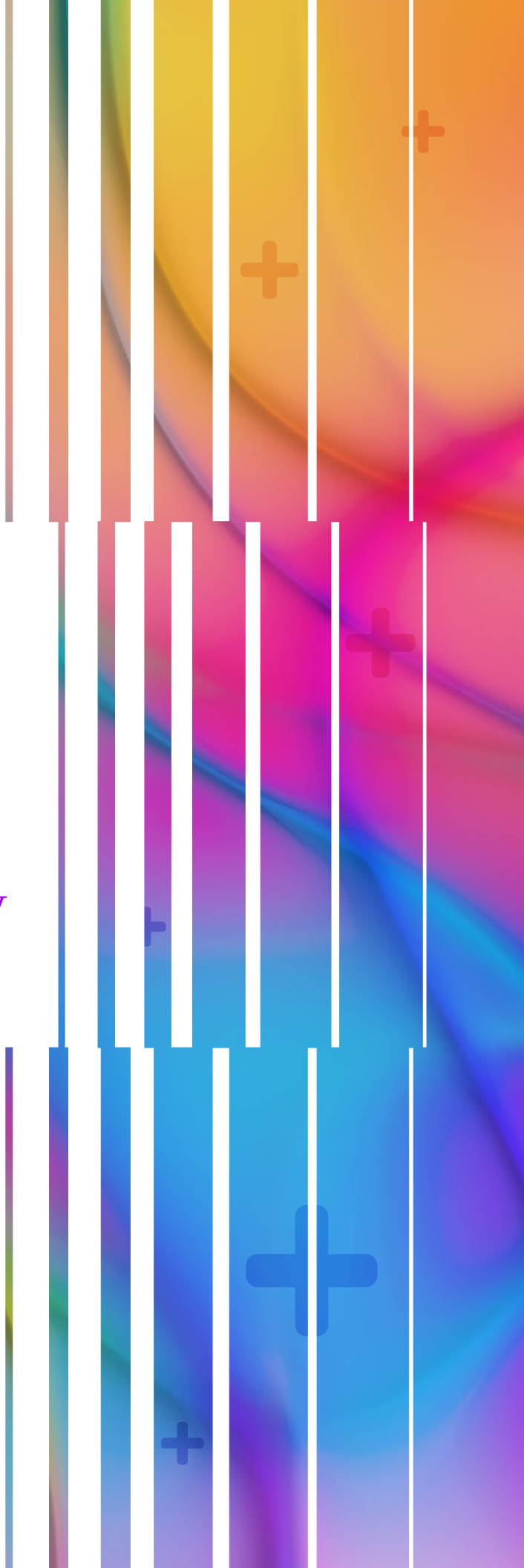
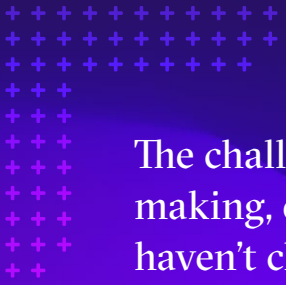




Fast forward

Accelerating the journey
to reinvention





The challenges facing the oil and gas industry have been years in the making, disrupting the business models and operating models that haven't changed in generations.

Today, oil and gas companies across the value chain recognize that the pressures that have been simmering in the background have reached their boiling point (see Figure 1). They are no longer avoiding or postponing the transformations needed to achieve profitability and maintain relevance in the years ahead. In fact, a recent Accenture survey found that almost 90 percent of the industry players recognize the need to change, and more than half are aiming to change their businesses fundamentally or significantly in the next three years. However, a smaller fraction is considering radical reinvention.¹

This is good news. But Accenture believes that significant or even fundamental changes will not be enough. The disruption is so pervasive, and the stakes so high, that nothing short of industry reinvention will do.

Figure 1. The energy system continues to expand. So do the consequences of rapidly growing and accelerating disruptive forces.



Why reinvent?

To identify the actions that will guide their unique journeys to reinvention, oil and gas companies must first understand the tangible consequence of the disruptive forces at play. Only then can they rally an effective response.

The game has changed forever.
The world will never run out of oil. What it will run out of is profitable oil.

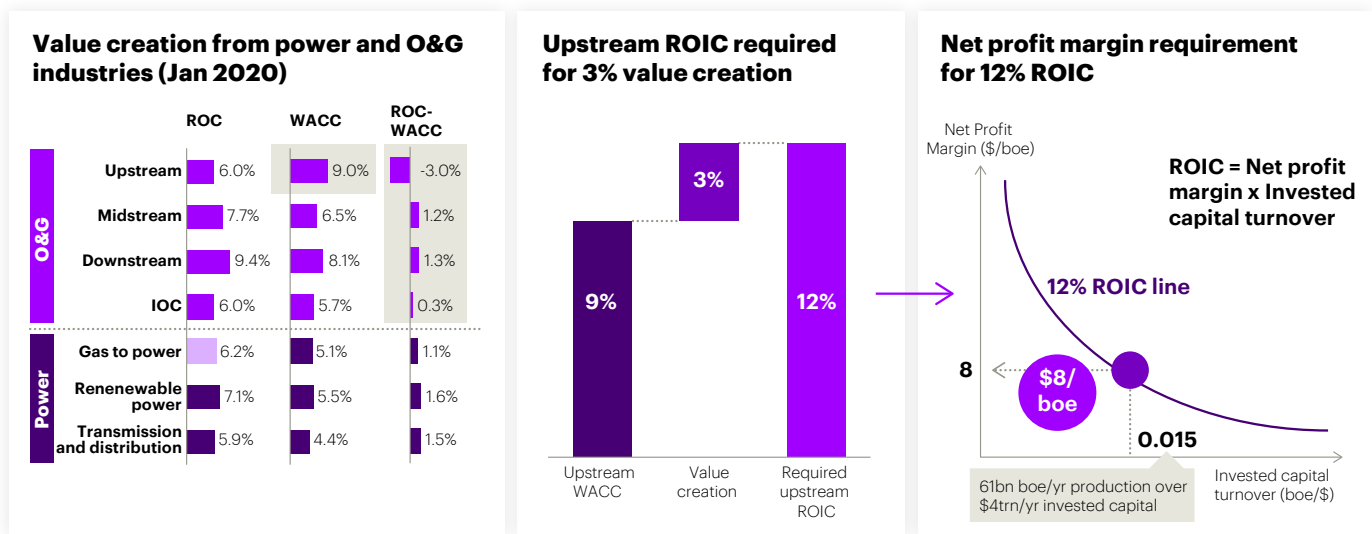
For starters, as GDP and populations grow, the world's energy needs will continue to increase—by a lot. It is estimated that demand for energy will grow by ~50 percent over the next three decades to sustain increasing levels of prosperity.² Much of this increase in energy consumption stems from emerging economies (predominantly in the Asia-Pacific region), which are urbanizing quickly, with growing industrial and transportation needs. Energy efficiency improvements will keep a lid on energy consumption in OECD countries.

However, to play a role in the expanding energy system of the future—particularly in non-OECD countries—Accenture estimates the industry will need to invest up to \$100 trillion over the next 20 years to ensure availability and sustainability of energy. Doing so will be challenging, considering the impact the **disruption of the energy system** is having on companies' returns, as well as their ability to attract the capital they need.

With industry returns nearing the cost of capital, it's not surprising that investments in the energy sector have plummeted over the past decade. To attract the investments they need, industry players will need to increase their returns by 50 to 100 percent—improving their returns on capital from mid-single digits to low/mid-double digits (see Figure 2).³

Figure 2. To attract investments for the expanding energy system, the industry needs to boost returns, not volumes

Industry returns have neared cost of capital and value creation has fallen below power generation → At today's level of invested capital, margins must equal \$8/barrel of oil equivalent (boe) to bring return on invested capital (ROIC) to 12% and value creation to 3%



Sources: Accenture analysis with IEA, Capital IQ, NYU Stern and S&P 500 data.

The expanding (and disrupted) energy system: Key takeaways

- Energy will continue to be the lifeblood of global economy—and a requirement for sustainable human development.
- Global energy demand, primarily in non-OECD countries, and investment requirements will continue to grow.
- Industry disruption has severely impacted returns and the industry's ability to attract capital.
- To accommodate the requirements of an expanding energy system, the oil and gas industry will have to significantly improve returns (by 50-100 percent).

Take your foot off the gas

Because natural gas is cleaner than coal and can be cheaper than renewables in some countries, many consider it to be a viable transition energy source. It is, but not for the long term. Demand for LNG gas will rise over the next decade. But so will the cost of carbon taxes, the investments in production and transport infrastructures, and the competitiveness of renewables. To remain competitive with coal or solar in key markets such as India after 2025, upstream gas prices will need to fall by more than 35 percent.⁴

Supply diversification is also a big source of disruption. While the overall energy supply will grow over the next 30 years, most of that growth will come from new energy sources such as nuclear, hydro or renewables. Fossil fuels' share of the energy mix will drop from ~85 percent today to ~65 percent by 2050. Oil demand is expected to peak at the end of this decade.⁵ At that point, oil producers will face a serious conundrum. Their operating environment will likely be characterized by carbon taxes, increasing margin pressures, diminishing talent pools, and cost parity between ICE and electric vehicles. To compete, breakeven oil prices will need to come down from US\$50/bbl in early 2020 to just over US\$25/bbl.⁶ This may seem like an impossible task. It is not. Accenture analyses have determined that the industry can gain approximately US\$500 billion currently trapped in operational inefficiencies.

Supply diversification: Key takeaways

- Energy supply will grow, but fossil fuels may continue to lose share.
- Oil demand will remain steady this decade, peaking toward the end of it. After that, demand may depend on economic improvements and the pace of decarbonization across industries.
- Gas will continue to be a key transition fuel, but the competition from renewables could limit its growth. Over time, gas will require substantial improvement in economics.
- The shift to electrification in transportation and power may continue to pick up its pace.

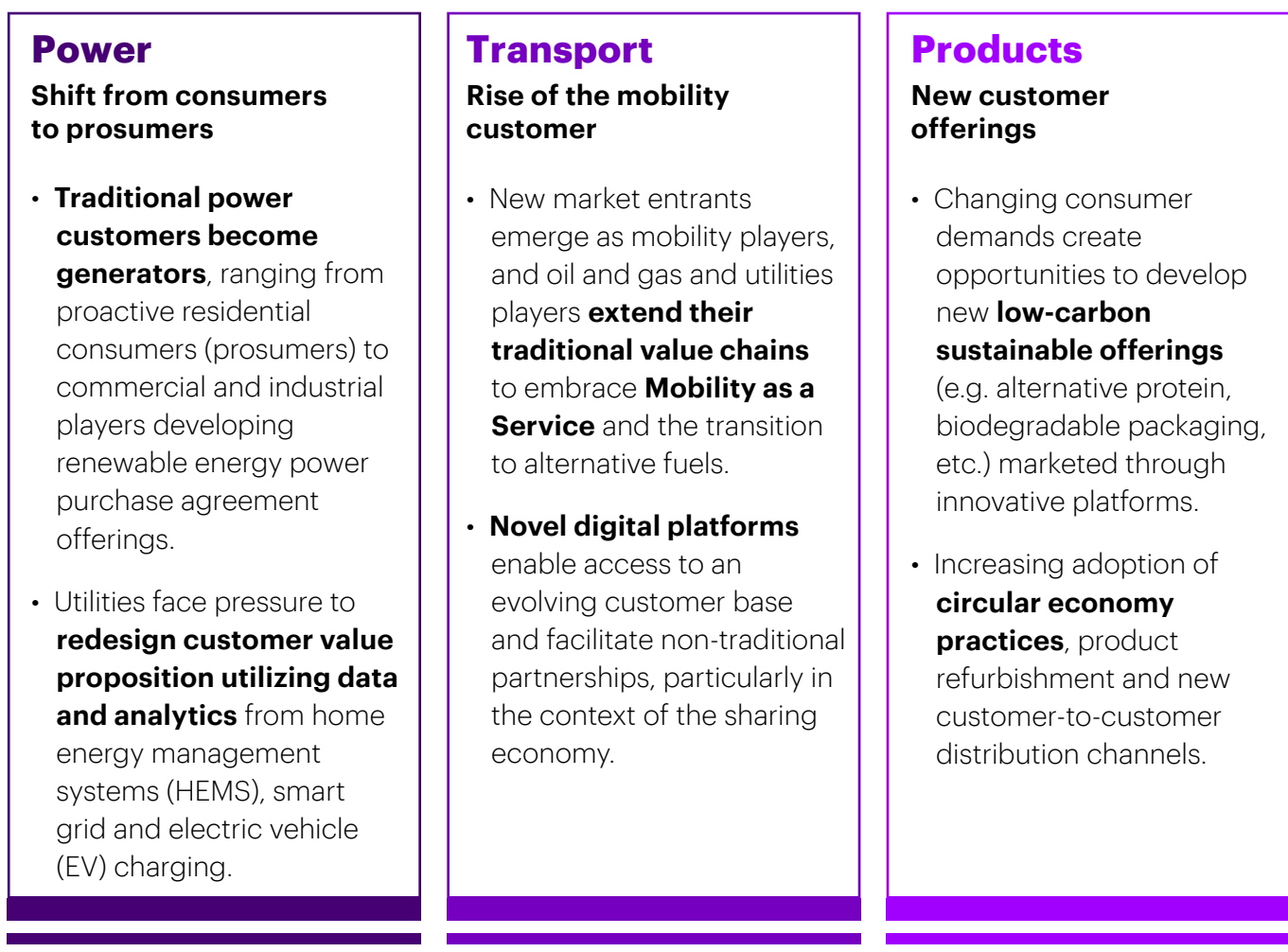
There's also the ongoing **demand evolution** with which the oil and gas industry must contend. Companies are having to pivot from being commodity businesses to customer-centric businesses—from businesses that extract resources to businesses that need to maximize the value captured from serving customers through energy (including low-carbon) solutions and services.

That shift marks new territory for the industry. For example, few have considered the importance of omnichannel strategies, which our research shows can lead to 80 percent more engagement. They may not understand that 63 percent of customers want products and services to be tailored to their needs.

Or that 72 percent of B2B customers want customized product offerings. Or that 33 percent of Gen Y/Z consumers are willing to pay more for purpose-led brands.⁷

Understanding such B2B and B2C customers' preferences and expectations is a first step to creating the types of channels, interactions—even partnerships and business models—that will keep customers engaged. The convergence of sectors is opening up new opportunities for oil and gas companies to collaborate across sectors and better serve energy customers of the future, particularly in the areas of mobility, power and low-carbon products (see Figure 3).

Figure 3. Three major trends are leading to the rise of the new energy consumer



Source: Accenture analysis.

Demand evolution: Key takeaways

- The energy industry is shifting from commodity-focused to customer-centric.
- Both B2B and B2C customer preferences and expectations are rapidly evolving.
- As target customers and their demands evolve, new disruptors, partnerships, business models and channels are emerging.
- The convergence of sectors is also opening up opportunities beyond traditional value chains—particularly in mobility, power and products.

Technology is another disrupter for the industry—in particular, the adoption of **digital technologies** (see Figure 4). Whereas other industries have embraced digital transformation (and generally been rewarded for their efforts), the energy industry has fallen behind. It has relied predominantly on operational technologies, for example, to improve production breakeven economics.

There are signs the industry is now catching up (see Figure 5). Our 2019 **Upstream Oil and Gas Digital Trends Survey** found that artificial intelligence, machine learning and data analytics are big areas of investment focus in the coming years. Planned investments in cybersecurity, however, have dropped. This could pose a problem given the rapid growth in cyber threats facing the industry.

Figure 4. Technological disruption is extending beyond the oilfield

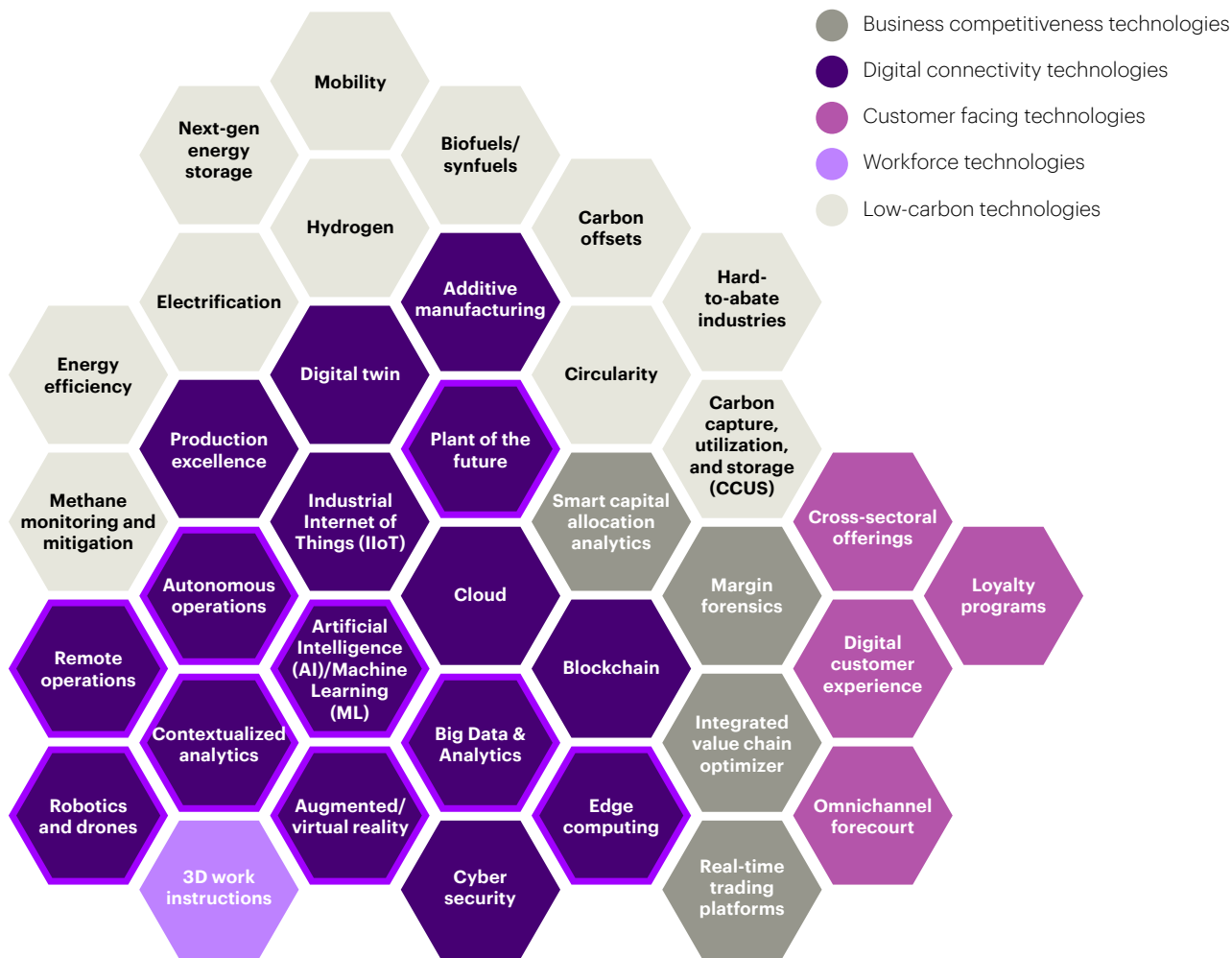
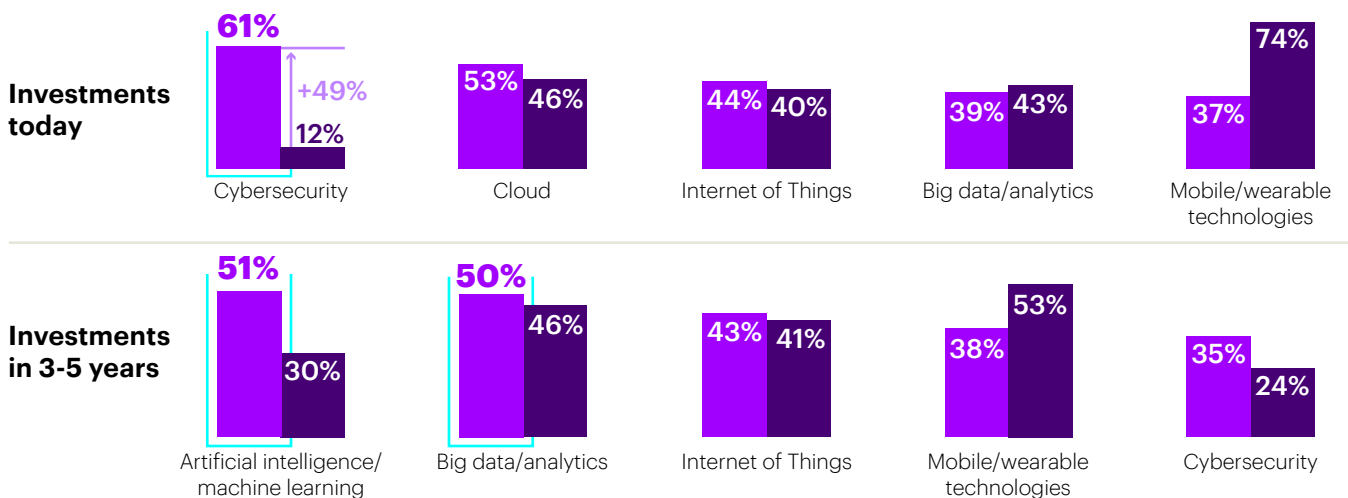


Figure 5. Oil and gas digital leading technology adoption plans

Which digital technologies is your organization investing in today and over the next 3-5 years?



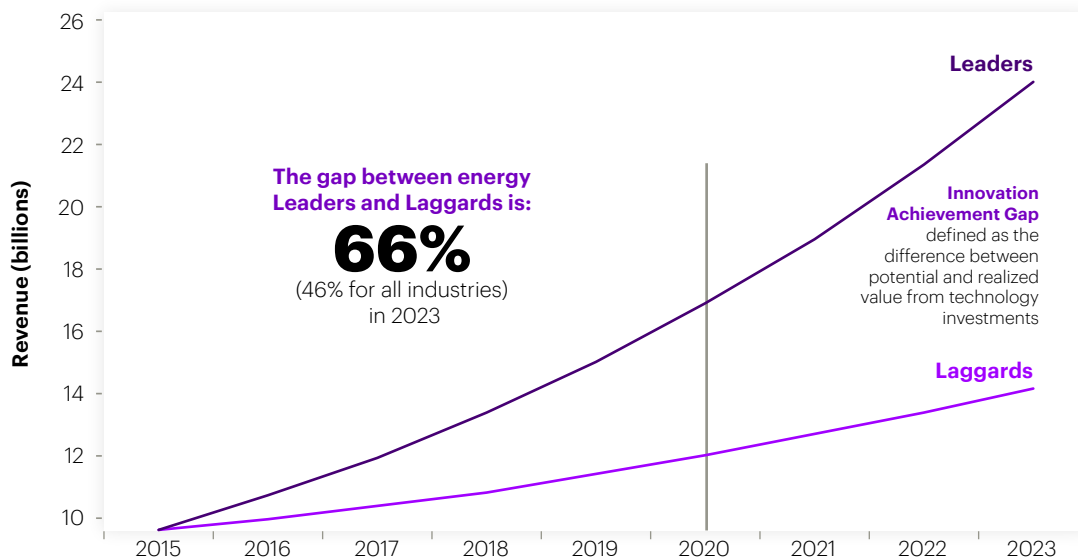
Global (N=255). Responses do not add up to 100%. Top five responses shown only.

Source: [Accenture Upstream Oil and Gas Digital Trends Survey 2019](#).

Accenture research has found that digital leaders in energy significantly outperform their peers (see Figure 6). For others to follow suit, they will need to make two structural changes: shift to an API-driven modular architecture that enables fast scalability; and deploy data hubs and data governance practices to underpin a well-defined digital strategy.

Figure 6. Digital leaders in energy enjoy sizable performance advantages

Revenue growth for two companies under study (2015-2023)



Sample: All O&G companies' respondents (n=350)

The analysis considers two companies making \$10 bn revenue in 2015. One is a Leader and the other is Laggard. The graph models their revenue based on actual data from Accenture research.

Source: Accenture research – Full Value. Full Stop.

Technology disruption: Key takeaways

- The energy industry has continued to primarily rely on operational technologies for its performance.
- Digital technologies are changing the game—and the industry has been left behind and continues to underspend, despite a greater urgency to transform.
- A broad portfolio of technologies is emerging that could redefine the energy system.
- Industry leaders may reap disproportionate rewards; significant performance gaps are already emerging.

Few challenges are having a greater impact on the future of oil and gas than **stakeholder pressure**. Environmental stewardship is now top-of-mind for customers and investors. Regulators are toughening their stance on carbon emissions by implementing carbon taxes and other price initiatives.

The role of, and impact to, the energy industry in alleviating emissions will be substantial (see Figure 7). And energy company employees, who expect their employers to be a force for good, not just a generator of profits, are also paying close attention. Climate action is particularly important for companies looking to attract young talent; only 24 percent of today’s energy workforce is under 35, compared to 32 percent across other industries.⁸ For all these reasons, climate and other environmental, social, and governance (ESG) commitments and disclosures are becoming essential to oil and gas companies maintaining their social license to operate.

An Accenture analysis has determined that a carbon price of US\$50-100/ton CO₂ would add approximately US\$5-10 to the cost of every barrel of oil in the United States by 2025.

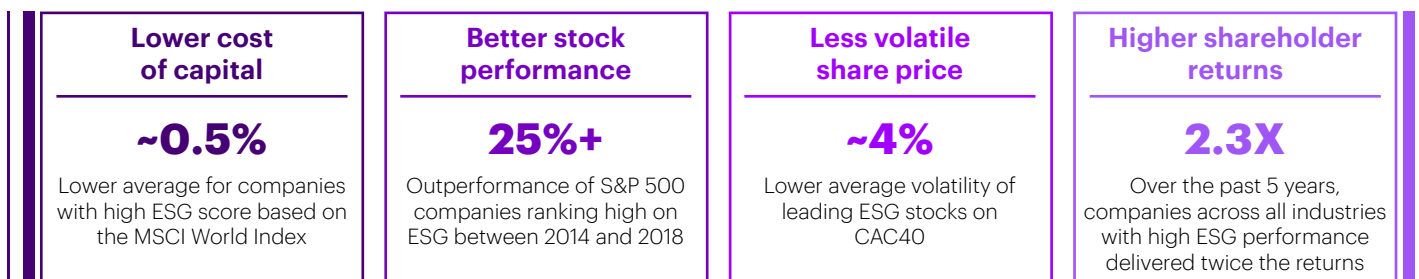
Figure 7. Energy industry must play a central role in alleviating environmental concerns... the systemwide cost of doing that will not be trivial

	Industry	Emissions ('20-'50)		Energy intensity (% cost)		Cost impact		
Transportation	Light transport	3.6 Gt	+61%	5.8 Gt	-20-40%	\$180-290B	2-5%	~\$0.02 per mile
	Heavy road	2.5 Gt	+84%	4.6 Gt	-30-40%	\$125-230B	5-10%	~\$0.12 per mile
	Aviation	1.0 Gt	+80%	1.8 Gt	-20-25%	\$50-90B	5-10%	~\$15 per ticket
	Shipping	0.9 Gt	+89%	1.7 Gt	-50-60%	\$45-85B	10-20%	~\$91,000 per trip
Industrials	Steel	2.3 Gt	+43%	3.3 Gt	-20-40%	\$115-165B	15-20%	~\$60 per ton
	Cement	2.2 Gt	+5%	2.3 Gt	-25-30%	\$110-115B	30-35%	~\$25 per ton
	Chemicals	1.5 Gt	+31%	2.0 Gt	-80-90%	\$75-100B	5-10%	~\$130 per ton plastic
Commercial	Retail	3.8 Gt	+119%	8.3 Gt	~5-10%	\$190-415B	1-2%	~\$0.01 per \$ of sales
	Power - gas	2.9 Gt	+72%	4.9 Gt	-70-80%	\$145-245B	20-25%	~\$0.01 per kWh

Sources: Accenture 2050 Carbon Emissions model; Accenture analysis based on industry cost structures.

Importantly, the benefits of strong ESG performance extend far beyond goodwill and investor interest. It has a direct positive impact on an oil and gas company's financial performance (see Figure 8). This translates into a critical advantage in an industry that has lagged nearly all others in terms of value creation.

Figure 8. Companies with better-managed ESG risks and high ratings demonstrate:



Sources: Accenture analysis; various industry reports; Climate Disclosure Standards Board; Accenture Research analysis of Ceres database.

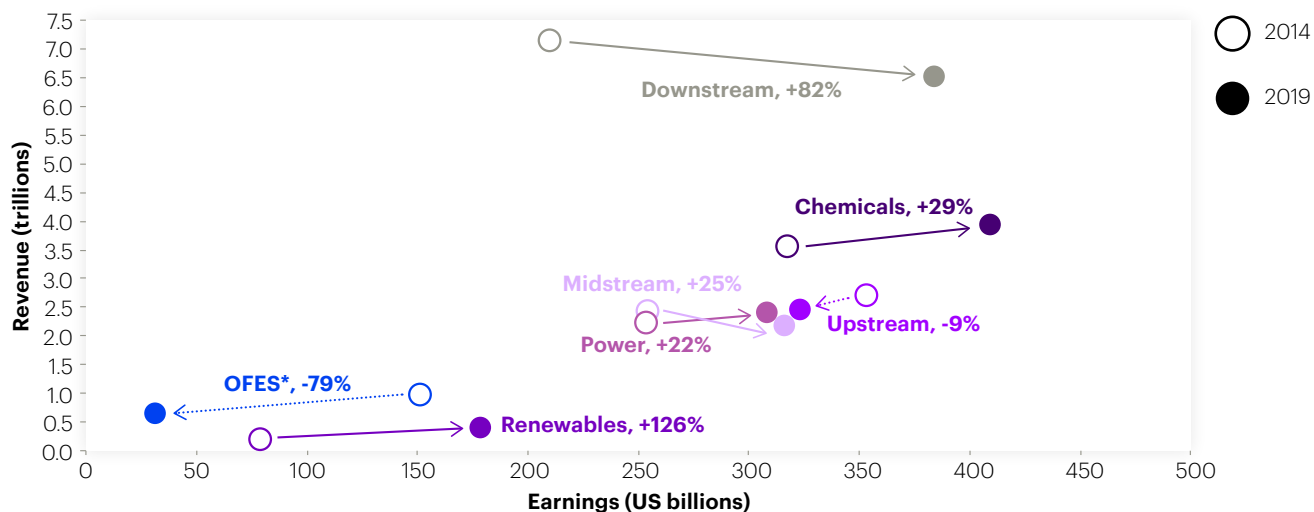
Stakeholder pressure: Key takeaways

- The energy industry faces stakeholder pressure on all fronts and ESG disclosures are becoming essential for oil and gas companies to maintain their social licenses to operate.
- A focus on being purpose-led and environmentally conscious is key for investors, customers, regulators and employees.
- As a contributor to a majority of the emissions, the industry has a central role to play in driving toward net zero by 2050; a challenging road lies ahead.
- Despite the challenges and added expectations, strong ESG performance is earning disproportionate rewards—a trend that will only continue to become more prevalent and prominent.

The final challenge disrupting the oil and gas industry is the **dynamic nature of value itself**. Value pools have steadily been shifting closer to the customer. Before the pandemic-related drop in demand, sectors downstream of the wellhead were generating acceptable (and improving) margins, but upstream margins continued to erode (see Figure 9). Value is also shifting from molecules to electrons, thanks to electricity demand growth.

Over time, as the supply curve flattens, power will likely see its profitability shrink. And as energy production becomes less differentiated, energy companies will need to find new sources of value and differentiation. They will also likely need to compete on a different risk and return paradigm. That is, they will need to weigh their investments and measure their results on a “per-joule” basis (see Figure 10).

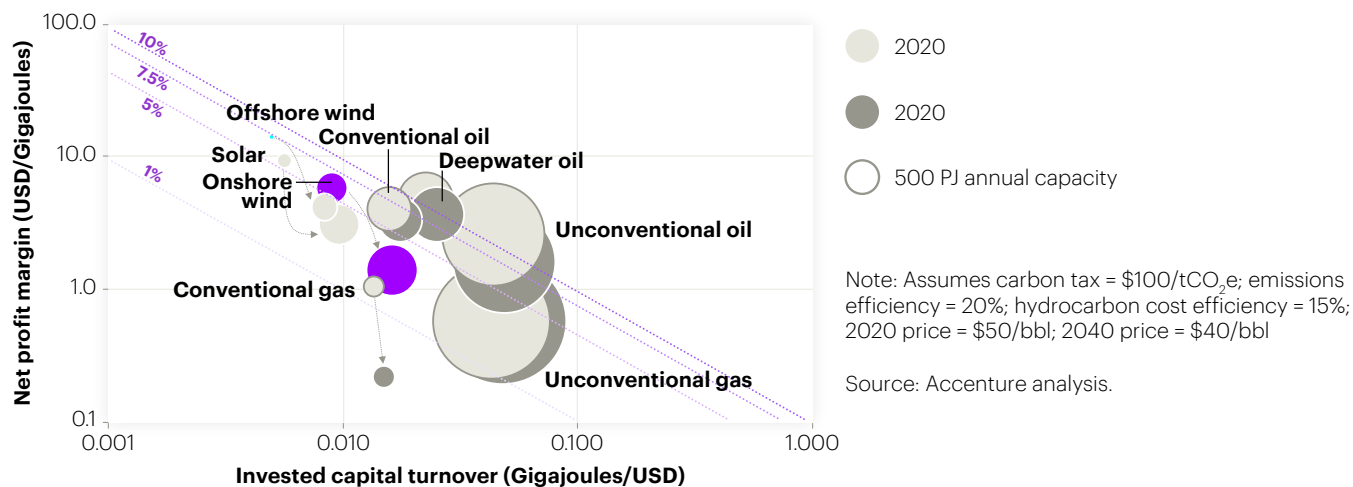
Figure 9. Changes in revenue and earnings by segment, 2014 - 2019



*Oilfield and equipment services

Source: Accenture analysis on 270 public energy companies over US\$1 billion in revenue and 264 public utilities companies over US\$1 billion in revenue.

Figure 10. To optimize value, companies need to weigh their investments on a price-and-profit-driven “per-joule” basis



Shifting value pools: Key takeaways

- Value has been shifting closer to the customer, downstream and into electrons.
- The value pools will continue to be dynamic; this is already being seen in downstream and chemicals sectors (where margins are getting impacted) and may extend to power.
- Energy companies may have to eventually compete on a different basis—risk and return per joule.
- New energy consumption patterns pave the way for fluidity and convergence across sectors, offering players opportunities to expand their traditional value chains.

What does reinvention look like?

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.

Reinvention leaders expect high returns (see Figure 11). Their actions make attaining these results realistic. If the industry at large were to follow suit, Accenture analysis suggests that it could unlock more than US\$0.5 trillion in margins.

Our research identified that companies leading the race to reinvention set themselves apart—not only through their actions, but also through their ambition.

Figure 11. Reinvention leaders expect big returns



Note: All figures shown are based on **self-reported** expectations for the next 3 years. Global (N=214).

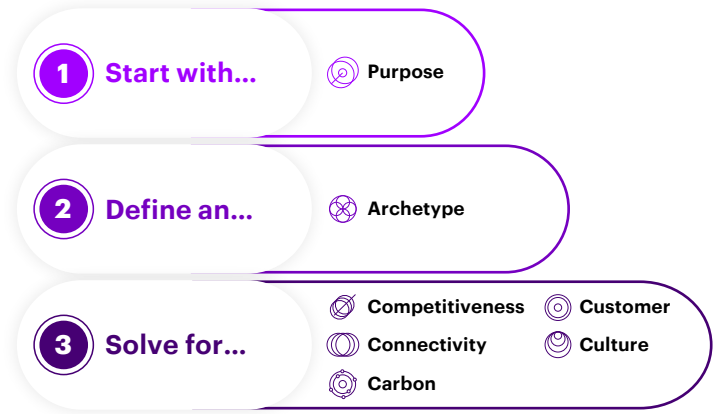
● Leaders ● Laggards

Source: Necessity is the mother of (re)invention (2021). Accenture.

Achieving these types of returns requires a focused strategy for reinvention (see Figure 12).

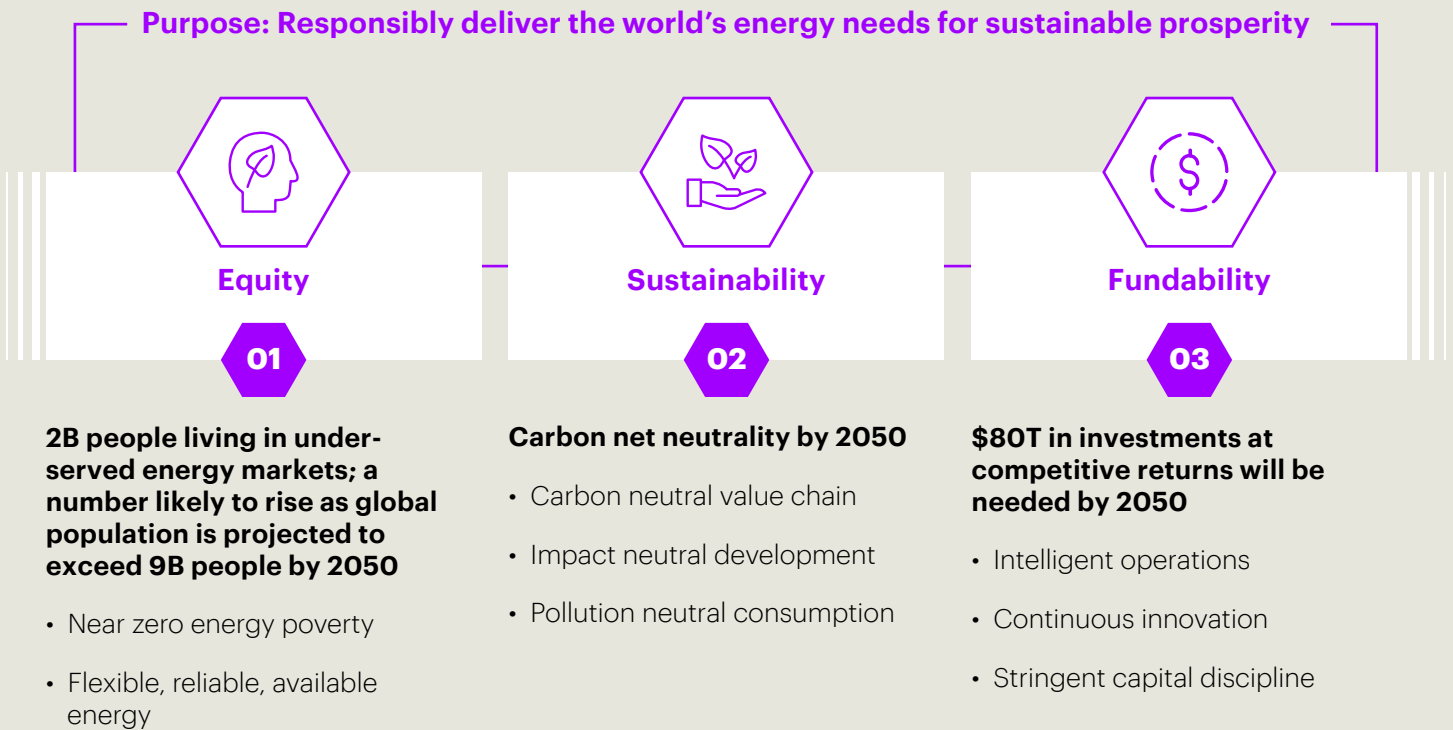
The journey starts with a clear **purpose**—one that drives relevance by balancing three critical elements: energy equity, energy sustainability and energy fundability (see Figure 13). These elements serve as a north star for reinvention. Regardless of the course the journey may follow, all companies will need to do their part to deliver reliable energy to all, achieve carbon net neutrality by 2050, and deliver competitive returns to investors.

Figure 12. The building blocks of reinvention



Source: Accenture analysis.

Figure 13. Energy companies must reinvent with a purpose that balances three critical elements



Source: Accenture analysis.

Next, companies need to identify the **industry archetype** they want to become. Accenture believes there are three end states from which to choose (see Figure 14). Each archetype will play a critical role in the world’s energy future. Each will require a different path to reinvention.

With the purpose set and future state identified, oil and gas companies can launch their reinvention journey. We believe that journey must incorporate actions across five critical dimensions, which we call the “5Cs” (see Figure 14).

Figure 14. Energy companies must identify the archetype they aspire to become. That decision determines the reinvention path they should take.

	The Energy Major	The Oil & Gas Specialist	The Low-Carbon Leader																											
Scope/summary	<ul style="list-style-type: none"> Covers the full energy value chain Plays in both hydrocarbons and low-carbon fuels at scale 	<ul style="list-style-type: none"> Focuses on oil and gas production Plays mainly in hydrocarbons, with a large focus on ESG 	<ul style="list-style-type: none"> Covers the full energy value chain Plays in both hydrocarbons and low-carbon fuels at scale 																											
Business model	<ul style="list-style-type: none"> Molecules, electrons, and solutions Assets and solutions 	<ul style="list-style-type: none"> Molecules Asset owner/operator 	<ul style="list-style-type: none"> Solutions Solutions provider 																											
Scale and margin	<ul style="list-style-type: none"> Large scale Medium to high margins 	<ul style="list-style-type: none"> Medium to large scale Low to medium margins 	<ul style="list-style-type: none"> Small to medium scale High margins 																											
Sources of value	<ul style="list-style-type: none"> Cross-value chain margin excellence Resource, customer and integration 	<ul style="list-style-type: none"> Cost and operational excellence Supply-side (resource) 	<ul style="list-style-type: none"> Technology innovation Demand-side (customer) 																											
Path to reinvention	<div style="border: 1px solid black; padding: 5px;"> <p>Competitiveness → Diversified portfolio and margin excellence</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Customer</td> <td>Culture</td> <td>Carbon</td> </tr> <tr> <td>↓</td> <td>↓</td> <td>↓</td> </tr> <tr> <td>Personalized solutions</td> <td>Industry collaboration</td> <td>Portfolio rebalancing</td> </tr> </table> <p>Connectivity → Enterprise digital twin platform</p> </div>	Customer	Culture	Carbon	↓	↓	↓	Personalized solutions	Industry collaboration	Portfolio rebalancing	<div style="border: 1px solid black; padding: 5px;"> <p>Competitiveness → Dynamic portfolio and cost excellence</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Customer</td> <td>Culture</td> <td>Carbon</td> </tr> <tr> <td>↓</td> <td>↓</td> <td>↓</td> </tr> <tr> <td>Modernized experience</td> <td>Agility and nimbleness</td> <td>O&G De-carbonization</td> </tr> </table> <p>Connectivity → Connected operations</p> </div>	Customer	Culture	Carbon	↓	↓	↓	Modernized experience	Agility and nimbleness	O&G De-carbonization	<div style="border: 1px solid black; padding: 5px;"> <p>Competitiveness → Differentiated technology and digital excellence</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td>Customer</td> <td>Culture</td> <td>Carbon</td> </tr> <tr> <td>↓</td> <td>↓</td> <td>↓</td> </tr> <tr> <td>Innovation partnerships</td> <td>Ecosystem orchestrator</td> <td>Clean energy first</td> </tr> </table> <p>Connectivity → Cloud-based product innovation</p> </div>	Customer	Culture	Carbon	↓	↓	↓	Innovation partnerships	Ecosystem orchestrator	Clean energy first
Customer	Culture	Carbon																												
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Modernized experience	Agility and nimbleness	O&G De-carbonization																												
Customer	Culture	Carbon																												
↓	↓	↓																												
Innovation partnerships	Ecosystem orchestrator	Clean energy first																												

Source: Accenture analysis.



Competitiveness

Companies should design for **profitable** reinvention. How? By deploying enterprise-wide transformations targeted at diversifying their asset, product and service portfolios and improving their operating capabilities. Further, oil and gas companies can no longer define success by the volumes of oil and gas they produce. They must compete on the basis of ESG criteria and also the returns they can generate on capital employed (ROCE) (see Figure 15). Our research has shown that nothing is off the table for reinvention leaders. They are rethinking their business models and operating models in tandem. They are looking to expand their reach to new geographies and asset classes, introduce new products and services (both within and outside of the oil and gas industry), and develop the capabilities they will need to deliver on their new business ambitions.

Think like a leader

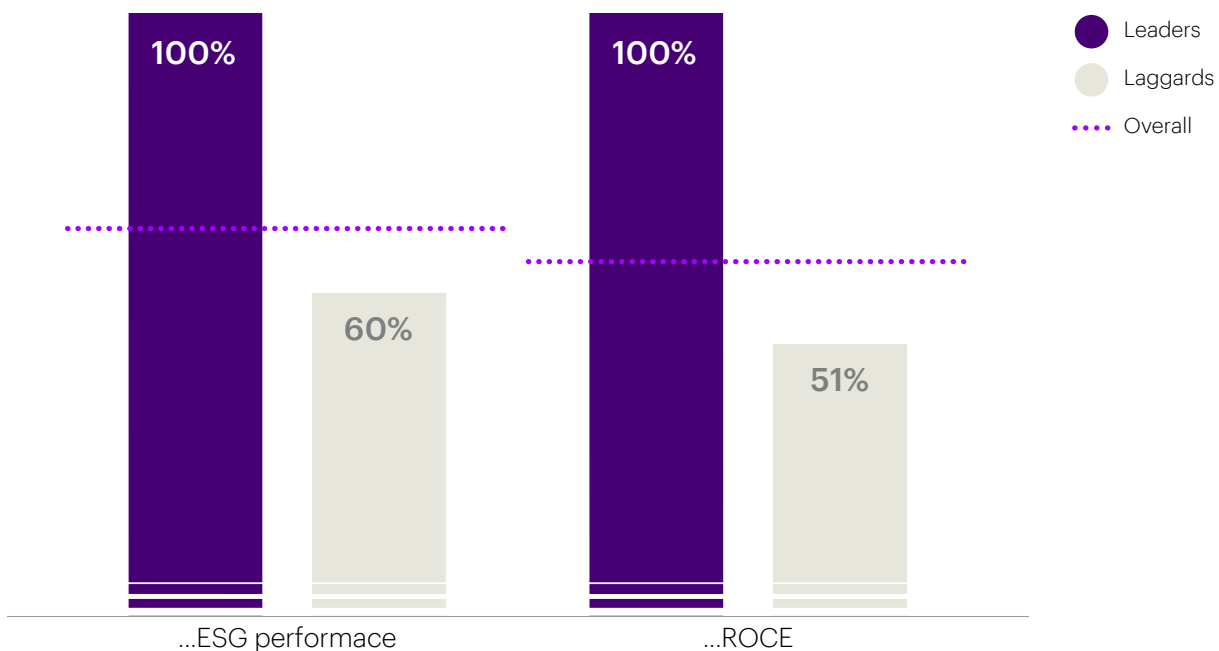
Leaders in Competitiveness design for profitable reinvention through enterprise-wide transformations targeted at diversifying their asset, product and service portfolios and improving operating capabilities.

Act like one, too

- Focus on ROCE, not volumes.
- Ensure operations and functions are in “lock-step.”
- Leverage new and existing ecosystems and partnerships.
- Capture the green multiple.

Figure 15. Leaders focus on improved returns and ESG performance and less on production volumes

Percentage of respondents expecting competitiveness initiatives to drive **strong** impact on...



Sample: Global (N=214).

Source: Necessity is the mother of (re)invention (2021). Accenture.



Carbon

Companies must go beyond reacting to external ESG pressures to proactively create new sources of revenue outside traditional oil and gas (see Figure 16). Leaders take decisive and practical near-term actions—such as investing in energy management solutions, focusing on achieving significant process efficiencies, and deploying better carbon-detection and management technologies. Over the longer term, companies can set themselves apart by establishing low-carbon business segments designed to drive margin and revenue growth.

Think like a leader

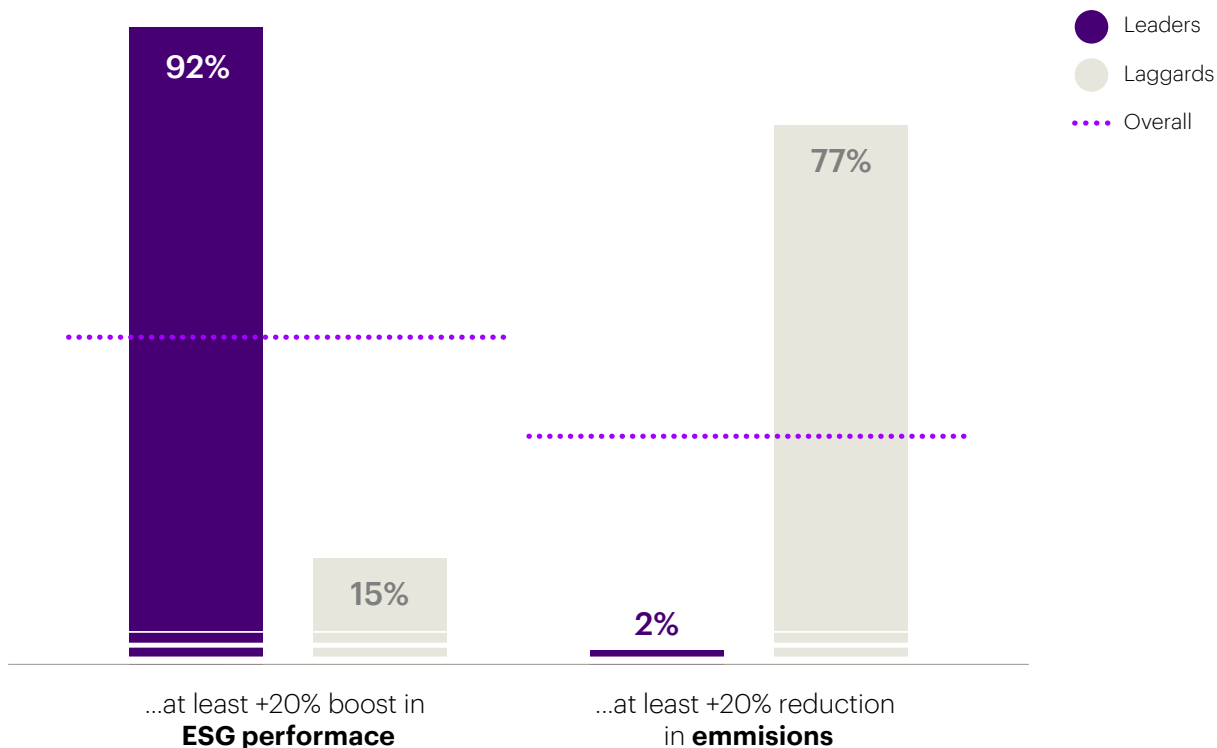
Leaders in Carbon go beyond reacting to external ESG pressures and are proactively creating new sources of revenue outside traditional oil and gas.

Act like one, too

- Move fast.
- Go low (carbon).
- Act as though carbon already has a price.
- Extend partnerships.

Figure 16. Leaders believe their carbon-related actions will deliver significant results

Percentage of respondents that expect carbon initiatives will drive...



Sample: Global (N=214).

Source: Necessity is the mother of (re)invention (2021). Accenture.

Connectivity

Reinvention calls for uniting an enterprise around a common vision and enabling workforces to collaborate to drive agreed-upon results. Digital technologies play a critical role in making the necessary connections possible. Companies must focus on digital transformation, not experimentation, (see Figure 17) and target financial and carbon-related metrics by implementing cloud, Internet of Things (IoT) and mobility solutions. And they must design connectivity programs to improve both “soft” metrics—such as employee engagement and customer satisfaction—and traditional financial and operational measures such as margin and ESG performance.

Think like a leader

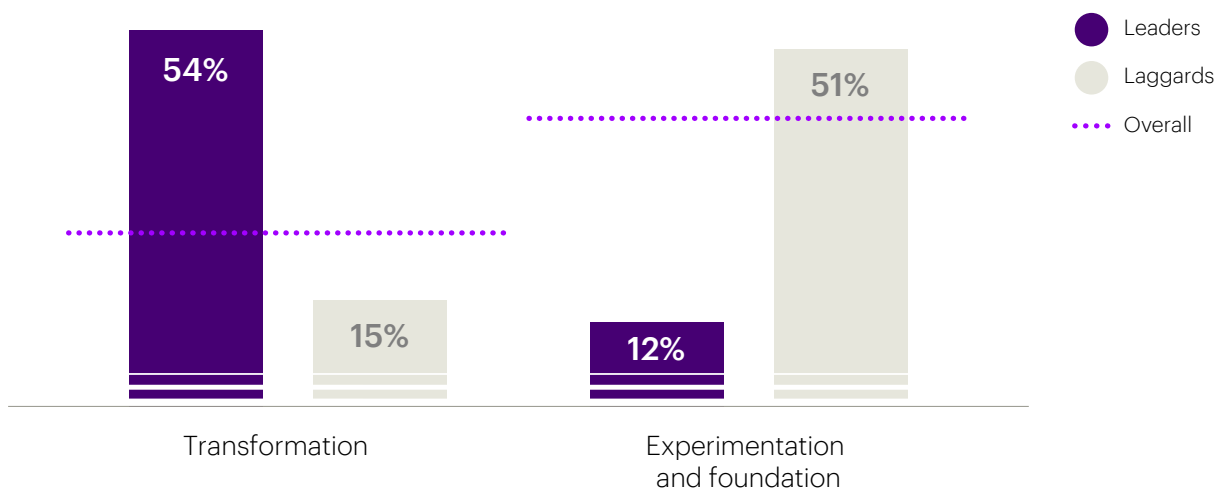
Leaders in Connectivity focus on digital transformation, not experimentation, and target financial and carbon-related metrics by implementing cloud, IoT and mobility solutions.

Act like one, too

- Don't simply follow the “cloud crowd;” consider cloud a strategic enabler.
- Build data management muscle.
- Focus on defense.
- Think enterprise-connectedness.
- Connect the dots across peers, suppliers and customers.

Figure 17. Leaders have bolder ambitions for cloud

Percentage of respondents goals for cloud this year



Survey question: What actions are you planning in the next year to improve your cloud capabilities? Global (N=214). Showing only two out of five response options.

Source: Necessity is the mother of (re)invention (2021). Accenture.



Customer

As oil and gas companies reinvent, they need to pivot from being commodity businesses to customer-centric businesses. From businesses that meet energy demand to businesses that solve problems. To manage this shift, they need to focus on creating a differentiated customer experience (see Figure 18) by actively responding to customer preferences and personalizing offers and interactions wherever possible. Digital investments are needed to continually improve experiences across the customer journey.

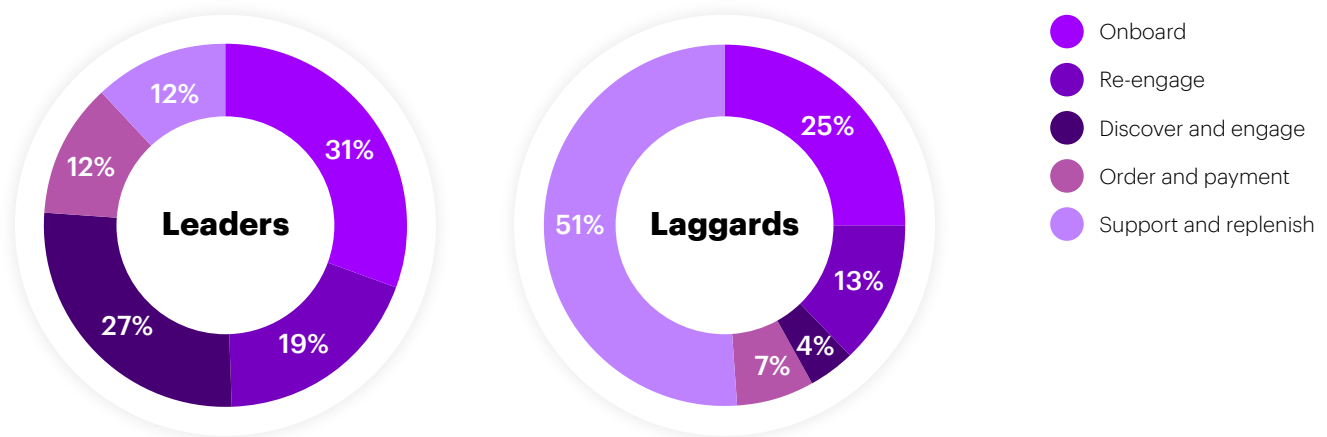
Think like a leader

Leaders in Customers focus on creating differentiated experiences by actively responding to preferences and improving customer segmentation.

Act like one, too

- Manage customers, not molecules.
- Create a customer/business experience management function.
- Solve customer problems.
- Reshape the portfolio.
- Create high barriers to defection.

Figure 18. Leaders use digital technologies to create a differentiated, end-to-end customer experience



Sample: Global (N=214).

Source: Necessity is the mother of (re)invention (2021). Accenture.



Culture

Reinvention does not happen without the buy-in of those charged with executing it. The entire organization needs to rally behind change, align to a reformulated purpose, and embrace new ways of working. The c-suite, for its part, must create the environment in which a new culture and new levels of productivity can flourish. That means enabling collaboration between teams and functions and creating engaging and rewarding employee experiences at every turn (see Figure 19).

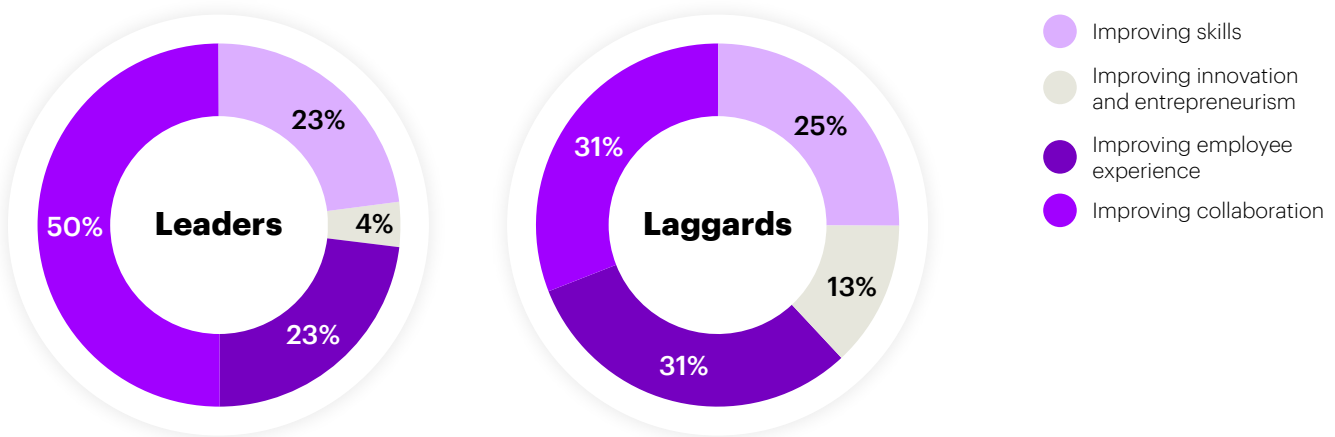
Think like a leader

Leaders in Culture recognize the value of collaboration to boost productivity and employee satisfaction and are focused on improving collaboration across functions and teams.

Act like one, too

- Make purpose a magnet for talent.
- Reimagine the work and the workforce.
- Design the organization for teamwork.
- Create an environment of experimentation.

Figure 19. Leaders and laggards emphasize Culture actions differently



Sample: Global (N=214).

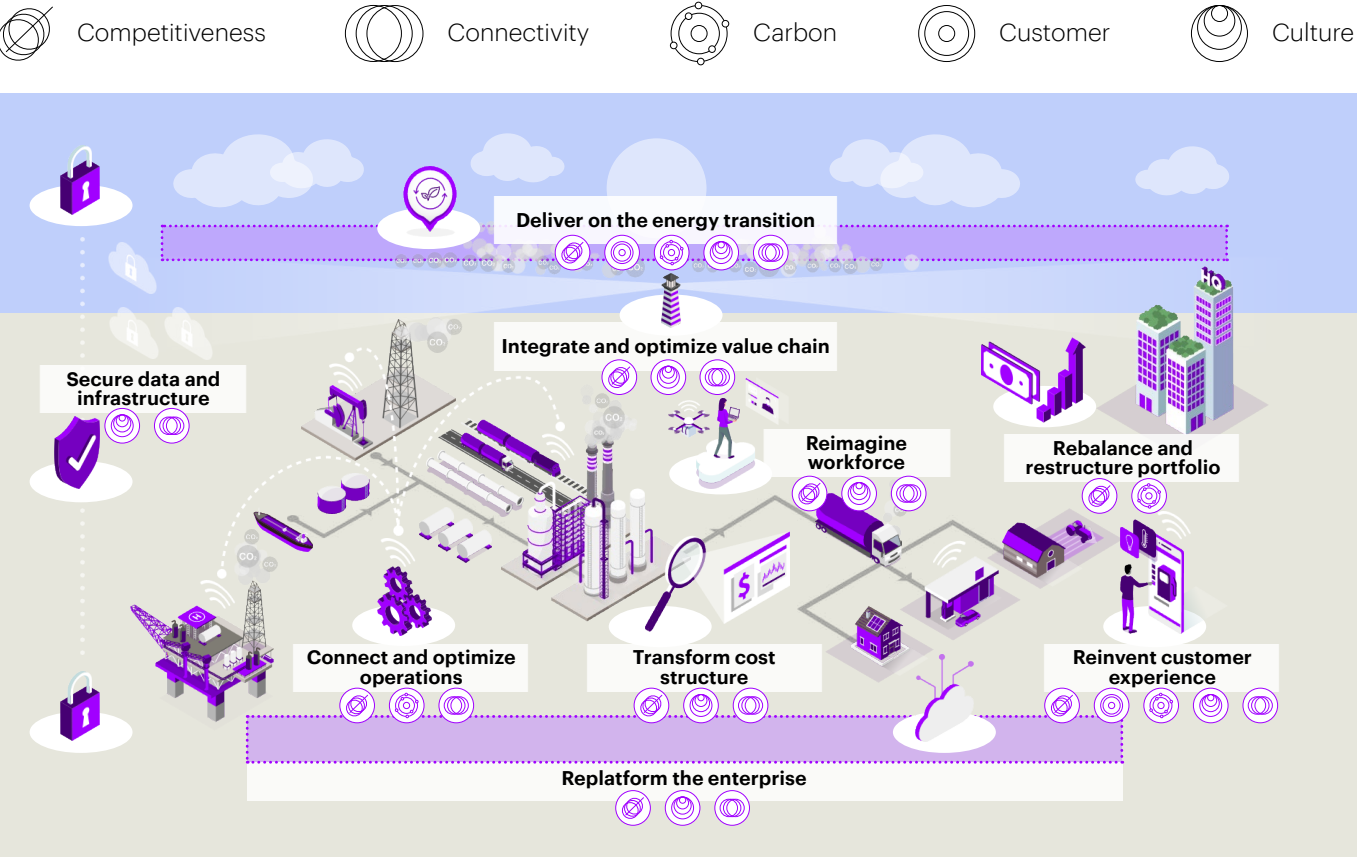
Source: Necessity is the mother of (re)invention (2021). Accenture.

How to reinvent

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.

Accenture believes, however, that there are nine transformational bets every company should make. Each activates two or more of the 5C dimensions of change (see Figure 20). Each has the potential to help companies unlock new value and deliver the promise of reinvention. Collectively, they are no-regret actions that can help position oil and gas companies for success in the years ahead.

Figure 20. Nine transformational bets that activate the 5Cs of reinvention



Source: Accenture analysis.

Re-platform and enable the intelligent enterprise.

Re-platforming starts with the cloud. This is a wise move, and many oil and gas players need to fast-track this journey. ABI Research has found that cloud spending in the industry is expected to rise by 4-5 times over the next five to six years.¹¹

A scalable cloud backbone enables massive, real-time data ingestion and can be used to streamline processes, connect core and non-core functions, and facilitate the use of automation, AI and innovation across the organization. Importantly, cloud provides end-to-end visibility across enterprise and operational data. That enables the use of advanced analytics and drives valuable insights that underpin the “intelligent” enterprise.

Transformation of cloud, analytics and AI capabilities can unlock up to 15 percentage points of ROCE at full maturity.¹²

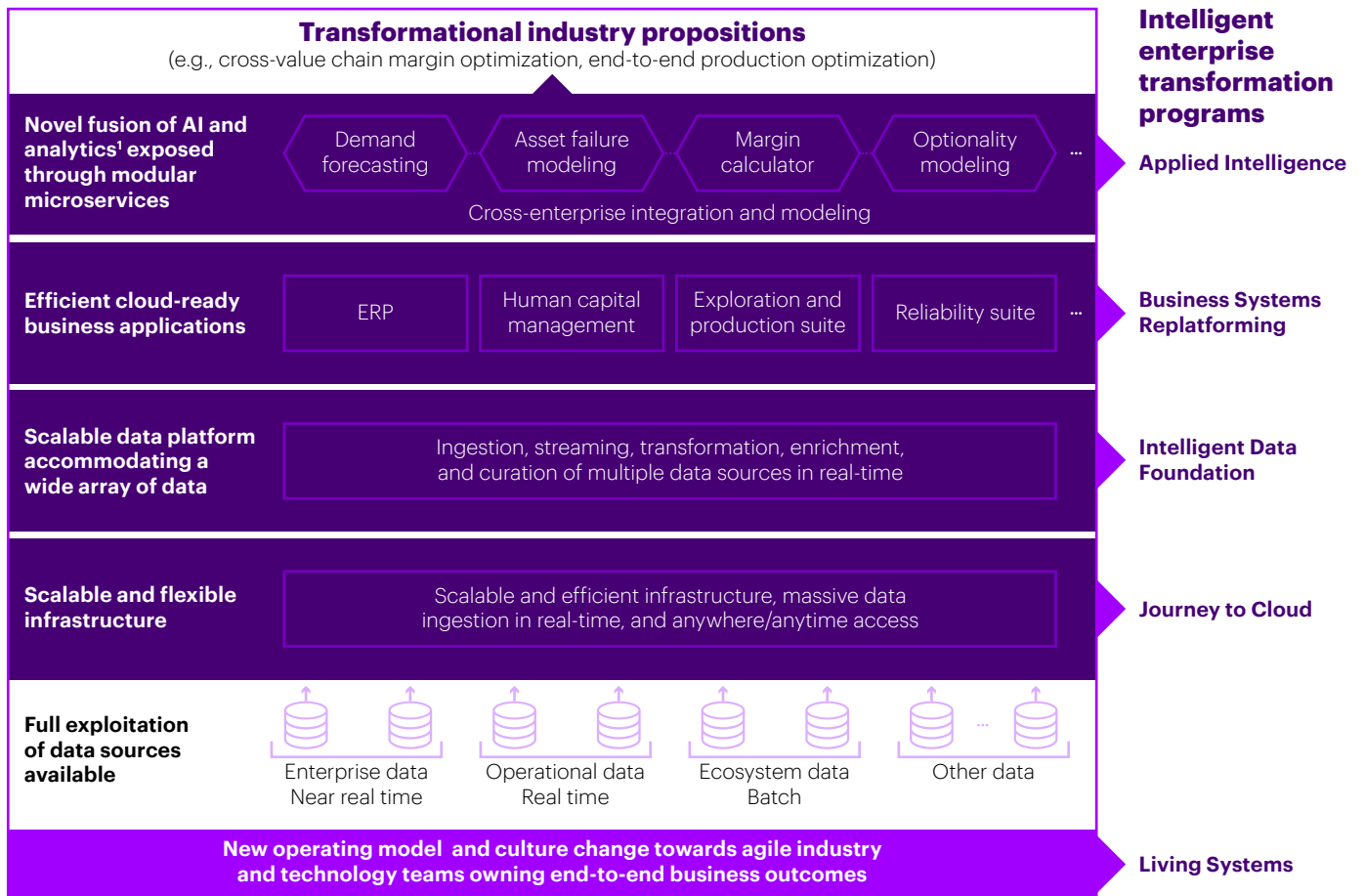
Act now

- Cloud spending in oil and gas is expected to rise at a compound annual growth rate (CAGR) of over 20 percent.
- Analytics, cloud and AI are the highest-potential technologies in oil and gas, able to unlock up to 15 percentage points of ROCE at full maturity.⁹
- Hyper-scale cloud providers are forming partnerships with most oil and gas companies.
- The energy industry spends ~55 percent less than leading industries on transformational digital propositions.¹⁰

Act fast (see Figure 21)

- Cloud-first backbone.
- Scalable data platform.
- Novel fusion of AI and analytics.
- Dynamic living system.

Figure 21. Enabling the intelligent enterprise



¹ Could also include other digital technologies such as robotics, distributed ledgers, or others

Source: Accenture analysis.

Integrate and optimize the value chain.

Value chain optimization has jumped to the top of the CEO agenda. Most oil and gas executives, however, believe that true value chain optimization is still theoretical and impractical. We disagree.

To get more value from the value chain, companies should use digital to rethink their end-to-end operating model, integrating operational **and** commercial excellence. This allows companies to release trapped margins across domains by optimizing six key levers: crude and product slate, channel and price, end-to-end risk, working capital, logistics and balance sheet.

But the journey to a truly optimized value chain requires rigor and structure. First, companies should start by obtaining visibility over their molecules by connecting data along the value chain. Then, they must instill new ways of working, new agile team structures, and a culture of collaboration—all while building the required AI core to support decision-making. Finally, the activation of the value potential requires new operating policies to redefine decision-making rules, risk/reward appetites, and align incentives at the intersection of value chain links.

Actions to optimize the value chain can allow companies to capture >US\$3 of additional margin per barrel.¹⁴

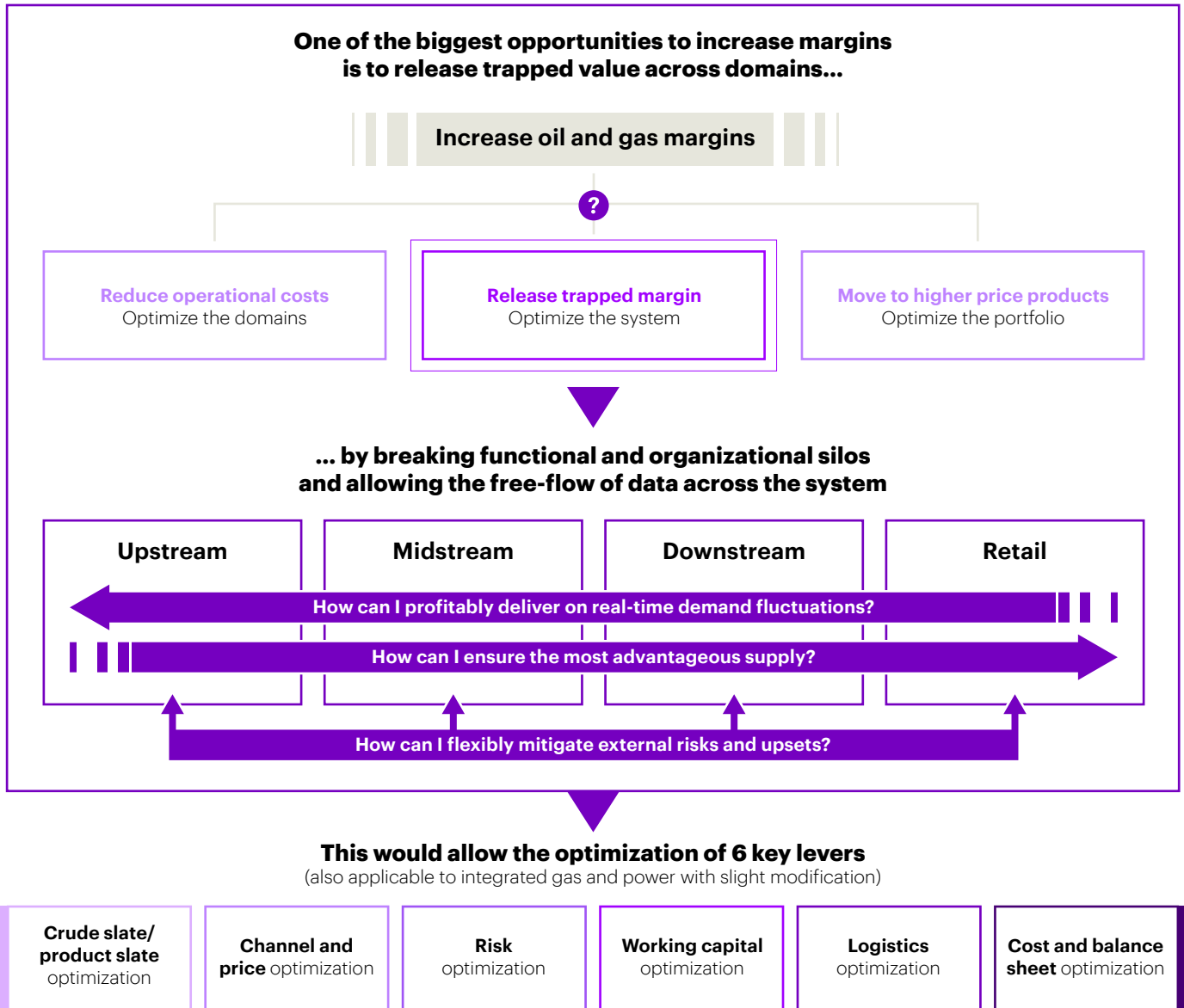
Act now

- Value chain optimization agenda top 3 item on the CEO agenda for most companies.
- Most oil and gas executives still believe it to be theoretical and impractical.
- There is significant value trapped in the value chain.

Act fast (see Figure 22)

- Integrated and Intelligent Data Foundation.
- AI-based real-time modeling engine.
- End-to-end optimization of product, price, risk, cost, logistics and working capital.

Figure 22. Integrated value chain optimization



Source: Accenture analysis.

Transform cost structure.

While oil and gas companies have managed to reduce breakevens by >25 percent since 2014, their returns have continued to trend downward as the headwinds of commodity prices have exceeded the gains from cost reduction.¹⁸ And the decarbonization forces, such as competition from EVs for energy demand within transportation, are accelerating and placing additional pressure on companies to structurally adjust their cost base.

How should they then proceed? Companies need to embark on an integrated, end-to-end cost structure transformation—one that incorporates systemic cost takeout, zero-based principles, and a reduction in capital intensity in companies' standard operating procedures.

They should cultivate a cost-conscious mindset across the organization and challenge every dollar spent from “cradle to grave” across the value chain. They should also create one source of truth. Connecting internal systems, data, analysis with external signals (market, supply chain, customer and benchmarks) can enable and sustain optimal cost decisions.

Quick wins in year one can be used to fund the structural cost transformation and sustain the results.

Building the next generation of cost management expertise can help energy companies reduce the cost of supply by at least an additional 30 percent.¹⁹

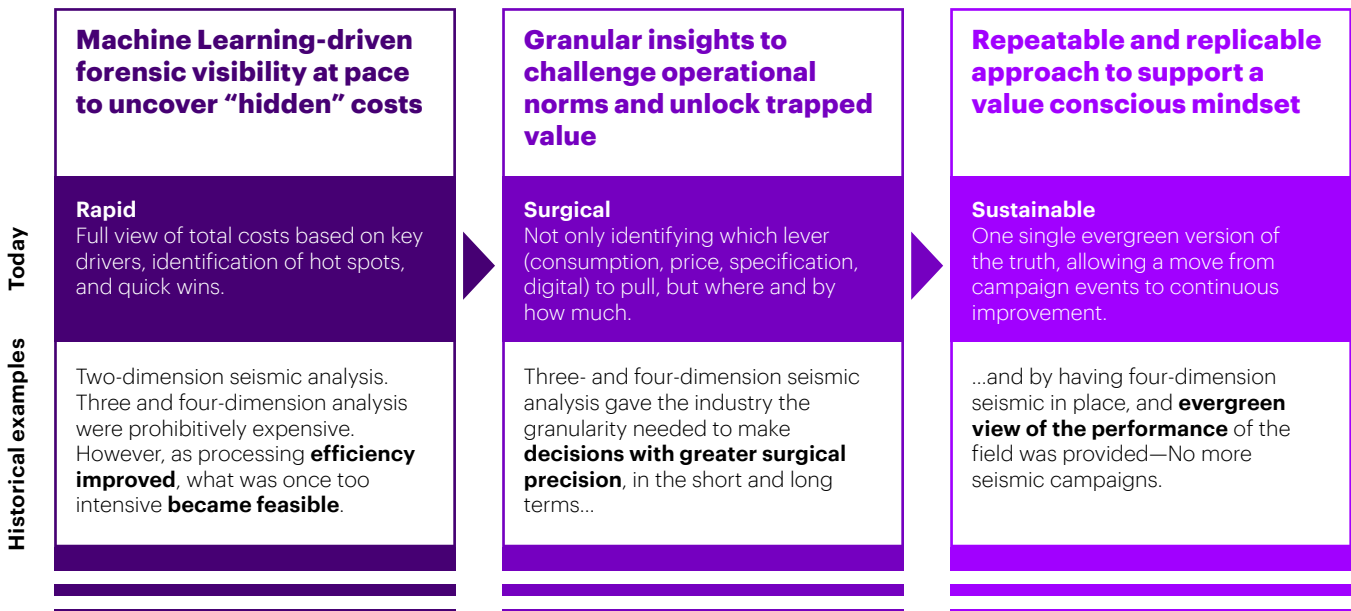
Act now

- Energy companies must reduce their average breakeven by 30-50 percent.¹⁵
- Carbon taxes will increase oil prices by \$5 to \$10/boe, changing the cost curve and reshaping oil company portfolios.¹⁶
- 2021 cost campaigns are finding <20 percent of their opportunities from squeezing their suppliers. The rest comes from reducing consumption and changing specifications.¹⁷

Act fast (see Figure 23)

- Cloud-based data ingestion to provide granular visibility of costs.
- AI-powered analysis and identification of opportunities.
- Quick cost takeout identified through platform and value-targeting process.
- Closed-loop, zero-based approach to sustain costs reductions.

Figure 23. Cost structure transformation enabled by AI

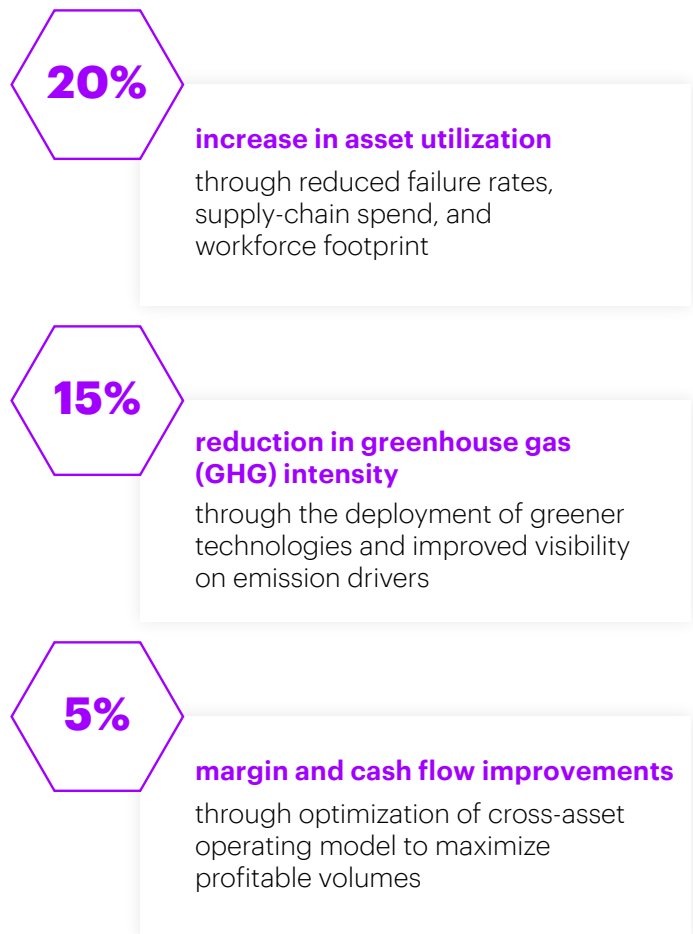


Source: Accenture analysis based on 2020 data from multiple sources including Rystad.

Connect and optimize operations.

One of the critical dimensions of reinvention is connectivity. It’s easy to understand why. Each year, the siloed nature of oil and gas operations leaves US\$150-200 billion in value on the table.²⁰ Our analysis shows that removing barriers by integrating multi-process data not only improves visibility of value drivers across the organization, but also drives significant financial and operational gains.

Connecting operations requires an end-to-end approach, a scalable data and infrastructure foundation, and a cross-functional, multi-asset decision model that optimizes margins.



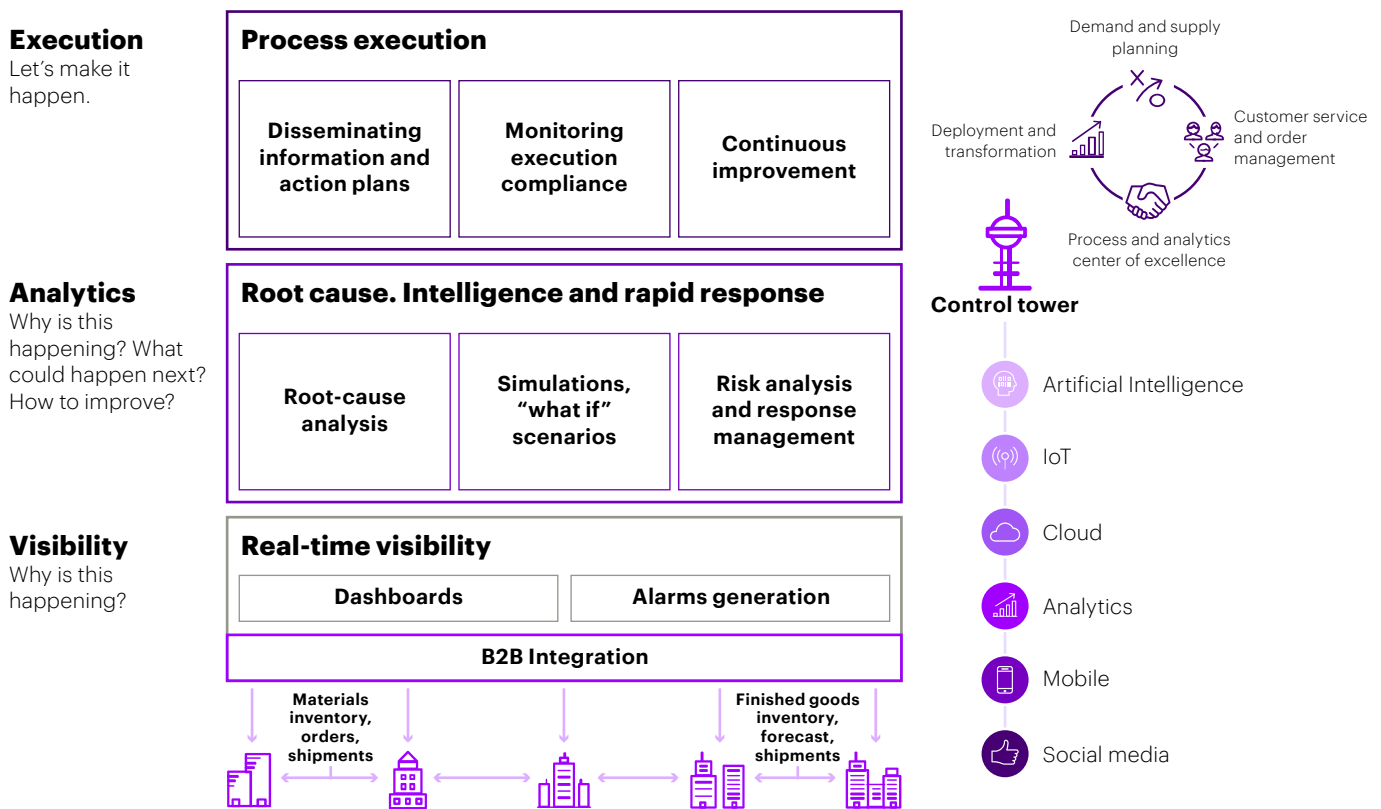
Act now

- A majority of oil and gas assets have higher-than-planned equipment failures, due to a lack of proactive operations and maintenance activities.
- ESG and carbon intensity are gaining traction as critical dimensions to evaluate operations performance.
- Digitization programs in oil and gas operations have been highly variable, of limited scale and siloed, with fewer than 20 percent achieving desired outcomes.

Act fast (see Figure 24)

- Assets of the future underpinned by operational, digital and informational technologies.
- Scalable data foundation, including industry-wide standards.
- AI-powered environment to enable predictive and prescriptive operations.

Figure 24. Connected operations... asset of the future



Source: Accenture analysis.

Rebalance and restructure portfolios.

Despite the fact that current breakeven prices are at a 10-year low, the market isn't rewarding oil and gas companies. In fact, energy companies are witnessing a mass exodus of capital. To keep investors engaged and boost the likelihood of profitability, oil and gas companies need to create a sustainable, nimble portfolio with maximum margins and the lowest cost of capital. That means objectively assessing their holdings across all assets and energy sources on a "per-joule" basis, building and maintaining an infrastructure for dynamic rebalancing, and applying digital expertise to pursue and manage new types of business deals.

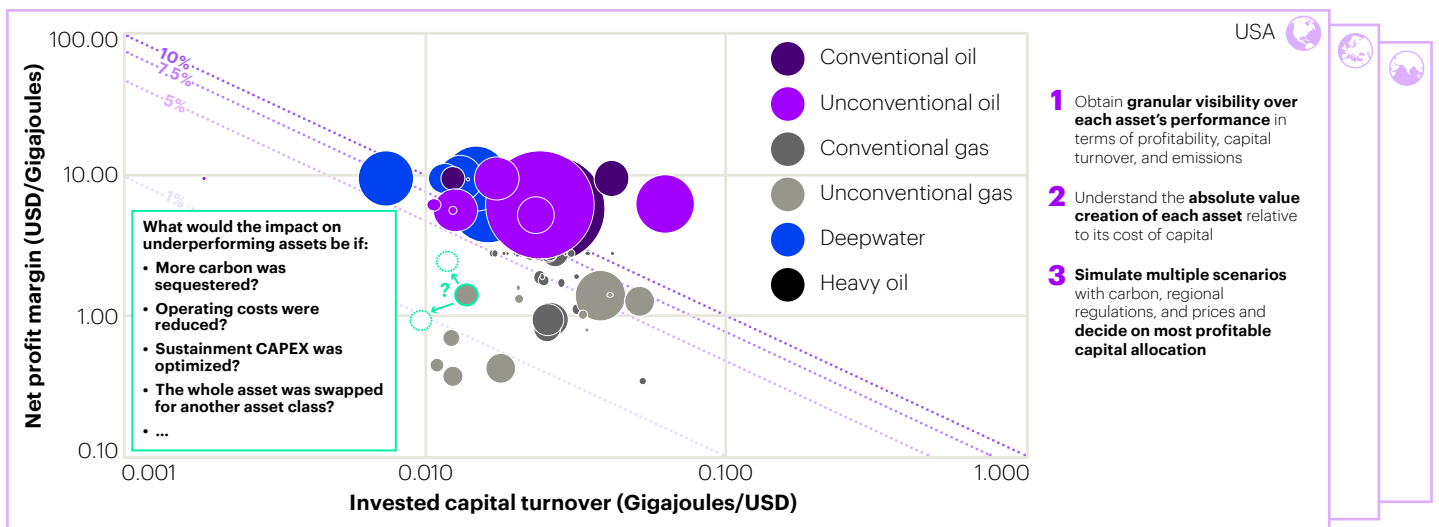
Act now

- Energy companies are still witnessing a mass exodus of capital.
- Global and US energy indices underperformed oil prices by 14-36 percent between 2017 and 2019.²¹
- Text analytics of over 200 oil and gas companies' SEC filings cited "portfolio optimization" an average of 1.5 times—the highest it has been in 25 years.²²

Act fast (see Figure 25)

- Granular visibility of asset performance in terms of net full-cycle value creation (or destruction) and carbon.
- Dynamic modeling of asset class performance by region, taking into consideration variables such as carbon regulations and technology improvements.
- AI and analytics to continuously perform analyses and allocate capital dynamically.
- Digital- and ecosystem-powered agile deal execution.

Figure 25. Rebalancing portfolio...dynamically



Assumptions: carbon tax = \$100/tCO₂e, emissions efficiency = 20%, hydrocarbon cost efficiency = 15%, 2020 price = \$50/bbl, 2040 price = \$40/bbl

Source: Accenture analysis based on 2020 data from Rystad and Global Data.

Secure data and infrastructure.

More than a third (35 percent) of oil and gas companies had more than 500,000 customer data records exposed in the last year.²⁵ This is not entirely surprising. Accenture research has found that oil and gas players, when compared to companies in other industries, are nearly four times worse at stopping targeted cyberattacks. They are four times slower at finding breaches. Three times slower when it comes to fixing them. And only half as effective at reducing their impact.

It doesn't have to be this way. Industry players need to develop a north star vision and roadmap for vulnerability remediation and enhanced security efficiency and effectiveness. And they need to instill secure behaviors and awareness to data trust concepts across the organization. Services and solutions are available to help companies not only focus on the threats that matter most, but also build the cyber maturity and business resilience that is now required.

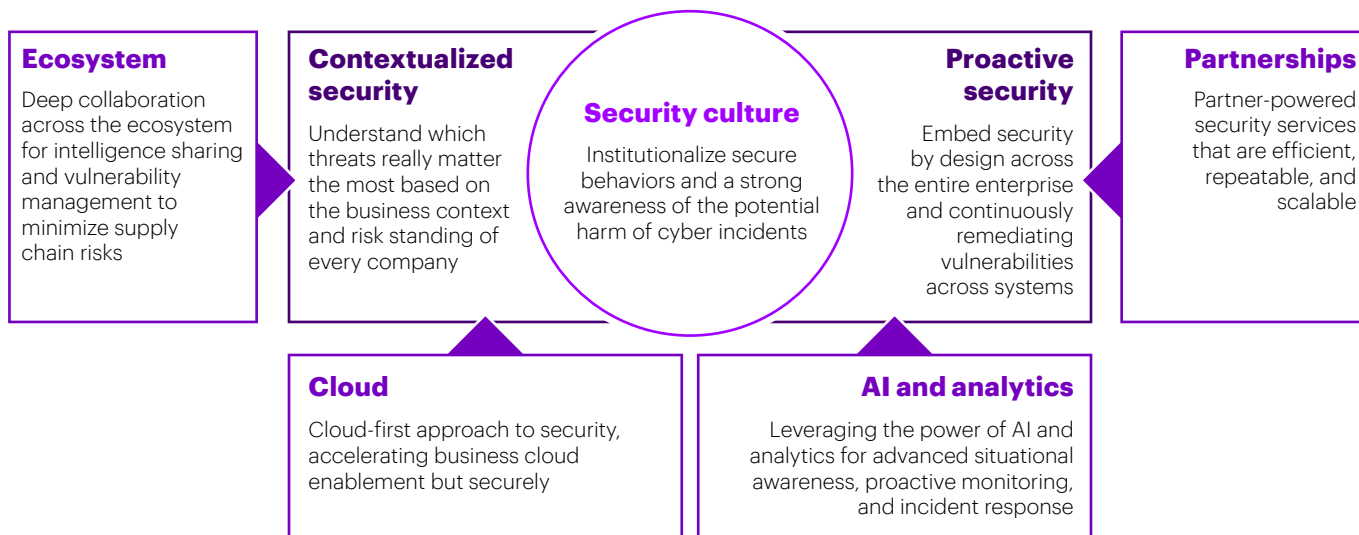
Act now

- Operating in one of the most targeted industries for cyber attacks, oil and gas executives are finding it unsustainable to stay ahead of attackers.
- In fact, despite the considerable advancements in the industry's cybersecurity posture, 35 percent of oil and gas companies had over 500,000 customer records exposed last year.²³
- Attack vectors are becoming increasingly complex and large, with 40 percent of breaches being the result of indirect attacks through an ecosystem partner.²⁴

Act fast (see Figure 26)

- Business-outcome-focused approach to cybersecurity.
- Contextualized insights on the threats that matter most.
- Proactive, cloud-first approach.
- AI/analytics foundation for proactive response.
- Deep collaboration with the ecosystem to secure the "weakest link."
- Partner-powered security services for efficiency, repeatability and scalability.

Figure 26. Securing data and infrastructure... holistically



Source: Accenture analysis.

Deliver on the energy transition.

One of the most pressing questions on the minds of energy executives is “How can the industry accelerate and lead an orderly decarbonization transition to 2050 and beyond?” It’s a daunting proposition, considering that oil and gas represents almost 60 percent of the world’s energy consumption.²⁸ Delivering on the energy transition is about more than saving the core business of oil and gas. It’s about orchestrating the transition across sectors, past the limits of the industry’s traditional value chain. It’s about redefining the role of oil and gas in the future energy system to 2050 and beyond.

There are a number of actions oil and gas companies must take to lead the transition and, along the way, future-proof their portfolios and strengthen relationships with consumers and investors. They include making carbon management a pillar of operational excellence, supported by cloud-based capabilities and an organization-wide culture of sustainability. Equally important, companies will need to accelerate and scale their moves into adjacent low-carbon businesses and also work with their customers to co-develop and execute decarbonization strategies and actions.

Achieving the decarbonization goal is dependent on the actions oil and gas companies take today, the strategic postures they want to hold tomorrow, and their ability to orchestrate and influence hydrocarbon-burning sectors to join them in the cause along the way.

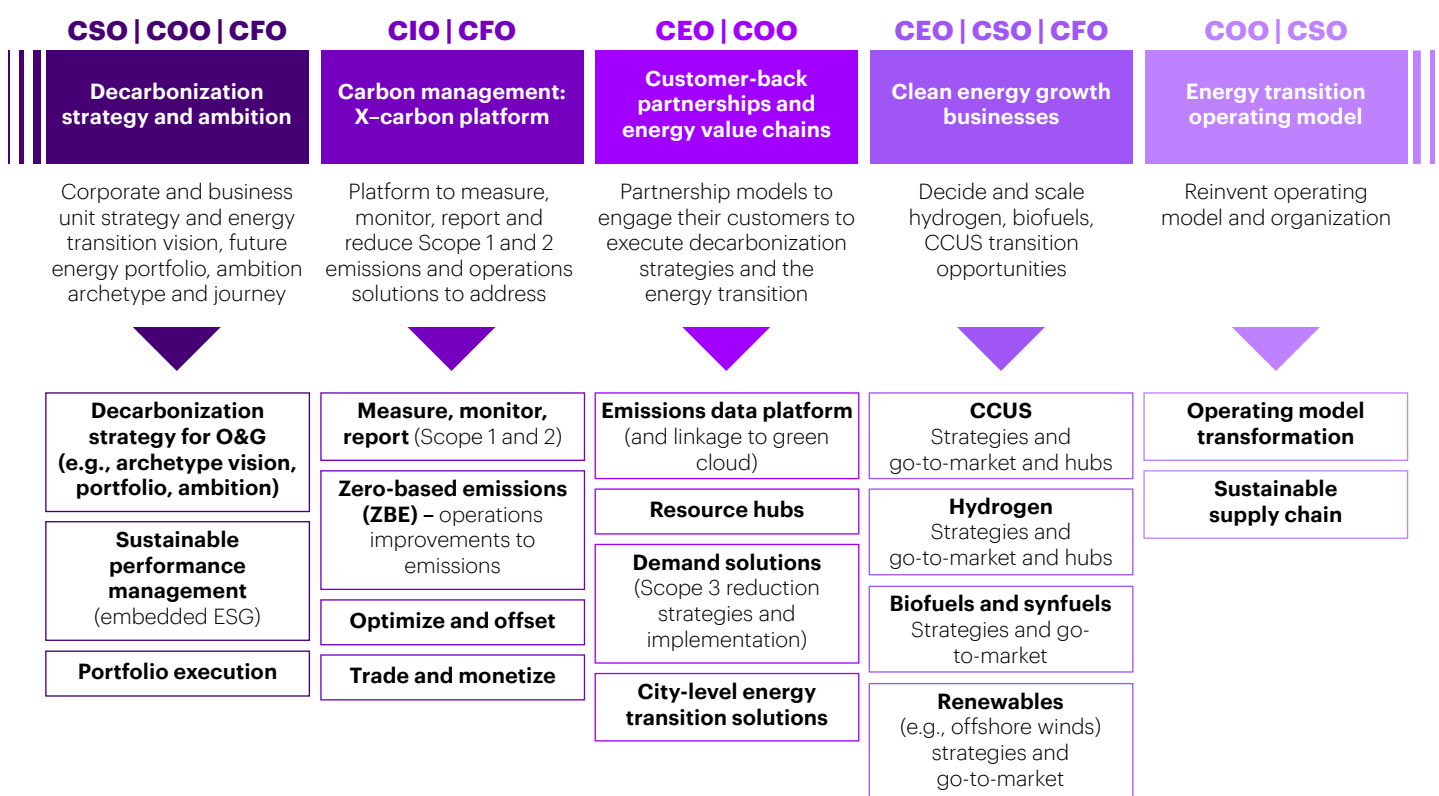
Act now

- Sustainability is the new digital.
- Investors are rewarding companies that are ESG leaders.
- More than 50 percent of decarbonization between now and 2050 will likely come from demand-side levers, such as energy, process efficiency and the circular economy.²⁶
- Energy Transition should be a source of growth—it will require an additional \$2-3 trillion/year of investments.²⁷

Act fast (see Figure 27)

- Own the green molecule.
- Align to the green electron.
- Earn the green multiple.

Figure 27. Delivering on the energy transition



Source: Accenture analysis.

Reinvent customer experiences and offerings.

In the new era of oil and gas, value will be derived from the strength of customer relationships, not the commodities sold. Engaging with and expertly serving customers—and solving their problems—becomes mission-critical. So does driving revenue generation through digital experiences.

There are several things energy companies should do to excel at customer-centricity. Most important is the creation of a differentiated customer experience across the customer lifecycle. Such experiences must be enabled by a streamlined technical architecture and a customer-oriented culture across the company. Putting customer data and insights at the heart of the company's business will enable the customer segmentation, targeted marketing and analytics-based pricing that are now so critical.

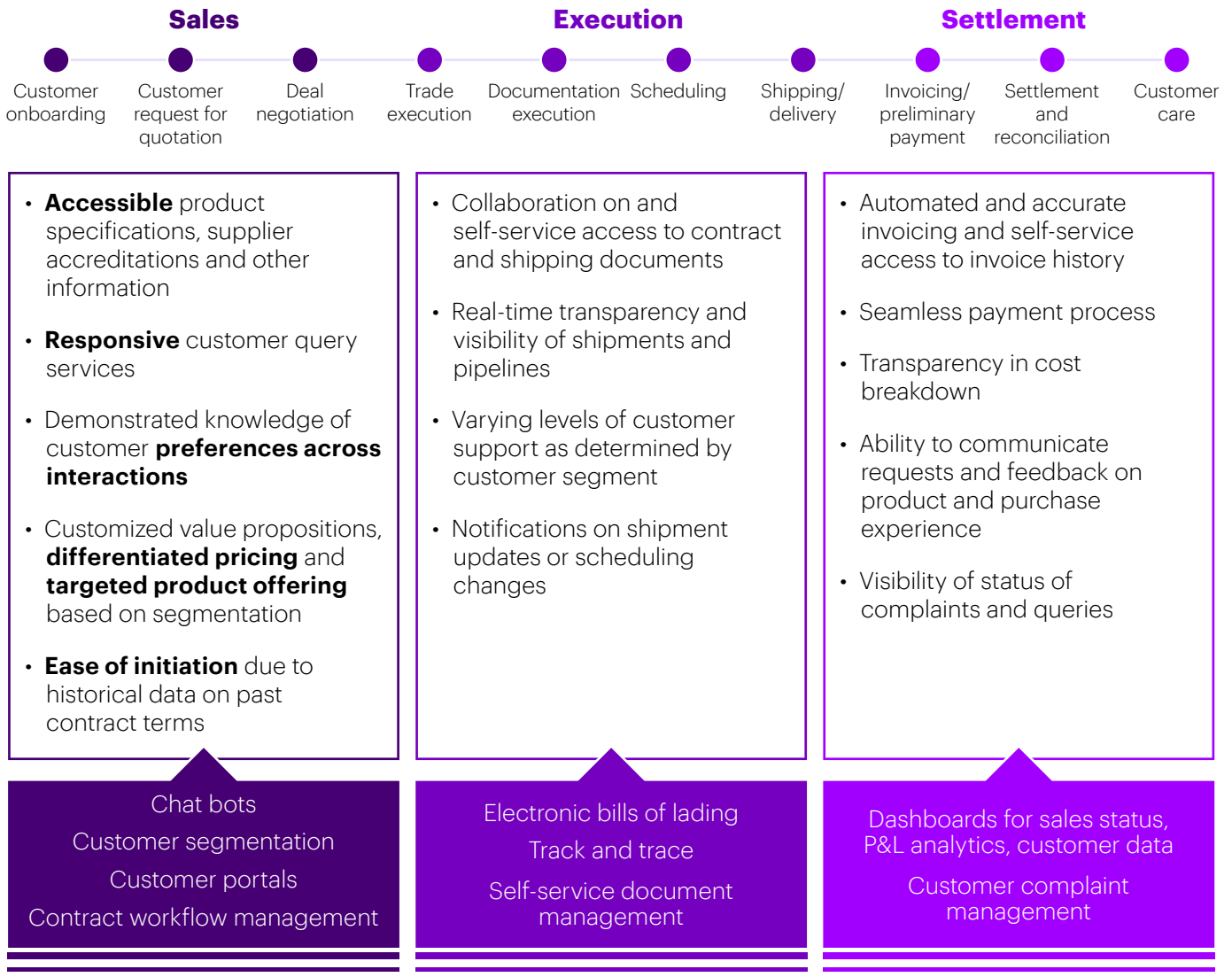
Act now

- Oil and gas companies are now recognizing that customers—long the end of the value chain—are really where it all begins.
- Oil and gas customers span most other industries, and all are demanding lower-carbon options to meet their customers' expectations.
- Demand for motor gasoline is expected to decline by 20 percent over the next 10 years, and has still not recovered to pre-COVID levels.²⁹
- Pricing algorithms allow energy companies to reap significant margins on fuel when oil prices decline rapidly.

Act fast (see Figure 28)

- Modern, digital-powered sales and marketing function.
- Differentiated customer and consumer experience, from onboarding to customer care.
- Enhanced commercial excellence through segmented sales and services and analytics-based pricing.

Figure 28. Reinvigorate customer experience



Source: Accenture analysis.

Reimagine the workforce.

Reinvention will require new roles and capabilities. Oil and gas companies will need to, therefore, identify new career pathways and attract new talent. They will need to redesign operating models and the organization to support new ways of working. For example, enabling work from anywhere and connecting the workforce to data and systems to drive insight and value in their day-to-day work will be increasingly important.

Additionally, companies will need to curate consistent, satisfying and rewarding end-to-end employee experiences across physical, digital and human dimensions. This is a critical component of a new workplace culture that can attract new talent, execute strategies, and achieve corporate imperatives.

Companies that successfully reimagine their workforces and organizational cultures will benefit from lower turnover, more effective talent acquisition, improved workforce productivity, and potential cost savings of 20 to 40 percent.³¹

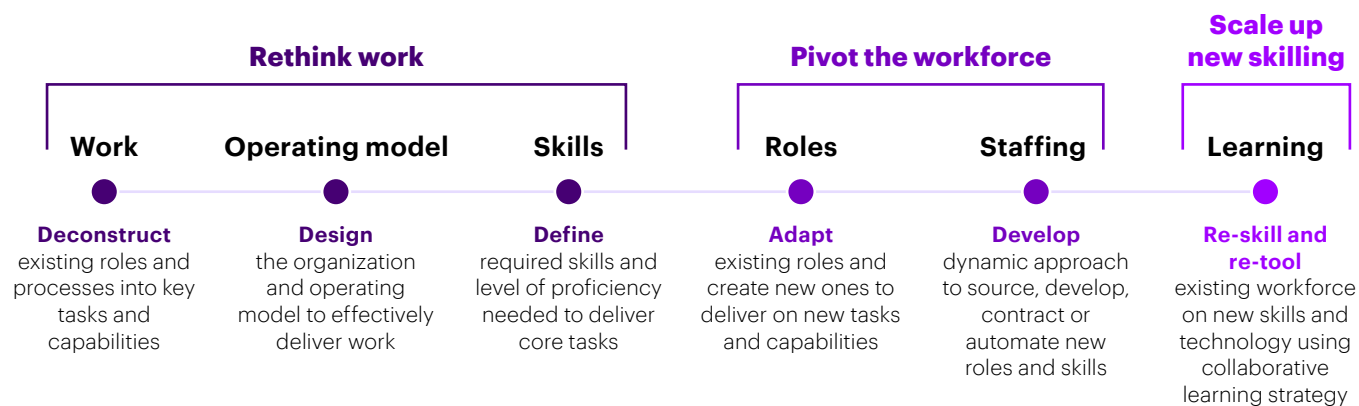
Act now

- Energy market dynamics are changing the way work needs to be performed, creating a need for a different workforce.
- However, attracting young professionals to energy careers is becoming increasingly challenging; just 14 percent of companies are digitally mature; they are the ones poised to capture strong returns in innovation, people experience and customer value.³⁰

Act fast (see Figure 29)

- A new understanding of the future of work and which roles need to change, which will no longer exist, and which need to be created anew.
- Curated employee experiences across physical and digital touchpoints.
- Environment that enables work from anywhere.
- Human-centered approach to facilitate modern change.

Figure 29. Reimagining work and workforce



Source: Accenture analysis.



The journey to reinvention starts now

The 2020s will be the make-or-break decade for the oil and gas industry.

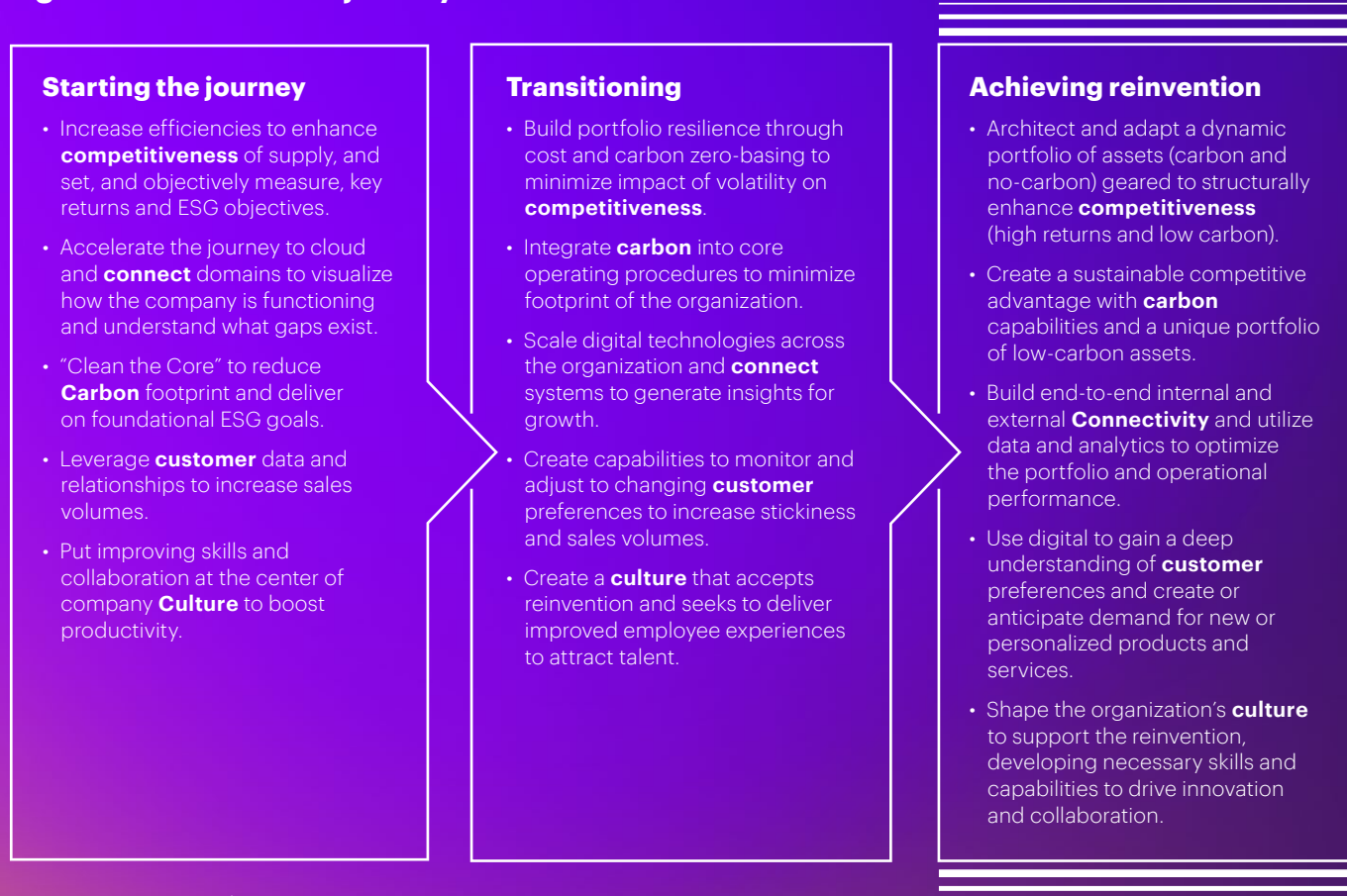
It kicked off with a continuation of challenges that were years in the making, including dwindling cashflows and investment returns. Then came the COVID pandemic, which destroyed hydrocarbon demand and flooded an already over-supplied market. Now, oil and gas companies face an additional set of structural shifts that can permanently change the environment in which they operate. Competition from new energy sources, environmental accountability, talent scarcity

and investor apathy top the list. These challenges are all on the rise, with no signs of slowing.

Oil and gas companies are finally saying “enough is enough.” They are recognizing that they have the opportunity—and an obligation—to address the disruption that is roiling the industry with a bit of disruption of their own.

They just need to take the first step (see Figure 30). Reinvention awaits.

Figure 30. Reinvention journey



Source: Accenture analysis.

Endnotes

- 1 Accenture, “Necessity is the mother of (re)invention,” 2021.
- 2 BP Energy Outlook 2020.
- 3 Accenture analysis with Capital IQ data.
- 4 Accenture analysis.
- 5 BP Energy Outlook 2020.
- 6 Accenture analysis.
- 7 Ibid.
- 8 US Bureau of Labor Statistics.
- 9 Accenture analysis.
- 10 Ibid.
- 11 “Oil & Gas IoT Core Analytics Service Revenues to Grow to US\$712 Million in 2026,” PR Newswire Europe, 16 February 2021, <http://global.factiva.com>.
- 12 Accenture analysis.
- 13 Ibid.
- 14 Ibid.
- 15 Ibid.
- 16 Ibid.
- 17 Ibid.
- 18 Ibid.
- 19 Ibid.
- 20 Ibid.
- 21 Ibid.
- 22 Ibid.
- 23 Accenture “**Third Annual State of Cyber Resilience**,” 2020.
- 24 Ibid.
- 25 Ibid.
- 26 Accenture analysis.
- 27 Ibid.
- 28 IEA (2020) World Energy Outlook.
- 29 Accenture analysis.
- 30 Ibid.
- 31 Ibid.

Authors

Muqsit Ashraf

Senior Managing Director
Lead – Energy Industry Sector

Varun Bindal

Managing Director
Strategy & Consulting, Energy

Rami ElDebs

Managing Director
Strategy & Consulting, Energy

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