of the future.



Energy portfolio restructuring: Charting the future

In response to a radically changing market, energy companies are charting new courses for their futures. Some continue to bet on their ability to generate returns from the oil and gas value chain.

They are focusing on growing margins and lowering carbon intensity. Others are supplementing their capabilities with low-carbon energy solutions or exiting hydrocarbons altogether. And then there are others, like the **energy majors in Europe,** that are betting big on diversification.

To reach their low-carbon targets, many energy majors are leveraging acquisitions and alliances. Such moves are enabling them to build knowledge, capabilities and a presence in new energy markets quickly. Gaining momentum is key. But it's also not easy.

Several energy majors have announced transition strategies and made early investments but have yet to see their valuations climb. But players embarking on this journey later will likely pay more for their low-carbon assets and, therefore, enjoy a lower potential upside.

As energy majors look to restructure their portfolios through M&A, they will need to apply rigorous checks and balances to all deals. This includes robust due diligence and risk/return evaluation processes. Deal valuations should also be considered carefully given the danger of overpaying as majors look to buy low-carbon assets "at any cost," which may risk return on investment.

To successfully transition from an oil major to an energy major, industry leaders also need a fresh approach to extract the full value of their investments—but also their divestments and legacy portfolios. Based on our experience, three key actions will make all the difference.

Read more to find out what these levers of success are and why they are crucial.

An agile and deliberate approach to portfolio management will enable European energy majors to play a key role in the low-carbon energy future.

Diversification in action: How OFES businesses can reinvent themselves

In 2021, oil prices bounced back from historic lows to $75 a barrel. Near-term market optimism took hold, fueled by the hope of an impending economic recovery in the post-pandemic world.

Despite this good news, oilfield equipment and services (OFES) companies are increasingly accepting the fact that the medium- to long-term demand and pricing premium for their products is structurally declining.

Investors agree. In an environment characterized by muted fossil fuel demand and growing calls for decarbonization, they've pulled back their funding for capital projects in the industry. Even the most optimistic forecasts do not see capital expenditures returning to 2019 levels until at least the middle of this decade. This does not bode well for OFES companies. The resilience of most of their business models, as currently structured, depends on a steady infusion of capital into the industry.

Glimmers of hope

Accenture believes there is untapped potential for OFES companies to attract investor interest in new, non-hydrocarbon-intensive areas that support the energy transition agenda. For example, there are significant investments being made in "emerging energy" solutions—ranging from electric vehicles and smart grid infrastructure to electrified heat pumps. There's no reason OFES companies can't or shouldn't claim a piece of the new energy investment pie.

Pursuing those investment dollars will require today's OFES companies to diversify. Rather than taking a defensive posture to salvage what they can from their traditional businesses, they must now "play offense" and branch out into new areas. We believe five significant value pools—currently at different levels of maturity—are worth considering. These include cleaner oil and gas operations; the extended natural gas value chain; proven renewables; unproven energy transition bets; and non-energy products and services.

There are tremendous opportunities for oilfield equipment and services companies willing to make bold decisions and diversify their offerings.

Diversification in action: How OFES businesses can reinvent themselves

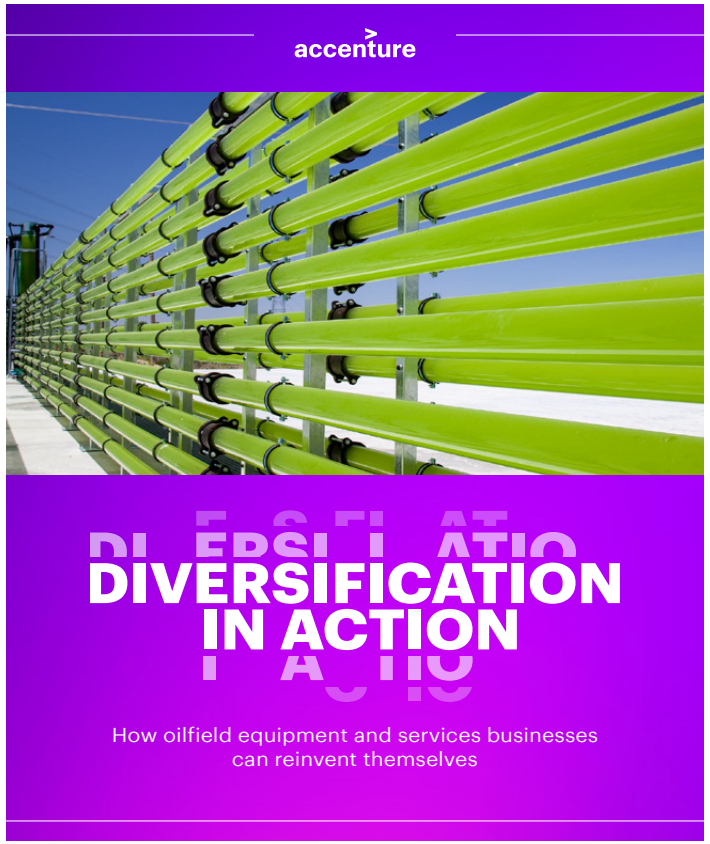
Diversification in action

OFES companies need to be able to fund the organic and inorganic investments required to build these new businesses. While the improving market for OFES should increase cashflow and enable some new investment, most companies will require divestitures of their traditional businesses to make this pivot at scale. Just as important as funding, however, are significant changes to the culture, capabilities and organizational structure of OFES businesses.

We believe there are five actions that companies' leaders can take to improve the likelihood of a successful pivot.

1. Reflect the positioning of their diversification initiatives in their organizational structures.
2. Develop a robust strategy and marketing teams to guide and enable the new business ventures.
3. Embrace ecosystem partnerships to scale quickly.
4. Rethink their approaches to acquiring and developing talent.
5. Foster a culture of innovation that rewards people for taking risks and stepping outside of the safe havens of the "traditional business."

Find out how these five actions can help OFES companies seize the opportunities that lie ahead.



Transitioning to a new energy future

03

The energy transition marks one the biggest challenge the oil and gas industry has ever faced. The good news is that we are far enough along in the transition to have strong hypotheses about what solutions are necessary and viable. To move forward, oil and gas players, governments and even consumers must work together to deliver a resilient energy transition—one that not only ensures long-term sustainability, but also enables inclusive growth and prosperity for all.

Shoot for the stars (or the clouds) in 2021 →

Hindsight is 2050 in resilient energy transition →

Scoping out profitable downstream future in Europe →

Shoot for the stars (or the clouds) in 2021

The oil and gas sector is not alone in preparing for a different, low-carbon future. Leaders from across industries are starting to rethink their organizations' business models and making changes that will have a big impact on their business performance.

For many, the change begins with cloud.

Adopting cloud to digitize core business processes is a particularly effective "green" solution. That's because it can help minimize the need for physical equipment and energy-intensive data centers, while leveraging more energy-efficient computing power. These benefits translate into a significant reduction in carbon emissions. According to our research, migration to the public cloud can facilitate a 5.9% decrease in total IT emissions. That comes to nearly 60 million tons of CO_2 globally per year, which is the equivalent of taking 22 million cars off the road.

Lowering direct energy demand is just one measure of cloud's impact on emissions. Another advantage of cloud is its ability to unlock the power of analytics and facilitate other sustainability efforts at scale. Consider how it could help energy companies maximize efficiencies in their current operations or clean their core. Given we need to save over 40 billion tons of CO_2 emissions to achieve our climate targets, it's nice to know that solutions like cloud can be a value multiplier, with numerous beneficial effects.

Read more on how cloud sets the stage for the actions that energy companies need to take now.

59%

of CEOs say they are deploying low-carbon/ renewable energy across their operations today. Of those, two-thirds are using cloud to make their commitments a reality.

Hindsight is 2050 in resilient energy transition

For oil and gas companies, the decarbonization imperative has increasingly become a boardroom issue. Unfortunately, many companies are still procrastinating. They fret that they will move too fast, too slow or in the wrong direction.

Some industry leaders, however, have spent the past decade planning. Considering options. Setting ambitions. Identifying opportunities to retain their relevance—and profitability—to 2050 and beyond.

The good news is that all the prep work and, yes, soul searching, that has gone on in c-suites and political halls of power have paid off. We have better insights into what the transition needs to accomplish. We have a greater appreciation of the risks and rewards that lie ahead. Importantly, we also have guides to help navigate the complexities and challenges of the energy transition:

- The 2021 edition of Fostering Effective Energy Transition, published by the World Economic Forum (WEF) in collaboration with Accenture, identifies three imperatives that must be addressed by stakeholders moving forward
- Accenture's Decarbonizing Energy: From A to Zero defines the opportunity and challenges ahead for the oil and gas industry. It proposes three future business models to which today's energy companies should aspire. And it highlights the actions companies need to take to achieve their 2050 ambitions.

These reports converge on a central theme: resilience. As we enter our second decade of preparation and action, the energy transition is still quite vulnerable to setbacks. We must be vigilant. And we must work together—industry and governments—to make the transition unstoppable.

Find out how collaboration across industries is essential to ensuring a successful energy transition.

When it comes to building a resilient energy transition, an understanding of where we've been guides us to where we need to go.

Scoping out profitable downstream future in Europe

Any well-rounded discussion about the decarbonization of industries must toss oil and gas into the mix. Downstream operations are often overlooked. That's a problem, since refining is responsible for 80% of all European oil and gas sector emissions.

It actually accounts for more direct emissions in Europe than the metals or cement sectors. In fact, in terms of emissions, oil and gas falls behind only chemicals and power generation. Even more critically, the refining sector supplies fuels for road transport, which in turn is responsible for nearly 900 million tons of CO_2/year. That's nearly three times that of the heavy material manufacturers combined.

The good news is that emissions related to refining are not the hardest to abate. The aviation and shipping sectors have a tougher go of it, given they are naturally restricted by space and weight limitations. Steel and cement producers are similarly limited. Their very high-temperature processes are not easily replaced with low-carbon technology alternatives.

In contrast, refineries are rather flexible on their feedstock and have the added advantage of possessing massive industrial sites with existing infrastructures capable of supplying lower-carbon fuels.

This is not to say decarbonization will be easy for refiners. Hardly. Yet, we see five opportunities for European refiners that can help them dramatically lower their Scope 1, 1, 2 and 3 emissions. These include:

- Switching to reliable, 100% renewable power
- Powering electrolysis processes with green hydrogen
- Investing in carbon capture, storage and utilization (CCUS) solutions
- Achieving process efficiencies
- Preparing for new, lower-carbon transport fuels

Find out more about how these actions can help refiners meet new demand, reduce direct and indirect emissions, and sustainably fuel the energy future.

When decarbonizing operations, European refiners need to steadily improve performance and think beyond their traditional refining assets.

Building resilience—and relevance

04

Resilience will be a defining characteristic of energy companies that successfully navigate the energy transition.

It is denoted by an organization's adaptability to market changes and customers' demands, and its willingness to pursue and capitalize on new opportunities—or even a new purpose when conditions warrant.

Re(de)fining resilience →

The race to agility: Upstream plans its next big move →

New pathways to relevance and profitability for E&P →

Re(de)fining resilience

Refiners' operating environments will be characterized by increasing pressures on margins, operational performance and safety imperatives, and diminishing talent pools.

In this environment, achieving resilience—defined as adaptability + responsiveness—is challenging. But not impossible. We believe refiners that get four things right can achieve the resilience that's now needed.

- **Asset and operational optimization.** Resilient businesses use real-time performance data to get the most from their assets. In most cases, refiners are not yet fully leveraging the power of data and analytics. To build resilience, operators must take the use of data and analytics to new frontiers.
- **Active cost management.** Resilient refining companies focus on highest-value production, while minimizing operational costs to fund future investments. To that end, they apply real-time insights and data-driven process improvements to keep costs down and asset utilization up. A data-based analytics approach can provide the visibility that's needed to pinpoint cost-reduction opportunities that, in turn, translate into bottom-line impacts.
- **An optimized workforce that is as productive as it is efficient.** Resilient organizations have the right people in the right roles, doing the right things with the right tools. Importantly, they augment their human capabilities with analytics, automation, artificial intelligence (AI) or other technologies to continually drive performance improvements.
- **A commitment to change.** Leaders not only understand the potential value at play, but also are willing to invest in building resilience. Their enthusiasm is well founded. Our analyses have found that strengthening, connecting and optimizing operations can deliver margin improvements of $0.5-1.5/barrel of oil (bbl), which translates into yearly profitability gains of $60-180 million for the average refiner.

Connecting and optimizing operations can result in yearly profitability gains of

$60-180

million for the average refiner.

Re(de)fining resilience

Connecting and optimizing operations is a particularly critical prerequisite for the resilience that's now required to successfully navigate the energy transition. Piecemeal solutions are no longer enough. Unlocking competitive advantage—and the full value potential of the organization—calls for an end-to-end approach.

We've identified three components that underpin a fully connected and optimized refiner.

- **A connected data foundation.** Resilience depends on granular visibility into the performance of onsite assets. That visibility—and the insights it enables—can only be gained with a mature data foundation built on cloud technologies, AI and other digital solutions.
- **An integrated operating model.** Resiliency leaders have little use for functional silos. They are moving toward fully connected operations with standardized processes and centralized functions. Access to integrated data and digital tools plays a big role in ensuring collaborative ways of working.
- **Intelligently managed assets and workers.** Leveraging the right resources at the right locations can boost the bottom line without sacrificing performance—and also free funds for additional investments in growth. Ecosystem partnerships can give downstream companies access to new capabilities, talent, innovations and even new sources of diverse data. Moreover, a refreshed talent strategy can help them attract and retain the best and brightest.

Find out more about how refiners can use resilience to their advantage—and the six steps they need to follow to build resiliency across their organizations.

The race to agility: Upstream plans its next big move

The rebounding price of oil surely bodes well for the oil and gas sector, right? Not so fast. We can't take too much comfort from the current prices, since they are largely due to artificial cuts by OPEC+, which are reviewed monthly.

The reality is that the market is still oversupplied, and the industry needs to adapt to a world where production will no longer grow by 1-3 percent per year on average. A first in over 100 years. The conventional tactics of cyclical layoffs, aggressive third-party concessions and capital expenditure reductions will be neither sufficient nor sustainable. The shortfall in the amount of cash needed is just too large.

We believe upstream players need to not only drive efficiencies, but also transform their operating philosophies to build business resilience. The name of the game is margin optimization. This means resetting and variabilizing cost structures to address lower demand and more volatile oil prices.

The good news is that the philosophical reckoning—and cost re-setting—are underway. A lot is going on in the industry. Portfolios are being realigned. Production forecasts are being adjusted. Investments are being re-directed to other parts of the value chain. Such actions will yield results. But will they be enough? And will they be sustainable? We're doubtful. A company can rarely cut its way to greatness—especially in an environment where pricing volatility is likely to continue vexing the industry for years to come.

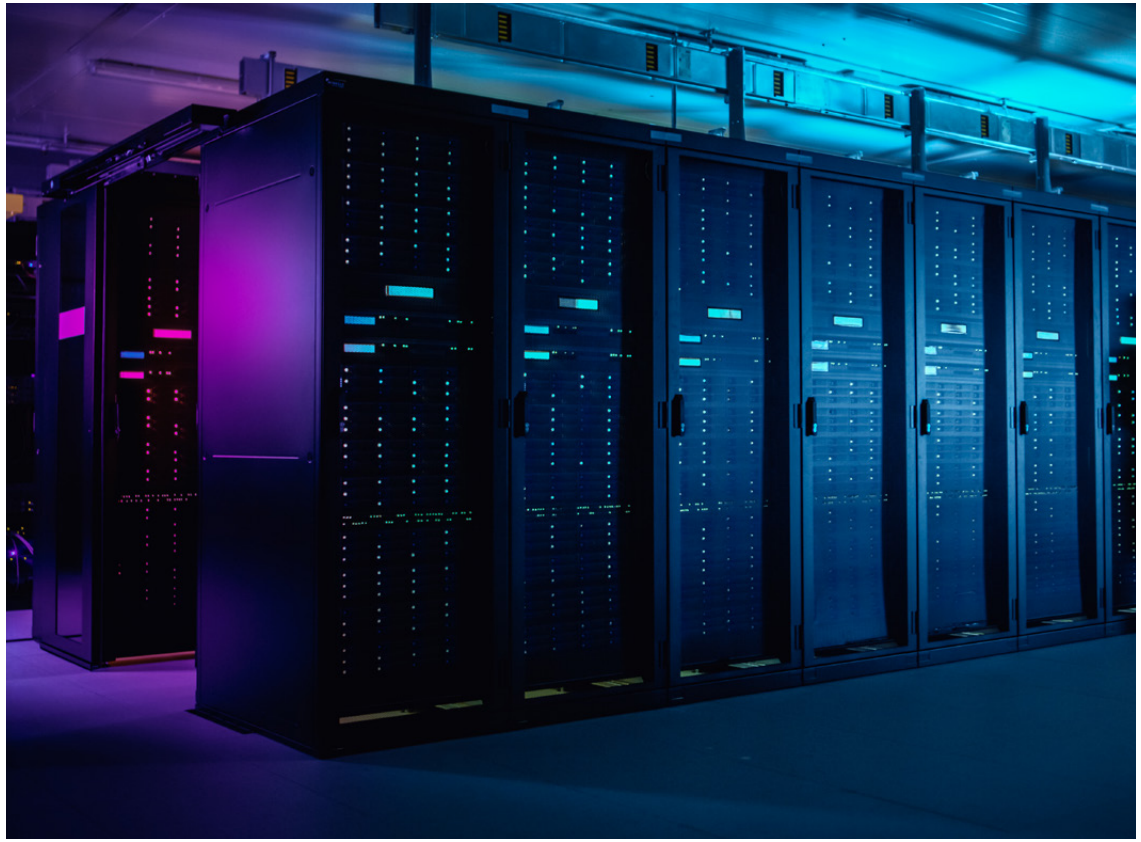
This is where the cost variabilization comes into play.

In the race to resilience, winning upstream players not only achieve efficiencies, but also transform their operating philosophies. Here's how.

The race to agility: Upstream plans its next big move

The aforementioned changes can usher in new value creation opportunities. They also create commercial and operational agility—important determinants of upstream companies' success in the future. There's been a lot of rhetoric about "agile" in energy companies in recent years. But its focus has been on IT; agility is still a novel idea when applied at the enterprise level. Why? Because three sets of barriers commonly get in the way.

Learn what those barriers are—and how lessons from outside the industry can help oil and gas companies overcome them once and for all.



New pathways to relevance and profitability for oil and gas

Today's exploration and production (E&P) companies operate in a world characterized by compressive disruption, volatile commodity prices, an overabundance of oil, and returns on invested capital (ROIC) that are lower than the weighted average cost of capital (WACC).

In this environment, they need to redouble their efforts to convince investors they are worthy of their attention. Most see only two paths to profitability.

- The first involves continuing to operate as they have in the past—but with some significant changes in terms of asset efficiencies, CO_2 and methane emissions, and energy intensity and waste.
- The second path takes them away from their core business altogether, toward alternative sources of value and renewables.

The truth is that resetting or sunsetting their oil and gas capabilities are not the only options for E&P companies. There is a broad middle ground of potential profitability—and renewed investor interest.

We see four new future roles for today's E&P players: Value chain specialists; asset class specialists; geographic specialists; or ecosystem specialists.

As they contemplate their next moves, exploration and production companies have more options than they realize. But less time than they think to make their choice.

New pathways to relevance and profitability for oil and gas

E&P companies will need to think carefully about which pathway(s) makes the most sense—operationally and financially. But regardless of the future they choose, E&P companies need to start thinking today about how they will operationalize their transition to a new, specialized business model. There are five key attributes every company needs to get right before they embark on their new path.

- **External positioning.** E&P companies need to effectively communicate the changes—and the financial reasons underpinning it—to their stakeholders.
- **Transparency.** Every E&P company should strive to achieve greater transparency in all that they do. Markets demand it. And companies benefit, too.
- **New ways of working.** As E&P companies consider their options for specialization, they should challenge the orthodoxies of their legacy operating models.
- **Capital and corporate structures.** The different pureplay options open to E&P companies require different capital and corporate structures. Developers, for example, might be best positioned in public markets. Ecosystem specialists may choose to operate as private enterprises. Owner-operators, joint ventures and partnerships are all possibilities.
- **Talent.** New skills, capabilities and roles will be needed. Recruiting, hiring and training will all be different. Remote working, too, must be considered part of the workplace strategy moving forward.

Learn more about how transitioning to a pureplay provider represents an untapped opportunity and offers a viable—and profitable—path forward.

Unlocking the power of talent and data

05

As oil and gas companies accelerate their digital transformations and reinvent themselves with new business models, new operational capabilities, and new and more agile ways of working, they often overlook two key elements of successful change: the data capabilities that unlock insights for better faster decision-making and the workforce capabilities that will bring the promise of those insights to life.

Designing the new energy workforce with applied intelligence →

Workforce enablement for the energy future →

And the walls came tumbling down: The OSDU™ Data Platform is dismantling data silos →

Designing the new energy workforce with applied intelligence

New workforce skills are essential to help oil and gas companies with more than just the energy transition.

As they shift away from legacy technology toward modern digital infrastructures, they will need a workforce that brings digital savvy to all aspects of their operations. Add to that society's demand for environmental accountability, a growing scarcity of talent and investor apathy, and the result is an energy industry tasked with an agenda for business transformation—change that requires a highly skilled, engaged workforce.

Given the shortage of new oil and gas talent today, reskilling and new-skilling existing employees can fill the talent gap. There are a couple of reasons this approach makes sense. For one thing, many energy workers are eager to further their careers, using their industry expertise. If organizations can retain these workers and reskill them for a more sustainable, clean energy future, they will have a win/win. Another bonus? Oil and gas companies that upskill employees instead of hiring new workers achieve 6X the cost savings.

Our analysis found that **34%** of all positions in energy companies are emerging roles that their existing workforces will need to fill.

Designing the new energy workforce with applied intelligence

Applied intelligence—a combination of artificial intelligence, data and analytics—allows energy companies to upskill employees and map out new roles far more easily than in the past. Applied intelligence also allows them to easily update skill and role repositories in real time as the business changes. Data science and skills analytics enable energy executives to map their existing workforces from declining roles to emerging ones, using skills proximity analysis.

More good news... As energy companies incorporate machine intelligence and automation into their operating models, machines will handle some of the more repetitive tasks previously done by humans. That means leaders can point their workforces toward more intellectually fulfilling and sustainable roles. Applied intelligence will help them do so more accurately, rapidly and at a scale previously not possible.

Learn which oil and gas skillsets are shifting and how companies can use applied intelligence to not only maximize the value from their existing workforces, but also deliver better employee experiences.

Oil and gas companies that upskill employees instead of hiring new workers achieve

6X

the cost savings.

Workforce enablement for the energy future

Energy companies can (and should) look outside the energy industry for insights into overcoming barriers to agility.

Fortunately, there are many examples of companies that have created a culture of agility and a workforce environment that nurtures it. One of them is Microsoft, which offers three valuable lessons:

- **Honor your past.** Microsoft's transformation involved capitalizing on its legacy of deep functional expertise in software engineering and problem-solving capabilities. Oil and gas companies can similarly translate their historic strengths to a new model.
- **Embrace a purpose-driven mission.** Microsoft's mission statement is to "empower every person and every organization on the planet to achieve more." The statement not only addresses the aspirations and needs of all people, but also aligns the enterprise to a common vision. Energy companies should similarly adopt a mission statement their workforces can get behind.
- **Don't fake it.** In addition to communicating relentlessly to the workforce about the need for, the drivers of, and the potential outcomes of a new direction, Microsoft grounded its culture in five cultural anchors. Energy companies can also develop similar non-prescriptive, guiding principles to help their people navigate the grey spaces around decision making. Performance management metrics aligned to each will further drive the right behaviors and ensure the workforce doesn't "fake it."

Read how Microsoft overcame its agility challenges—and how its lessons can help energy companies become the responsive, purpose-driven organizations they must now be.

Honoring the past, embracing a purpose-driven mission, and backing up claims are the building blocks of a cultural change that the energy industry needs.

And the walls came tumbling down: The OSDU™ Data Platform is dismantling data silos

In this fast-changing, value-focused environment, upstream companies have to make better, faster decisions.

They need granular insights and analytics to capture as much value as they can from their existing assets and operations. And they need connected infrastructures and operations to enable new levels of collaboration and agility. Achieving each of these imperatives requires a strong data foundation. Such a foundation underpins all digital transformation and all innovation.

Upstream leaders are starting to wrest control of their data landscape by investing in new data capabilities, AI solutions and cloud infrastructures. That's a step in the right direction. But because the underlying data that fuels these new capabilities is still scattered, non-standardized, duplicated, or is vendor-specific or of questionable quality, upstream operators have captured just a fraction of their data's value.

The good news is that companies can finally start reclaiming that value. How? By using the OSDU™ Data Platform, a solution designed by The Open Group OSDU™ Forum.

Accenture's analysis shows that the OSDU™ platform can help operators activate three value levers that, in turn, can generate a **5-15%** increase in return on capital employed (ROCE).

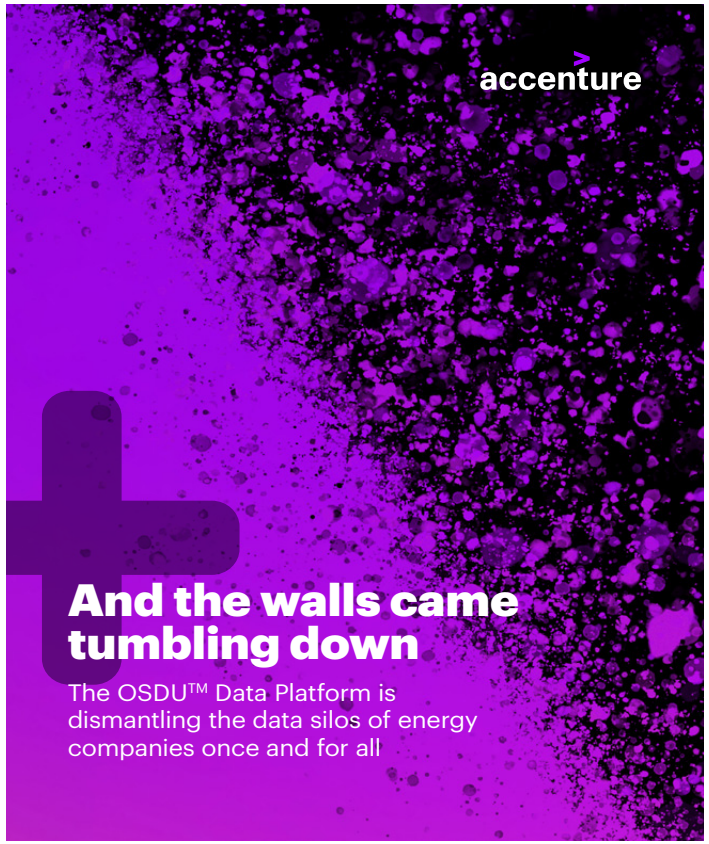
And the walls came tumbling down: The OSDU™ Data Platform is dismantling data silos

Comprising a set of services and workflows—and expressly designed for exploration and production (E&P) data domains—the OSDU™ Data Platform enables operators to store all subsurface, wells and surface, and new energy data into a single reference data platform. The open-source, cloud-based and technology-agnostic data platform solves the upstream energy industry's data structure, storage and access challenges in several ways:

- It contextualizes data in a single system of record.
- It eliminates data duplication, which lowers data storage costs.
- And it removes data silos and proprietary data formats, which increase the pace of innovation.

In these ways, the platform has the potential to dramatically improve application interoperability, accelerate workflows and drive operational efficiencies—all while delivering meaningful insights that inform better, faster decision making.

Find out the steps we recommend E&P companies take in order to capture the OSDU™ Data Platform's full potential.



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