HFS TOP 10

Energy Services Top 10, 2021

The service providers shaping oil, gas, and the energy transition

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Excerpt for Infosys

Oil and gas is reforming into the energy industry as it moves from fossil fuels to renewables. It is merging with the utilities sector and faces pressure across environmental, social, and governance (ESG) sustainability. Simultaneously, it must balance the acceleration in digital transformation brought on by a double-shock of the pandemic and 2020 oil price crash, alongside the demands to make the most of existing assets and improve efficiencies throughout the value chain. Business and technology services providers are helping their energy clients through these transitions and competing demands. Still, they must be transparent about their strengths and focus areas, where they bring in their wider partnership ecosystems, and how they link the global context to the outcomes their clients need.

Josh Matthews, Practice Leader, HFS Research

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1 Executive summary

Introduction and key data

- The service providers covered in this report are Accenture, Atos, Capgemini, Cognizant, DXC Technology, HCL, Hitachi Vantara, Infosys, LTI, NTT DATA, TCS, Tech Mahindra, and Wipro. The overall and detailed rankings are on page 29. This report analyzes their execution, innovation, voice of the customer, and alignment with the HFS OneOffice™ vision across energy (including oil and gas) industry services.
- The oil and gas industry is reforming itself into the energy industry. It is experiencing multiple competing fundamental transitions: from fossil fuels to renewable energy, broader sustainability across value chains, adoption of digital and more intelligent technologies, the double-shock effects of COVID-19 and the oil price crash forcing a dual CAPEX/OPEX crisis, M&A and divestment activity, questions over what to do with existing assets, and a continuing need to drive efficiencies throughout operations.

The energy services market

- The energy services market is growing concurrently with the demand for services across the value chain.
- Competing transitions are fueling this growth, and the highest increases in demand are for asset and data management, refinery process control tech and emissions management, and market repositioning strategy.
- The energy transition is driving the continued integration of energy and utilities industry services and technology.
- Page 14 and onward provide additional details on the energy enterprise and services markets.

Service provider benchmarking

- The average headcount is 5,348.
- The average revenue is $530 million.
- The average number of clients is 86.
- Clients are mostly located in North America and Europe, with many providers' headcounts strong across geographies.
- Twenty-five percent (25%) of clients engage in sustainability services.
- Thirty-four percent (34%) engage in co-innovation.
- Four percent (4%) and 18% engage in outcome-based and hybrid pricing models, respectively.
- See page 26 for more service provider benchmarking details.

Enterprise client themes

- Environmental sustainability is firmly on energy companies' outlooks alongside talent, technology, and optimization.
- AI is widespread at scale across energy enterprises, with investments planned across the technology board.
- Environmental sustainability drives emerging technology adoption alongside customer engagement and finance and accounting (F&A).
- C-level commitment and organizational alignment present the biggest barriers to the energy industry's plans for emerging technology.
- See page 14 and onward for further comments on the industry's dynamics.

Value chain

- The HFS energy value chain covers upstream exploration and production, midstream transportation, downstream refining, distribution, and retail and marketing. Sustainability services and the use of digital, more intelligent technologies, engineering, consulting, and business process services are also in scope if they're based on an energy-specific engagement.
- See page 8 for more details about the HFS energy value chain.

Key takeaways and recommendations

The energy transition	**Energy is the new face of oil and gas, merging with utilities and integrating across all industries.** The need to reduce emissions to net-zero by 2050 at the absolute latest is fueling a global energy transition. The transition is creating new industries and ecosystems built on existing links between energy, utilities, and other industries like automotive, technology, and manufacturing. Business models are changing fundamentally as customers, regulators, and finance sources apply pressure. But despite the rising role of electricity as a critical asset—not just a utility—and energy firms trying to play in the utilities value chain, energy firms and governments are still investing vast amounts of money into coal, oil, and gas.
Competing demands	**The energy transition must integrate with sustainability** across environmental, social, and governance (ESG) factors, digital and more intelligent technology adoption, COVID-19 and the shifts to remote working, the pandemic-oil price crash double-shock, cybersecurity threats to business and nationally-critical infrastructure, the question of what to do with existing assets, ongoing efficiency pressures, customer experience reinvention, talent wars, and more. The energy transition dominates the narrative of both the energy and utilities industries; however, these fundamental, competing, and interlinked transitions must align in enterprise and service provider roadmaps.
Mindsets and geopolitics	**Oil and gas transition strategies vary globally, dictated by geopolitics and the double-shock of a pandemic and oil price crash.** Many commentators and indeed service providers perceive Europe as a leader, with regulations and supermajors pivoting from fossil fuels to renewable energy (alongside re-investments in fossil fuels outside of Europe). The US sees gas as the near future, but the Biden administration might just be speeding up its renewable bets. Some Asian and African markets will take longer, with European and US firms investing their fossil budgets more globally. India and China continue their mix of renewable and fossil fuel investments. COP26, the UN climate summit this November 2021, will shed light on just how much consensus and progress is likely over the coming years.
Technology and services	**Digital, cloud, and more intelligent technologies are now the norm, and they spread throughout industry use cases. They're becoming a license to play for enterprises and service providers.** The energy transition is driving the continued integration of energy and utilities industry services and technology. The services arms of conglomerates are competing against the independent firms and their ecosystems. Sustainability services are being embedded in provider portfolios and existing customer relationships. Services portfolios are expanding across the value chain from consulting to delivery in case studies and customer references, not just in branding and marketing narratives.
Going forward	Both energy firms and their service providers need to balance the energy transition and the multiple, competing, interlinked transitions. They must meticulously align their roadmaps to outcomes, solving business challenges that stem from the global context. Underpinning these outcomes must be focused services and technology throughout the value chain—working with the wider partnership ecosystems of providers. We illustrate these dynamics in our energy industry overview on the next page.

Energy industry overview | Enterprise goals must achieve outcomes and solve challenges aligned to a global industry context with multiple competing and interlinked transitions

Global industry dynamics and challenges							
The energy transition from fossil fuels to renewables	Sustainability demands and regulation across ESG: environmental, social, governance	Digital and more intelligent technology adoption	CAPEX availability due to internal cost pressures and investors moving from fossil fuels	Cybersecurity of operations and national infrastructure	Customers and talent that views the industry negatively	COVID-19 and managing a move to remote operations	Cost pressures from oil price fluctuations and ongoing efficiency demands

Energy industry value chain					
Upstream E&P	Midstream	Downstream refining	Downstream distribution	Retail and marketing	The energy transition

Service providers must keep bringing their energy clients back to outcomes and solving business challenges

Outcomes

- Reduce direct, indirect, and supply chain emissions to net-zero
- Being a positive part of the energy transition, not its enemy
- Ongoing process efficiency improvements and cost savings
- Develop new business models and customer pools
- Customer experience improvements, both B2B and B2C
- Remote working efficiency
- Social sustainability across diversity and working practices
- Governance sustainability: risk and reputation, including solidifying the industry's future-readiness and cybersecurity

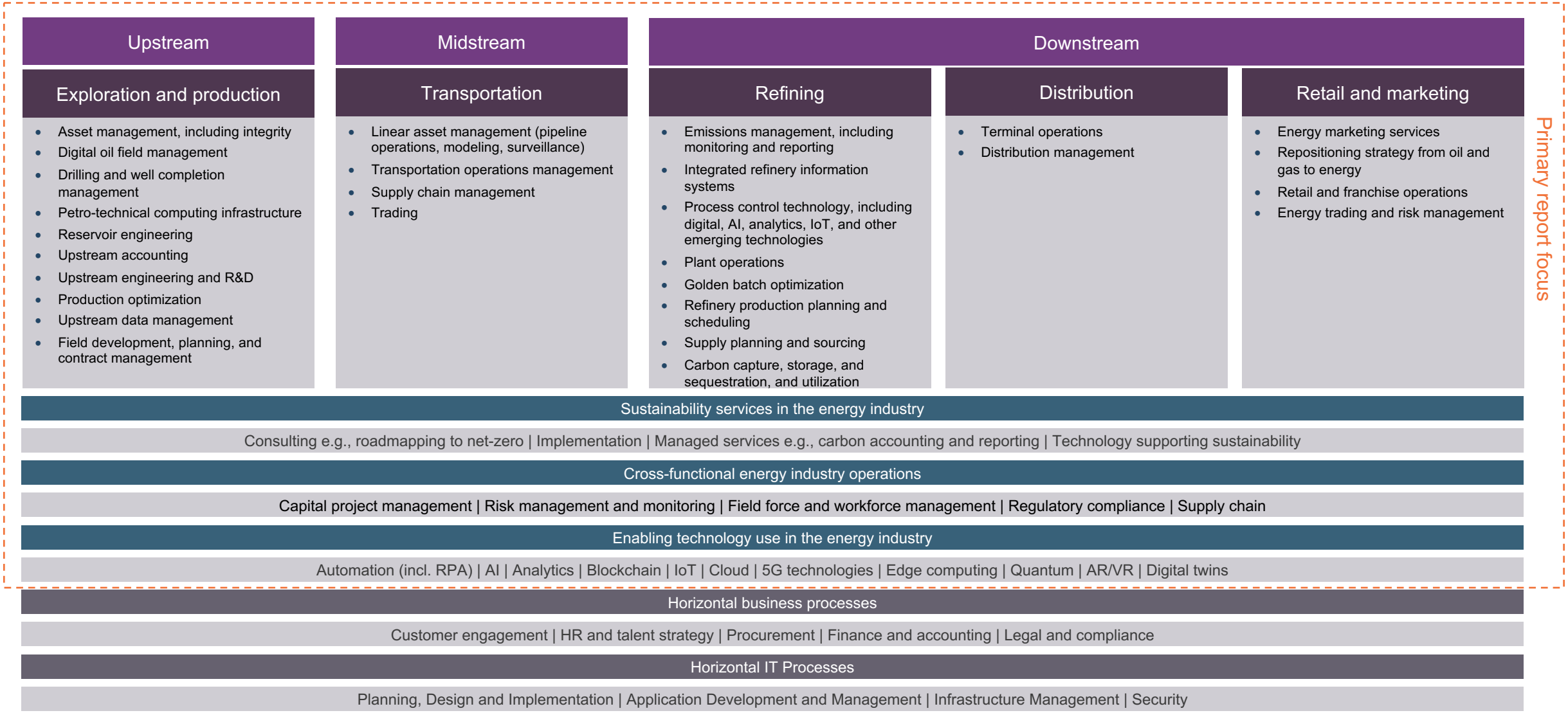
Energy enterprises challenges, target outcomes, and services must align with the global context

Energy services value chain (illustrated on next page)

Advisory, sustainability, digital and emerging technology, engineering, IT, and business process services

Demand is increasing most for services in asset management and data analytics, refining emissions and process control tech, market repositioning strategy (page 25)

The HFS Research energy industry services value chain



Excerpt for Infosys

2 Report description and methodology

Service providers covered in this report

Excerpt for Infosys

Introduction and methodology | The HFS Energy Top 10

- The *HFS Energy Top 10* report for 2021 maps the industry's dynamics and, within that context, assesses how well business and technology service providers help their clients achieve results across the industry. The study evaluates service providers' capabilities across our energy services value chain on execution, innovation, voice of the customer, and HFS OneOffice™ alignment criteria. HFS developed the value chain on page 8 to unify how services providers work with customers and partners using consulting, digital and emerging technologies, sustainability services, and managed services to deliver outcomes. The HFS OneOffice™ vision on page 13 is our stake in the ground for what digital transformation looks like in action, given new context during COVID-19.
- Energy services span the provision of upstream exploration and production services, midstream transportation services, and downstream services across refining, distribution, and retail and marketing, all in support of energy organizations. Our focus is on energy-industry-specific services; therefore, horizontal services such as finance and accounting (F&A) or applications management are out of scope unless they have clear industry elements.
- We've included more written commentary on the energy industry throughout this report, along with enterprise and service provider data before the final Top 10 results and detailed participant profiles.
- The following three areas are our data sources for this report. We describe our assessment methodology in more detail on page 12.

Provider-side information	Service provider briefings	Enterprise-side data and references
• Detailed quantitative and qualitative information provided by service providers on their operations and strategies, both in the energy industry and how their industry-specific services fit within the broader company.	• In-depth conversations with service providers' energy teams. • The participant profiles outline strengths and opportunities based on these briefings, the information they provide, and their reference customers.	• *HFS OneOffice™ Pulse Study, H1 2021* data, covering more than 800 of the Global 2000 enterprises and including more than 50 energy industry leaders. • Reference calls and surveys with service provider clients providing quantitative and qualitative information.

HFS Energy Top 10, 2021 | How we assessed service providers across their energy capabilities

Execution | 25%

Scale and resources

- FTEs (full-time equivalents) dedicated or available to energy services
- Energy services revenue

Growth and trajectory

- Year-over-year (YoY) energy revenue growth
- YoY energy client growth
- YoY available energy headcount growth

Client reach

- Number of energy clients
- Energy client mix by size
- Global range of energy clients
- Global range of energy FTEs

Innovation | 25%

Ecosystem

- Scope and use of energy-relevant partnerships
- Applicability and integration of energy-relevant acquisitions

Vision and sustainability services

- Analyst assessment of vision clarity and focus within the energy industry's context across sustainability, digital, and competing transitions
- Sustainability services and solutions used in energy engagements

Creative client engagement

- Co-innovation with clients
- Unique service models, including outcome-based and hybrid pricing
- Client assessments across a range of innovative engagement metrics

Technology use and development

- Breadth of emerging-technology use in energy engagements
- Platforms, tools, and technologies leveraged for energy clients
- Intellectual property portfolio
- R&D investment and strategy

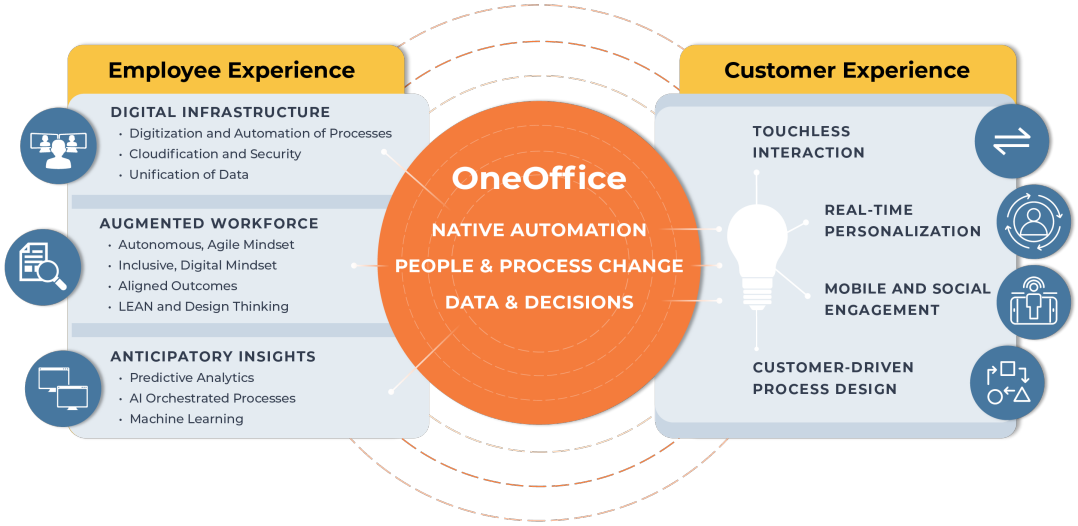
HFS OneOffice™ alignment | 25%

- Client perception of digital transformation, data, digital fluency, and change management capability
- Service provider self-assessment of OneOffice™ alignment and ability to present one face to the customer
- Breadth of provider engagements leveraging digital and emerging technologies versus managing legacy
- HFS analyst assessment of OneOffice™ alignment (see next page)

Voice of the customer | 25%

- Client quantitative assessments of execution and innovation
- Overall client satisfaction with the provider, outcomes, and financials
- Analyst conversations with reference clients
- Analyst assessment of references and case studies
- HFS enterprise buyer data across the Global 2000

HFS 2025 Vision | OneOffice™ in the energy industry



Fundamental principles are emerging as part of OneOffice™-aligned organizations span strategy, talent, change management, data and digital fluency, and alignment across the organization. The energy industry, like most, is in a war for digital and general talent as the industry struggles with both the image associated with its role in climate change and questioning how much longer it can survive. Technology platforms are integrating data across value chains to help align organizations' operations and decision making. To address change management in new ways, service providers are moving into all parts of the value chain from advisory to delivery and ongoing management.

The HFS OneOffice™ vision is our stake in the ground for what digital transformation looks like in action, given new context by the forced change the pandemic triggered. Built on customer, employee, and partner experience, the aim is to break down barriers between the front, middle, and back offices for a connected, communicating enterprise. In an energy industry context, examples include:

- The pandemic and negative oil price combined to leave the energy industry slashing CAPEX investment and tightening OPEX margins, leading to reductions in headcount for a variety of reasons. Reduced headcount led to new demands for automation to streamline processes and, if done well, connect upstream oil and gas exploration operations to the retail end of the value chain.
- An array of digital and more intelligent technologies—5G, IoT, and AR/VR—are being leveraged to reinvent rig, pipeline, and plant operations. AI, analytics, and automation are providing new insights and helping make sense of the vast amounts of data generated during the industry's transformations.
- Connectivity is fueling mobile engagement and touchless interactions for rig and plant operators.
- Oil and gas firms moving into the utilities industry value chain are grappling with customer experience demands in B2C operation—featuring contact center operations—in addition to their existing retail outlets such as gas stations now catering to electric mobility.
- Consulting and capability across the services value chain are not just branding anymore; they are being proven in case studies and customer references.

3

The energy industry in 2021

The energy transition | Energy is the new face of oil and gas, merging with utilities and integrating across all industries

- **The need to reduce emissions to net-zero by 2050 at the absolute latest is fueling a global energy transition**. It defines enterprise operations, roadmaps, and the demands of third-party technology and business service providers. The oil and gas industry is well on the way to rebranding itself as the energy industry and is pushing into the traditional utilities space, making a big play in renewable energy generation and making moves throughout the value chain all the way to the consumer.
- **The links between energy, utilities, and other industries like automotive, technology, and manufacturing are well established but expanding.** Now, the effects of the energy transition are reshaping finance, insurance, supply chains, hospitality, telecom, media, and every other industry in various ways, whether via electrification, the adoption of digital and more intelligent technologies, or an ongoing need to do more with the assets they already have and manage the risk of phasing them out.
- **Business models are beginning to change fundamentally as demands come from customers, regulators, and sources of finance, with enhanced reporting requirements and climate change commitments now a must.** Consumer and enterprise customers understand carbon footprints and make decisions and demands based on the increasing availability of information. Demands also come from enterprise customers based on the need to clean up their supply chains (i.e., their Scope 3 emissions). When you take the energy transition alongside broader sustainability demands, the adoption of digital and emerging technologies, COVID-19 and remote working shifts, talent wars, cybersecurity, and an ongoing need to be more efficient, you see the scale of the challenge facing the energy and utilities space. See more on these competing demands on the next page.

The energy transition | Renewable energy emerges, but fossil fuels aren't disappearing soon

- **Electricity is the backbone of a new energy system, but integrating renewables also drives physical, virtual, and financial system complexity**. Firms will need to use existing, new, and complementary technologies to manage a (supposedly) "smart" energy system, and none of this will be possible without digitalization and the command-and-control infrastructure it brings. Electricity is moving from a mission-critical utility, such as in powering data centers and control systems, to also being a critical asset through battery storage and localized generation. Firms need to manage new forms of market participation.
- **To become utilities providers, energy firms need to reinvent their customer contact and experience (CX) processes.** While oil and gas supermajors have the resources to throw at renewable energy generation, mastering CX is a new ballpark. Distributed generation also means two-way flows of power, with renewable generation fed back into the grid by "prosumers," leading to massive investments in intelligent device monitoring, grid management, and grid reliability to manage flows. Traditional utilities firms have become well-versed in CX for some time (although at varying levels of quality depending on which customer you ask). While this gives them a head start on energy majors looking to disrupt their longstanding industry, they also need to fend off challenges from startup disruptors in their own space. Auto-switching services, renewable-only energy providers, and decentralized energy platforms are just some examples of these threats.
- **There are still frightening amounts of money being thrown into coal, oil, and gas**; there needs to be urgency in everything that touches climate change, and the transition can't happen without energy firms on board. Trust needs to be reestablished by the material action of oil and gas firms; they need to be clear on the good and the bad if they'll ever re-earn the trust of the public and politicians. Bad actions don't cancel out the good of renewables investments, but when those investments are still a small fraction of fossil fuel investments, there's work to do. There are global disparities in attitudes to the energy transition, and regardless of what happens at COP26 this November or whether the general optimism about the Biden administration proves valid, there will be a disparity for some time.

The energy transition must be integrated with sustainability across ESG, digital and technological change, a pandemic and oil price double-shock, and more…

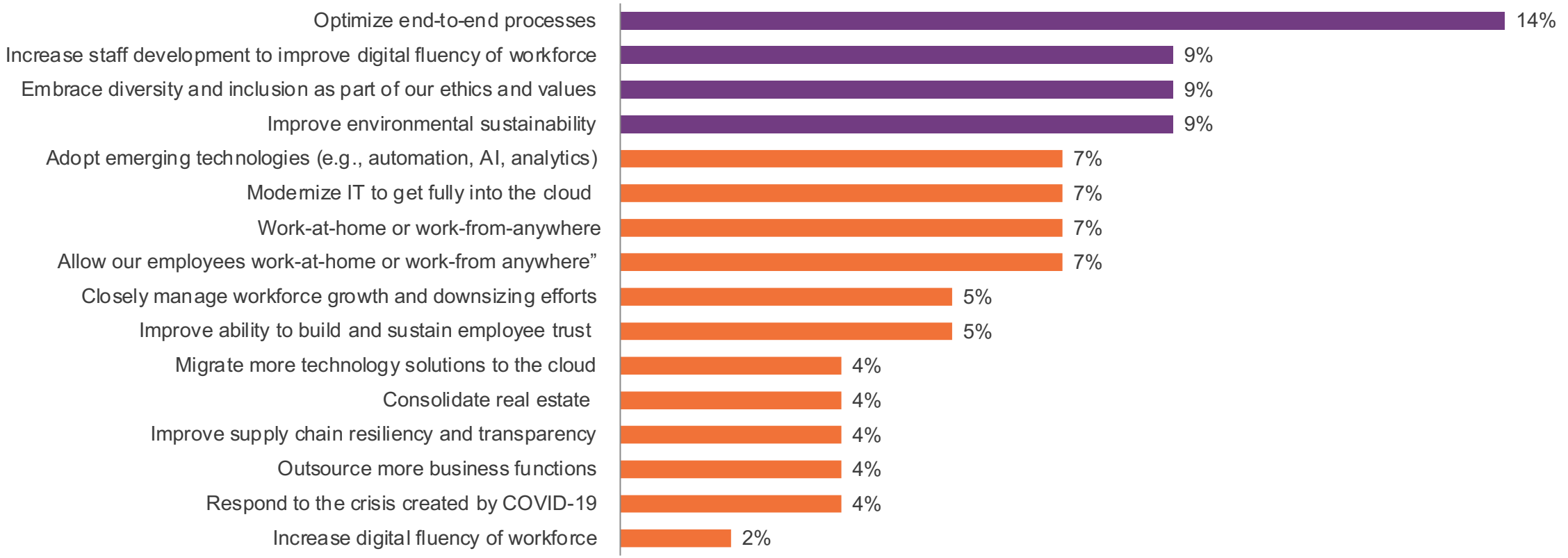
- **The energy transition dominates the narrative of both the energy and utilities industries.** However, these industries must integrate the multiple fundamental competing transitions into its organizational roadmaps.
- **ESG factors mean sustainability demands beyond the energy transition.** Alongside the transition from fossil fuels to renewables, broader environmental, social, and governance (ESG) factors are forcing change, whether via disclosure of diversity metrics and supply chain labor practices, financial risk and governance around the future of assets and practices, or the circularity of supply chains and their integration with industries like the automotive sector.
- **2020 brought a double-shock of a negative crude price and a global pandemic.** Refineries have been shut, assets are being sold and restructured, energy firms are rife with M&A activity, and headcounts are being reduced. The energy industry has traditionally swung between a CAPEX and OPEX focus depending on the industry's economic state, but now both are being forced in tandem. Cost pressure is combining with an industry-wide need to invest and reform across the digital and energy transitions.
- **Transformation means more digital and intelligent technologies.** Operating and working models were already changing, but the pandemic accelerated and re-contextualized what digital transformation meant, adding another fundamental line of change to the industry. More "intelligent" technologies like AI, analytics, internet of things (IoT), and automation are being adopted throughout a variety of use cases for a variety of outcomes, but there still remains a heap of legacy infrastructure to manage and migrate and new, less-intelligent apps and workflows to develop.

The demands of geographies, markets, criminals, and employees add to the complexity facing the energy industry as it transitions

- **Differences in mindset across geographies to the pathway of the energy transition are stark.** Europe is moving faster toward renewables. North America is seeing a more gradual shift to natural gas and is banking on carbon capture (although there is still a high amount of renewables activity). Countries are taking widely varying views on nuclear power, driven by politics. China is going after all extremes from renewables to coal, and India is looking at a huge acceleration of electrification and hydrogen economy development. The Middle East and Africa are transitioning to cleaner fuels, but they see continued fossil fuel investments from further afield.
- **Customer experience is shifting.** CX is shifting for both the energy and utilities industries, whether via new electric vehicle charging at fueling stations or the increasing levels of self-services for utilities firms. With utilities firms more established in contact center and CX operations, they have a head start as oil and gas firms move into their space and auto-switching and renewable-only services come online.
- **Cybersecurity in energy is nationally-critical**: The convergence of operating technologies with digital (OT-IT convergence) has opened up a world of opportunity for cyber criminals of all kinds. Ransomware attacks are targeting power grids, refineries, pipelines, and all forms of critical infrastructure with the potential to shut down commerce, travel, and most of daily life. The threats prompt huge cybersecurity spending by government and all industries, all connected to the energy and utilities industries.
- **Modern talent takes a different view of the fossil fuel industry**: High attrition rates stem from the pandemic and oil price double-shock and from the increasingly negative connotation surrounding the energy industry. Talent is shifting toward industries perceived as sustainable for the coming decades, but attrition is also an opportunity for a new focus on automation, broader technologies, and third-party services to significantly improve the efficiency of processes that have gone unchanged for decades.

Process optimization, Talent management, and ESG are the top 3 priorities for energy companies in the next 12-18 months

What are the major changes in your organization's ways of working for the next 12 to 18 months? (Rank 1)



Sample: 56 Global 2000 energy enterprise leaders
Source: HFS OneOffice™ Pulse Study, May 2021

Oil and gas transition strategies vary globally, dictated by geopolitics and the double-shock of a pandemic and oil price crash (1/2)

- **Global differences in oil and gas firms' narratives to the energy transition (investments aren't always exactly matched) present a fundamental split.** One group presents a narrative that fossil fuels' time is more limited (with regulation and customer perceptions shifting) and are transitioning more quickly toward renewable energy. The second group pitches an acceptance of the role of fossil fuels in the global economy for decades to come and is transitioning more heavily to natural gas, banking on carbon capture, storage, and utilization (CCSU) with some level of renewables investments now and planned in the future.
- **Europe is perceived as a leader, but do investments and regulations match the rhetoric?** From the point of view of European energy majors, which have embraced the rebranding more than most (e.g., TotalEnergies, bp, Shell), oil will go away, and they'll not survive unless they change quickly. However, that doesn't mean that their global business is all being turned away from fossil fuels, as we discuss below.
- **The US sees gas as the near future, but the Biden administration might just be speeding up its renewable bets.** US companies, of course, see the change, but they are more public in their views that oil will be around for 30 years or more and that gas will be around for much more than that. They're focusing on first moving from oil to gas, then down the road renewables come in. While both the US and European views are as accurate as anyone can predict, these points of view are driving highly different organizational cultures. The expectation of less strict regulation coming from the US federal and state governments (despite optimism that the Biden administration will be able to oversee some positive change) is battling shareholder, public, and political pressure instead. European governments appear more willing to press ahead with regulation and have the general support to do so, although examples like Germany moving totally away from nuclear power leading to a coal uptake don't help.
- **US firms are more focused more on Scope 1 and 2 emissions being compensated for by CCSU.** In Europe, more advanced regulatory and industry-wide landscapes are diving into Scope 3 supply chain emissions, with more advanced digital progress enabling the shift. Service providers in this study saw close to no Scope 3 discord in the US, backed by customer references, including a large oil field services (OFS) firm. Exxon Mobil, for example, produces sustainability reports without Scope 3 consideration, leading to no pressure on its supply chains. Some OFS companies are, however, starting to embrace sustainability. Schlumberger and others are offering Scope 3 reporting for their clients (i.e., reporting Schlumberger's Scope 1 and 2 emissions), and maybe in another year or two, we'll see regulation or even hints of carbon pricing if regulators are convinced by market leaders the industry won't collapse overnight. Despite this, it is still not on the European scale. Other interesting examples emerge in remote fieldwork, where monitoring and maintenance are governed by digital command centers and on-site devices, in part for predictive maintenance and in part for limiting the amount of travel to sites. Even if US majors remain focused on Scope 1 and 2, it isn't all bad news; it's explicitly linked to efficiency, not just regulations, as well as reliability and cost, and it filters into the economic incentives for CCSU with tax benefits for its adoption taking hold in the US.

Oil and gas transition strategies vary globally, dictated by geopolitics and the double-shock of a pandemic and oil price crash (2/2)

- **Some Asian and African markets will take longer to transition; it's not just the US perceived as lagging behind.** With European-headquartered firms facing regulatory pressure across ESG metrics to transition faster, they're investing their fossil fuel business further afield where the most polluting fuels are likely to linger at scale in these markets for longer, with hydrocarbons still seen as the engine room for development.
- **In the Middle East, Aramco, for example, shows another set of dynamics.** Upgrades to reduce carbon intensity and "crude-to-chemicals" developments are being seen, but the core hydrocarbon business remains.
- **Then there are the "pure plays" in APAC; for example, Petronas and Reliance and India.** Reliance announced a hydrogen business alongside the government's plans to decarbonize the country; service providers expect the speed of change in India to be, as one put it, "mindboggling." Reliance is also investing in solar and battery manufacturing. China is investing in, in simple terms, everything.
- **US firms are showing strategic regional differences just like European majors.** The regional differences tend more toward the overall direction a company is taking, so there remains a focus on Scope 1 and 2 emissions for US firms globally. Local nuances and regulations will undoubtedly keep coming in, and all companies will have to adhere to them. There has been some divestment by US firms from their European assets, similar to European firms investing in fossil fuels abroad while moving to renewables at home.
- **Market disruptions are forcing many energy companies into M&As or demergers.** M&A activity dominates the upstream sector; the midstream is into acquisitions, and downstream companies are selling off refineries or fuel retail businesses. Companies are carefully considering the future direction of their CAPEX and investment following a tumultuous year in energy markets and as ESG considerations increasingly dictate their ability to attract capital.

Energy industry technology (1/2) | Digital, cloud, and more intelligent technologies are now the norm and spread throughout use cases, and they are becoming a license to play

The energy industry, like most, is filled with use cases of digital and more intelligent technologies being turned toward industry-specific applications and outcomes. The coming four pages outline the attitudes in our enterprise data toward their current technologies, planned investments, the targets of those investments, and the challenges they face.

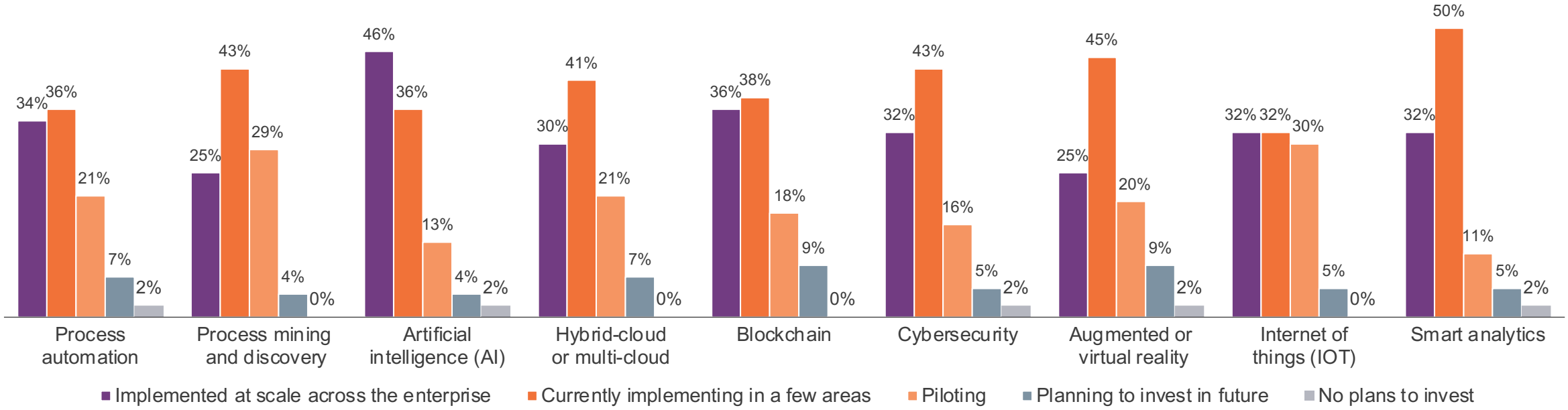
- **Automation is becoming critical for core industry business processes.** Automation reduces manual effort, streamlines tasks, and consolidates resources to mitigate industry's talent losses from 2020's double shock combined with the industry's perceived limited lifespan. There is now less reluctance around automation and data management compared with pre-pandemic attitudes. The industry was risk-averse to remote working, but like most sectors, remote work is now accepted as the norm—whether that's in the trading departments or increased levels of remote field operations.
- **Analytics and AI generate new levels of insight**: they allow firms to monitor assets in closer to real-time, respond faster, improve the accuracy of forecasts, cut costly errors, and many other core cases for the improved use of data in decision making.
- **Internet of things (IoT) technology is advancing the monitoring and operating of assets** in combination with data, analytics, and AI to improve awareness, reduce equipment downtime, and boost data collection.
- **Blockchain is being leveraged** to develop energy trading applications as decentralized generation by "prosumers" and enterprises transforms the market dynamic; transparency of energy sources, for example, in purchasing renewable energy certificates, is also being improved. Blockchain platforms are also being applied to secure networks of industry assets, systems, and IOT devices.
- **Cybersecurity**: The industry's critical infrastructure—pipelines, refineries, platforms, and much more—is becoming a common target for cyberattacks, leading to a boom in demand for cybersecurity professionals, technologies, and services. But cybersecurity is not only about technology. It's about people, processes, data, change management, and the technologies that enable it.

Energy industry technology (2/2) | Digital, cloud, and more intelligent technologies are now the norm and spread throughout use cases, and they are becoming a license to play

- **Cloud migrations and capabilities** support cost takeout, business continuity, business alignment across the value chain, integration of technologies and operations, streamlining operations, improving the use of data, and much more that we're growing used to seeing in successful cloud adoptions.
- **Digital twins model plants, supply chains, and enterprise ecosystems**. Firms are testing new operating models, modeling process data, and getting new perspectives.
- **Quantum computing will see early use cases in the modeling of complex physics and ecosystem shocks**. In the energy industry, this translates to geophysical modeling of, for example, oil fields or weather patterns around renewable energy sites. Ecosystem modeling will also better predict and prepare firms for the impacts of disruptions such as oil price crashes and pandemics.
- **AR/VR platforms** are being developed into training environments and aiding fieldwork, for example, augmenting a piece of equipment with operator instructions.
- **Customer experience and engagement**: In fuel retail, there's an ongoing effort to convert customers into higher value transactions in stores, and energy firms need to crack the general customer contact and experience angles if they're going to branch into the utilities industry. The general assessment of energy firms' customer capabilities is not good—it's a big jump to the levels of established customer management in the utilities industry. There are also customer pools merging across industries—for example, between energy and automotive—where examples are surfacing of integrating energy management and market information into vehicle dashboards in partnership between automotive manufacturers and energy suppliers.
- **Sustainability technology** is being developed in various combinations of all the above to better measure, monitor, report, and optimize ESG performance and business outcomes in tandem. The energy industry is seeing high levels of investment into technology for sustainability.

Emerging technology is seeing adoption across energy enterprises

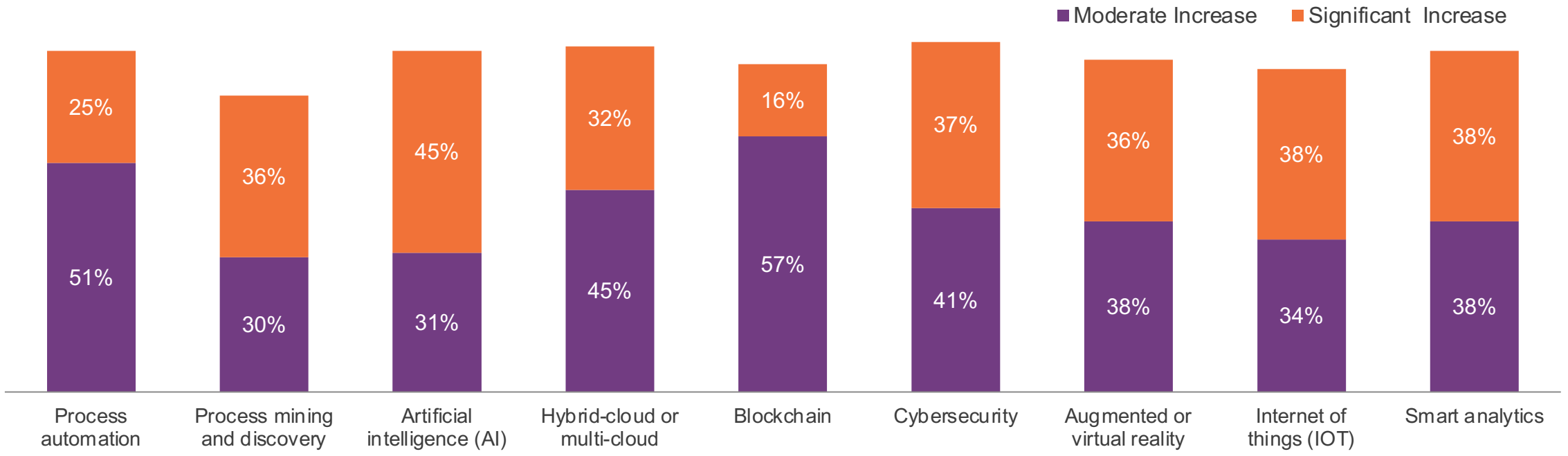
What is the stage of overall adoption of emerging technologies in your company?



Sample: 56 Global 2000 energy enterprise leaders
Source: HFS OneOffice™ Pulse Study, May 2021

Energy investments are planned across the technology board, with AI standing out

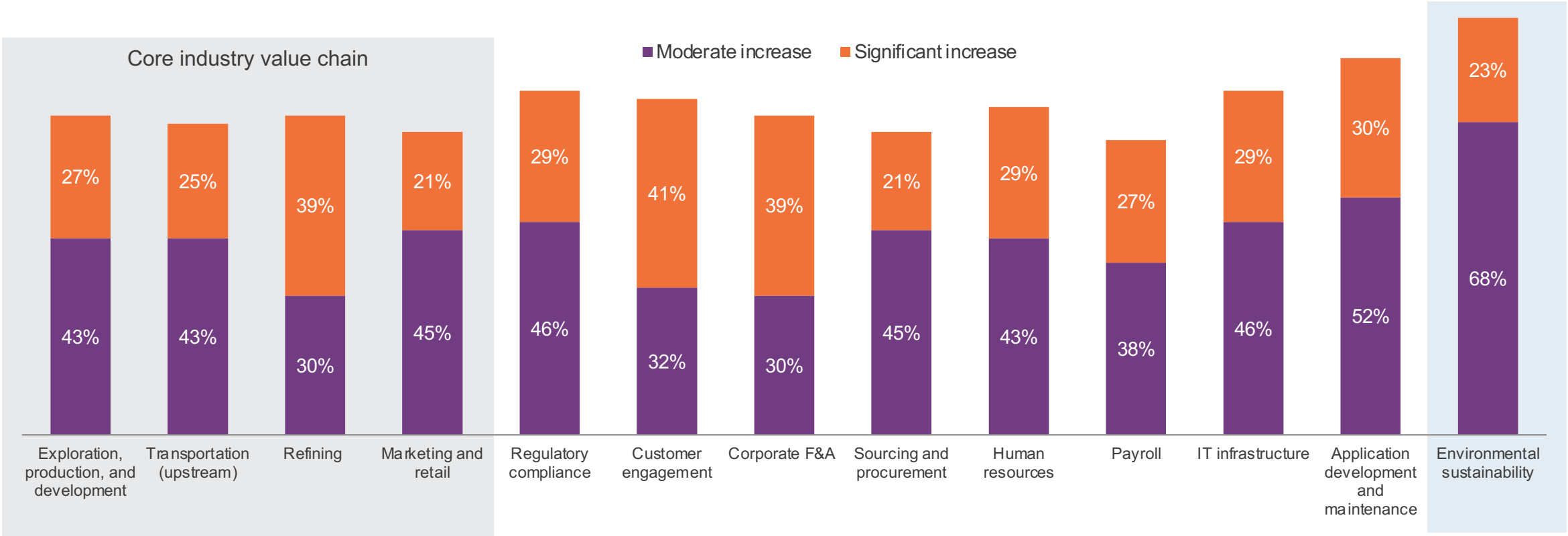
How do you see investments changing for these technologies over the next 12 to 18 months?



Sample: 56 Global 2000 energy enterprise leaders
Source: HFS OneOffice™ Pulse Study, May 2021

Technology drivers | Environmental sustainability is driving emerging technology adoption alongside customer engagement and F&A

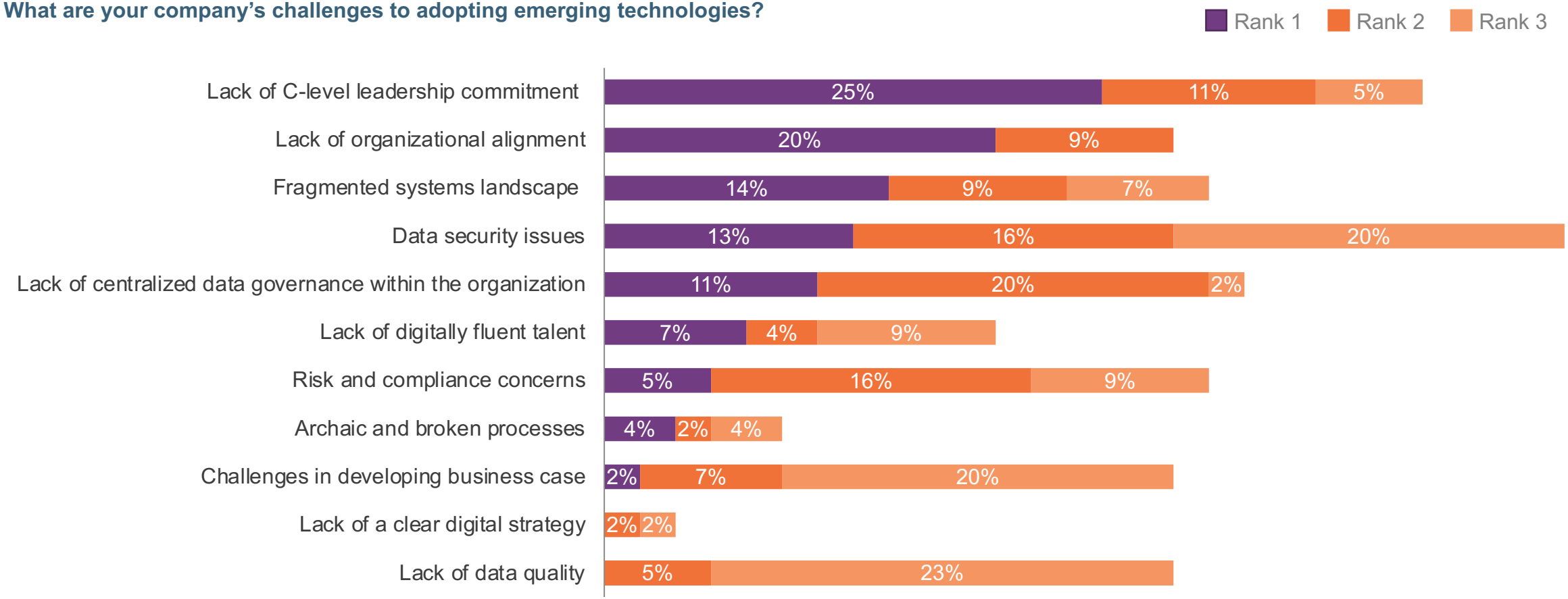
How do you expect the adoption of emerging technologies to change across your industry's value chain in the next 24 months?



Sample: 56 Global 2000 energy enterprise leaders
Source: HFS OneOffice™ Pulse Study, May 2021

Barriers to technology | C-level commitment and organizational alignment present the biggest barriers to the energy industry's plans for emerging technology

What are your company's challenges to adopting emerging technologies?



Sample: 56 Global 2000 energy enterprise leaders
Source: HFS OneOffice™ Pulse Study, May 2021

The energy transition is driving the continued integration of energy and utilities industry services and technology

- **Technology and business service providers are beyond critical in decarbonizing the energy and utilities industries, and they are doing so in balance with numerous other competing demands.** Service providers, especially the leaders profiled in this report, have longstanding presence in the industries, understand the domains, and have huge networks of partners and innovation, but it's their visions and market positioning within the global context and industry transitions, with a clarity of focus on where specific sets of capabilities come in alongside the ecosystem, that define the best of the best. The breadth of capability at these service providers' disposals makes self-awareness and humility even more important, and it makes strengths stand out in a market full of similar narratives.
- **Conglomerate firms have advantages where their engineering, IT, digital, and strategy services arms can tap into longstanding OEM and industry infrastructure expertise.** However, other providers have vast partner ecosystems that can match this, and they often provide services to conglomerates despite them having their own services arms. For example, many of the firms in this report have parent companies deeply involved in energy generation, power grid operation, and technology design and manufacturing, but they must still compete with independent service providers for their own parent company's business.
- **End-to-end isn't just branding anymore; cases and customers are proving a shift across the value chain.** Many service providers' journeys from delivery toward innovation, consulting, and increasingly large transformational projects are being proven in case studies and our conversations with clients. The most successful firms combine their deep technical expertise with increasing levels of business fluency to engage at higher and higher levels of client organizations. Providers partner to cover any expertise gaps and link up with the strategy consulting firms operating at the highest levels designing organizational-wide strategies. These larger traditional consulting firms are certainly in for a fright and mustn't be complacent as firms rapidly move up the value chain; there is still a way to go, both in branding with (new and existing) clients that have grown used to firms being "delivery powerhouses" separate from the consultants and in bridging the gap between domain consulting and being able to engage in a three-plus-year timeframe with the C-suite.
- **Service providers are integrating sustainability throughout their portfolios across consulting, technology, and managed services**. HFS is currently mapping the ecosystem, which remains fragmented and undefined, but this is a key component throughout the energy transition where sustainability must become native in organizations as they undergo evolution on so many fronts to survive and grow stronger.
- **Digital and more intelligent emerging technology capability is now a bar for entry to service providers; this capability must be aligned with outcomes and the global competing context**. For the energy transition, providers are formalizing their go-to-markets around digital, technological, and industry-aligned capability across IoT, analytics, cloud, and much more. Providers are co-creating with customers and partners, building platforms for next-generation grid operations, emissions reporting, carbon offsetting, EV solutions, and many more specifics to both the energy and utilities industries.
- **Enterprise customers are demanding outcomes, and we see the effect in client deals**. The multiple transitions facing the energy and utilities industries create more and more transformational projects incorporating services and technology across the value chain. But there remain workflows and assets to manage, with modernizing aging infrastructure still providing a large part of services revenues. App development remains prevalent, and cloud migrations are becoming the norm, as are enterprise platform upgrades and integrations with more intelligent technologies.

Demand is increasing across the energy services value chain: It's fastest across upstream, refining, and retail and marketing services

- We asked the 13 service providers profiled in this report to assess the change in demand for their services across the energy value chain over the past 12 months from +5 (a significant increase) to -5 (a significant decline).
- Demand is increasing across the whole value chain.
- The fastest growth in demand is for upstream (exploration and production), refining, and retail and marketing services.
- **There is standout growth for upstream asset and data management, refining emissions management, refining process control tech, and market repositioning strategy from oil and gas to energy.**
- This mirrors the overwhelming dominance of the energy transition throughout this study; however, the competing industry demands are born out in an increase in demand across the value chain for technology and business process services.

Upstream: exploration and production	Change in demand	Midstream: transportation	Change in demand	Downstream: refining	Change in demand	Downstream: distribution	Change in demand	Downstream: retail and marketing	Change in demand
Average	+3.4	Average	+2.8	Average	+3.3	Average	+2.4	Average	+3.3
Asset management, including integrity	4.6	Linear asset management (pipeline operations, modeling, surveillance)	3.3	Emissions management, including monitoring and reporting	4.6	Terminal operations	2.4	Energy marketing services	3.2
Digital oil field management	3.7	Transportation operations management	2.8	Integrated refinery information systems	3.6	Distribution management	2.3	Repositioning strategy from oil and gas to energy	4.2
Drilling and well completion management	3.0	Supply chain management	3.5	Process control technology, including digital, AI, analytics, IoT and other emerging technologies	4.3			Retail and franchise operations	3.2
Petro-technical computing infrastructure	3.3	Trading	1.8	Plant operations	3.6			Energy trading and risk management	2.6
Reservoir engineering	2.7			Golden batch optimization	1.7				
Upstream accounting	2.4			Refinery production planning and scheduling	2.3				
Upstream engineering and R&D	3.1			Supply planning and sourcing	2.8				
Production optimization	3.8			Carbon capture, storage and sequestration, and utilization	3.6				
Upstream data management	4.4								
Field development, planning, and contract management	2.8								

Source: HFS Research, 2021
Sample: 13 leading energy service providers covered in this report

Energy services | Benchmarking the service providers profiled in this study

5,348

Average headcount dedicated or available to energy services

Largest: 14,000
Smallest: 500

- Service provider headcounts saw 31% growth in 2020 and 12% in 2019.

$530 million

Average energy services revenue across participants

Largest: $1.9 billion
Smallest: $100 million

- Energy services revenues saw 3% growth in 2020 and 11% in 2019; we're expecting an increase in growth mirroring headcount rises over the coming years.

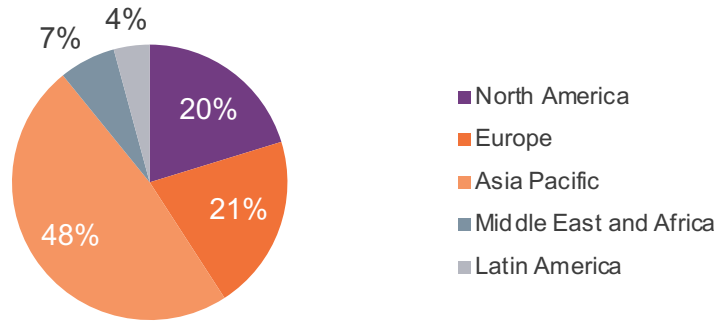
86

Average number of energy services clients

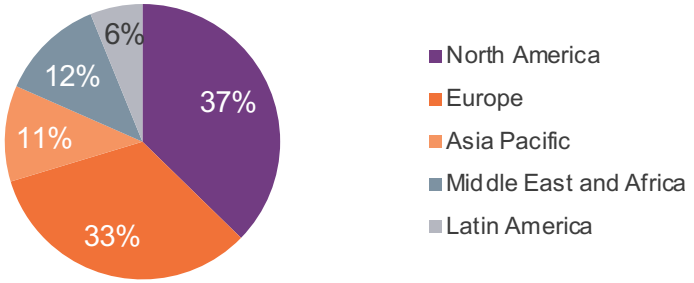
Largest: 250
Smallest: 30

- Twenty-five percent (25%) of energy clients engage in sustainability services.
- Thirty-four percent (34%) engage in co-innovation.
- Four percent (4%) engage in outcome-based deals, and 18% are hybrid.
- Providers largely cite between 50% and 80% of their engagements as digital (not managing legacy).
- Broadly, providers rate their alignment with the HFS OneOffice™ vision as 8-10/10

Service provider headcount locations: North America and Europe are challenging APAC



Global client breakdown: North America and Europe dominate



Source: HFS Research, 2021
Sample: 13 leading energy service providers covered in this report

4

Results: Energy Services Top 10, 2021

Energy Services | A summary of the providers assessed in this report

Provider (alphabetical)	HFS' take
Accenture	Ambition and resources positioned at leading the energy transition, combining delivery with high-level strategy showcased in sustainability and global networks
Atos	Alignment throughout a newly vertical Atos across the energy value chain, with standout decarbonization, cybersecurity, and innovation
Capgemini	Energy innovation and delivery across the value chain proving its consulting, engineering, and technology capabilities, with Altran fully integrated
Cognizant	Data and analytics brand strength combines with growing value chain and energy-specific capability, surrounded by an acquisition and partnership boom
DXC Technology	Cloud strength and a scaled energy-specific portfolio to bring together a broad set of OT and IT solutions
HCL	Bringing engineering to the strategy table, marrying business and technology; investment pouring into co-innovation and R&D joins a long energy history
Hitachi	The industrial capability of Hitachi across IT, OT, OEM, advisory, and services, combines in one face for energy solutions
Infosys	Historic energy powerhouse proving that innovation, sustainability, and transformation capability is a reality
LTI	Energy expertise combined in the broader L&T Group, with technology and sustainability solutions to match, puts LTI in the industry heavyweights
NTT DATA	Energy scale and a suite of industry-specific solutions backed by R&D investments
TCS	Energy industry engineering engine, execution across the value chain and R&D investment for digital innovation and sustainability
Tech Mahindra	Clear technology focus spans energy-specific solutions and platforms, bringing together data and analytics alongside a full house of emerging tech
Wipro	Energy vision and a new operating model aligning Wipro's services and technology strengths under the energy transition's global context

HFS Top 10 Rankings | Energy services 2021 notable performances

HFS Winners Circle
Top five providers overall across execution, innovation, voice of the customer, and HFS OneOffice™ alignment criteria

#1	#2	#3	#4	#5
accenture	Infosys Navigate your next	TCS TATA CONSULTANCY SERVICES	wipro	LTI

Execution powerhouses
Top five providers on execution criteria

#1	#2	#3	#4	#5
accenture	TCS TATA CONSULTANCY SERVICES	DXC TECHNOLOGY	wipro	Infosys Navigate your next

Innovation champions
Top five providers on innovation criteria

#1	#2	#3	#4	#5
accenture	Atos	HCL	LTI	wipro

Aligned to the HFS OneOffice™ vision of transformation
Top five providers on HFS OneOffice™ alignment criteria

#1	#2	#	#4	#5
accenture	Infosys Navigate your next	Capgemini	LTI	wipro

Outstanding voice of the customer
Top five providers on voice of the customer criteria

#1	#2	#3	#4	#5
Infosys Navigate your next	TCS TATA CONSULTANCY SERVICES	LTI	HITACHI	accenture

Other notable performances

- **NTT DATA** ranks #4 for Scale and resources and #4 for Client reach
- **DXC Technology** ranks #2 for Scale and resources
- **Hitachi Vantara** ranks #2 for Client reach and #2 for ecosystem
- **Capgemini** ranks #3 for Growth and trajectory
- **Cognizant** ranks #3 for ecosystem
- **HCL** ranks #1 for Creative client engagement & #1 for Growth and trajectory
- **Wipro** ranks #1 for Vision and sustainability services
- **Atos** ranks #2 for Creative client engagement

Excerpt for Infosys

HFS Top 10 Rankings | Energy services 2021

Rank	Overall HFS Top 10 position	Execution				Innovation					OneOffice alignment	Voice of the customer
		Scale and resources	Growth and trajectory	Client reach	Overall execution	Ecosystem	Vision and sustainability services	Technology use and development	Creative client engagement	Overall innovation		
#1	accenture	accenture	HCL	accenture	accenture	accenture	wipro	accenture	HCL	accenture	accenture	Infosys
#2	Infosys	DXC TECHNOLOGY	LTI	HITACHI	TCS	HITACHI	accenture	TCS	Atos	Atos	Infosys	TCS
#3	TCS	TCS	Capgemini	wipro	DXC TECHNOLOGY	Cognizant	LTI	Atos	accenture	HCL	Capgemini	LTI
#4	wipro	NTT DATA	accenture	NTT DATA	wipro	TCS	Atos	LTI	LTI	LTI	LTI	HITACHI
#5	LTI	Infosys	wipro	Capgemini	Infosys	Infosys	Infosys	HCL	Infosys	wipro	wipro	accenture
#6	HCL	wipro	TCS	TCS	NTT DATA	wipro	TCS	Infosys	TCS	Infosys	TCS	HCL
#7	Capgemini	Capgemini	Cognizant	Infosys	Capgemini	Capgemini	Capgemini	wipro	Capgemini	TCS	HCL	NTT DATA
#8	Atos	HCL	Tech Mahindra	Atos	HCL	Atos	Cognizant	Cognizant	Cognizant	Cognizant	Atos	Cognizant
#9	HITACHI	Atos	NTT DATA	DXC TECHNOLOGY	Atos	HCL	HITACHI	Capgemini	wipro	Capgemini	Cognizant	Capgemini
#10	Cognizant	Cognizant	Infosys	LTI	LTI	LTI	HCL	HITACHI	HITACHI	HITACHI	HITACHI	wipro

Excerpt for Infosys

5 Infosys profile

How to read the profiles
HFS's take

Logo

Dimension	Rank
HFS Top 10 position	#
Ability to execute	#
Scale and resources	#
Growth and trajectory	#
Client reach	#
Innovation capability	#
Ecosystem	#
Vision and sustainability services	#
Technology use and development	#
Creative client engagement	#
OneOffice alignment	#
Voice of the customer	#

Strengths

Strengths of the service provider: qualitative and quantitative

Opportunities

HFS and customer feedback recommendations for the service provider to develop

Client breakdown by size

Client location breakdown

Maturity across the value chain

Value chain capabilities

Upstream: exploration and production	Midstream: transportation	Downstream: refining	Downstream: distribution	Downstream: retail and marketing

Value chain capability scale

Not a focus | Emerging | Mature

Acquisitions and partnerships

- **Recent acquisitions that have added to energy services**
- **Key partnerships that contribute to energy services**

Clients

- **Number of clients and key client names**

Operations

- **Headcount dedicated to and available for energy services**
- **Delivery location breakdown and key centers of excellence, etc.**

IP, platforms, and tools

- **Intellectual property (IP), platforms, and tools key to energy services**

Historic energy powerhouse proving that innovation, sustainability, and transformation capability is a reality

Infosys® Navigate your next

Dimension	Rank
HFS Top 10 position	**2**
Ability to execute	5
Scale and resources	5
Growth and trajectory	10
Client reach	7
Innovation capability	6
Ecosystem	5
Vision and sustainability services	5
Technology use and development	6
Creative client engagement	5
OneOffice alignment	2
Voice of the customer	1

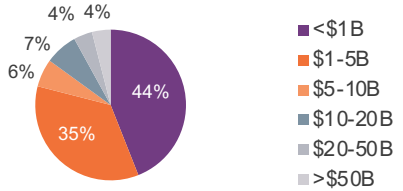
Strengths

- **Domain-centric approach, knowledge, and deep history in energy with the clients and partnerships to match:** Infosys has the necessary pragmatism toward the energy transition across differing Europe and US mindsets. The energy practice has an opportunity to lead the development of Infosys' brand across the value chain, including its sustainability capability. The energy transition shows this opportunity more than most areas. Infosys co-developed the Cobalt platform's industry-focused assets in collaboration with energy clients.
- **Breadth and broadening value chain coverage**: Infosys continues to deepen customer relationships, upskill staff, and expand its capability.
- **Sustainability First approach and growth ambition:** Goals aligned across Infosys's capabilities and partnership networks UN, WEF, and EMF.
- **Deep Microsoft history and solutions:** Experience includes sustainability and energy specifics, plus many other partners with similar depth.
- **bp relationship and digital design studios**: bp's CEO heralds Infosys as a core partner. New design studios in London and Houston were built on Brilliant Basics and WongDoody acquisitions, including a bp-specific floor. With bp, Infosys has developed Energy as a Service (EaaS).
- **HFS OneOffice™ aligned:** Collaboration with clients and partners across the value chain is tightening the narrative in an aligned go-to-market.

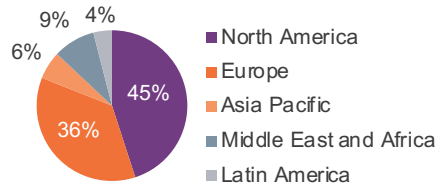
Opportunities

- **Energy transition and sustainability services:** Infosys shows exceptional development in its sustainability services portfolio, case studies, and narrative, and it is among leading SIs for these services. It must permeate this capability throughout its energy industry practice and engagements with its long-established client pool. Infosys needs to maintain a continued focus on developing a brand image across the value chain with new and existing clients.
- **Deployments of digital and emerging technology throughout the portfolio:** While there are standout cases and Infosys is embedding digital and emerging technologies in engagements, there is room for expansion in its large client base.
- **Take the opportunity to expand global headcount and the share of larger clients.**

Client breakdown by size



Client location breakdown



Value chain capabilities

Upstream: exploration and production	Midstream: transportation	Downstream: refining	Downstream: distribution	Downstream: retail and marketing

Value chain capability scale

Not a focus — Emerging — Mature

Acquisitions and partnerships

Recent energy-relevant acquisitions:

- **2020:** Simplus
- **2019:** WongDoody
- **2018:** Fluido
- **2017:** Brilliant Basics
- **2015:** Noah Consulting

Key energy partnerships:

- AWS, Microsoft, PTC Inc, Software AG, Vantiq, HPE, MongoDB
- Industry bodies such as OSDU, Open Footprint Forum, PPDM, PODS and ISA, Energy Industry Forum
- Society of Petroleum Engineers
- The Infosys Innovation Fund invests in startups
- **Academia:** Stanford, University of Petroleum & Energy Studies, Graphic Era University, MIT, Pune

Clients

Number of clients: 130

Clients include:

- The top five integrated oil and gas majors
- The top five OFS companies
- Eight of the top 10 independent upstream companies
- Three of the top five midstream companies
- Three of the top five downstream companies

Operations

Energy headcount: 5,750, across

- North America 15%
- Europe 10%
- Asia Pacific 70%
- Middle East and Africa 3%
- Latin America 2%

Delivery locations:

- 10 technology and Innovation hubs in the US
- 10 design and innovation hubs in Europe and Asia Pacific
- Cobalt Living Labs, Digital Engagement COE, Applied AI Living Labs, Blockchain COE, XR COE, Quantum Computing COE, Cybersecurity, Data for Digital, IoT

IP, platforms, and tools

- Pipeline corrosion monitoring (AWS)
- Remote tank inventory monitoring (Software AG–Cumulocity)
- Asset predictive analytics (PTC Thingworx)
- Domain specific AR Training solution (PTC Vuforia)
- Upstream water hauling (OSI PI)
- Petrel Data QC for cloud data ingestion
- Reservoir dashboards
- Proppant Mart blockchain logistics management
- Digital oil fields (DOF) monitoring solution
- CREMS (Critical rig equipment monitoring solution)
- Cobalt cloud platform with energy-specific accelerators

Excerpt for Infosys

6 About the authors

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Josh Matthews is a Practice Leader at HFS, based in Cambridge, UK. Josh leads HFS's coverage of sustainability and the energy and utilities industries, built on academic and industry expertise across chemical engineering, management, and sustainability. Josh also focuses on supply chain, the TMT (telecom, media, and technology) industry, and the HFS Triple-A Trifecta of automation, analytics, and AI segments. Other subjects of interest and coverage include quantum computing and diversity and inclusion (D&I). Previously, he has covered the internet of things (IoT) and manufacturing.

Josh is a former City Councillor in Cambridge, where he held the opposition portfolio for Climate Change, the Environment, and the City Center.

Josh graduated from an Engineering and Management master's program at Cambridge University. His research tackled operational and environmental improvements in industry and the implementation and management of sustainable initiatives. On behalf of the university, Josh worked on consulting projects at Unilever, as well as SMEs in the tech and marketing spaces.

Josh had previously graduated from Loughborough University with a first-class master's in Chemical Engineering. Over the course of this degree, he worked in the energy industry, and was a visiting researcher at UC Santa Barbara, publishing designs and analysis of low-CO2 hydrogen production in the Chemical Engineering and Technology journal.

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Saurabh Gupta is President of Research and Advisory at HFS. He oversees HFS' global research function managing the global team of analysts and operations across US, Europe, and Asia-Pac. He works closely with the CEO to set the strategic research focus and agenda for HFS Research, understanding and predicting the needs of the industry and ensuring that HFS maintains its position as the strongest impact thought leader for business operations and services research.

He is a recognized thought leader and passionate problem solver in the global services industry. With 15+ years of experience across client, provider, advisory, and analyst roles, he brings a uniquely realistic and wide-ranging perspective to our industry's challenges and opportunities. Before joining HFS, Saurabh led strategy for Genpact's CFO and transformation services, helped shape the Business Process Services (BPS) strategy for AbbVie, managed Everest Group's global BPS practice, and worked as a techno-functional consultant at Infosys.

Saurabh advises senior executives on business transformation initiatives with a strategic mindset and execution orientation. He has authored over 125 research reports, is a frequent speaker, and is regularly quoted in industry publications. He is well-known for spotting disruptive trends like As-a-Service, Cloud, Analytics, Robotics and predicting their implications for different stakeholders. He brings to the table a combination of subject matter expertise and structured thinking with effective collaboration and communications.

HFS TOP 10

About HFS

Insight. Inspiration. Impact.

HFS is a unique analyst organization that combines deep visionary expertise with rapid demand side analysis of the Global 2000. Its outlook for the future is admired across the global technology and business operations industries. Its analysts are respected for their no-nonsense insights based on demand side data and engagements with industry practitioners.

HFS Research introduced the world to terms such as "RPA" (Robotic Process Automation) in 2012 and more recently, the HFS OneOffice™. The HFS mission is to provide visionary insight into the major innovations impacting business operations such as Automation, Artificial Intelligence, Blockchain, Internet of Things, Digital Business Models and Smart Analytics.

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