



Can you reshape as fast as the future does?

Now is the time for oil and gas
to invest in electrification

■ ■ ■
The better the question. The better the answer.
The better the world works.



Building a better
working world

Authors: Andy Brogan, Fay Shong, Jaideep Malik and Simon Watson

Contributing: Andrew Perkins, John Simlett, Paul Bogenrieder

Is now the time for oil and gas players to invest in electrification?

Affordable and widely available electric vehicles (EVs) have long been imagined as the next evolution in the automobile market. Even so, that transition has perpetually remained off the horizon; yet, EY analysis shows that, by the mid-2020s, that future is poised to become the reality, with a dramatic impact to oil and gas companies.

Each year, EV cost parity with internal combustion engine vehicles grows more likely. While the current oil shock amid the COVID-19 pandemic has introduced a complicating factor into the equation, oil and gas companies are confronting a uniquely challenging environment now. Demand for gasoline is expected to drop significantly over the long term – to the tune of 13.7 million barrels of transportation fuel per day by 2040, Bloomberg New Energy Finance predicts. EVs could entirely offset annual marginal growth in oil demand as early as 2027, with oil demand reaching its peak by the late 2020s, the Carbon Tracker Initiative says.

Amid the pandemic, manufacturing activities and travel have slowed or shut down across the world, leading to sharp drops in demand and prices. Volatility is rising, and customers are spending less while showing greater interest in environmental sustainability. As a consequence, returns in the industry have been challenged as companies look for new sources of growth to offset declines in their conventional businesses.

Amid these pressures, it may be an ideal time for major oil and gas players – by which we primarily mean integrated and national oil companies – to initiate or strengthen their bets on the EV future. They shouldn't necessarily feel threatened as oil supply and demand is displaced; however, they need to start acting now to start reimagining what's next, today, and develop new revenue streams around it. They have built-in strengths to rely on: strong brands, operations on a global scale and retail sites that can act as crucial foundational infrastructure to enable the future of mobility. In the process, they can gain direct access to a new and growing consumer base and become a material participant in the evolution of smart cities and other infrastructure plays.

An EY study of 29 EV value pools has homed in on six that show promise for the oil and gas sector. These value pools vary by size and relevance across geographies because of local market and regulatory conditions, creating a complex but intriguing landscape for companies hoping to capitalize on them. To succeed, oil and gas players must carefully examine each value pool and their own potential synergies, pursue investments in new capabilities and form alliances with the right partners. We will survey the current landscape, discuss these value pools and consider how best to deliver their potential.



Table of contents

Assessing the future	2
The six most promising EV value pools for the oil and gas industry	3
Four scenarios for how the future could unfold	7
Emerging market strategies	8
How EY teams can help	13



1

Assessing the future

In 2017, EVs represented just 4% of total global vehicle sales – but that percentage is expected to surge to 30% in 2025 and to almost 50% just five years later, according to LMC Automotive and Bloomberg. That's because EVs are expected to reach price and performance parity with internal combustion engine vehicles as early as 2025 in many key geographies, with the rest of the world following over the next decade. By 2023, the cost of a lithium-ion battery – one of the prime drivers of the cost of an EV – is likely to be just 10% of the cost in 2010, according to the International Energy Agency and Bloomberg research.

Most of the countries in the world are encouraging the proliferation of EVs as part of efforts to slow down climate change below the UN's agreed-upon 2°C target. While such targets are frequently missed, 142 countries have targets or mandates for generating renewable energy, according to the Center for Strategic and International Studies, indicating that the desire remains over the medium to long term. Also, subsidy totals from governments for 2017 reflect the different fortunes of renewables (rising to US\$143 billion) vs. fossil fuels (falling to US\$300 billion), according to the Center for Strategic and International Studies. Enhanced efficiency and lower dependency on fossil fuels also help to increase energy security, especially in a world of geopolitical controversy and disrupted supply chains.

EV infrastructure remains an enormous challenge in the current state. About US\$2.7 trillion in capital investments in EV infrastructure is needed through 2040, Morgan Stanley has estimated. Charging stations are a particular need, and not just for passenger vehicles: the percentage share of EVs within corporate fleet sales quintupled from 2014 to 2018, with nearly 15 million EVs expected to be part of US fleets by 2040, according to the U.S. Energy Information Administration. This massive shift from gasoline to electricity will add to pre-existing peak loads and may take distribution voltages outside the acceptable range. The strain will pressure utilities, which will need massive investments to upgrade aging infrastructure while devising strategies to shift EV charging to off-peak hours. Meanwhile, the costs of cobalt and lithium – core components of the batteries that will power EVs – have already doubled since 2015, showing the impact on automotive supply chains.

Electric mobility promises to be one of the biggest cross-industry phenomena of the 21st century, affecting the automotive, oil and gas, power and utilities, mining, chemicals, consumer products and retail, and public sectors. But investors are not always sure where to place their bets in this emerging ecosystem because of the different sizes of opportunities, capex requirements, investment horizons, market competition and overall complexity. As such, EY professionals identified nearly 30 value pools, spanning the full life cycle of batteries (from mining the minerals to recycling in the aftermarket), various infrastructure concerns, financing and more. For oil and gas companies, the best opportunities lie within six of these value pools.

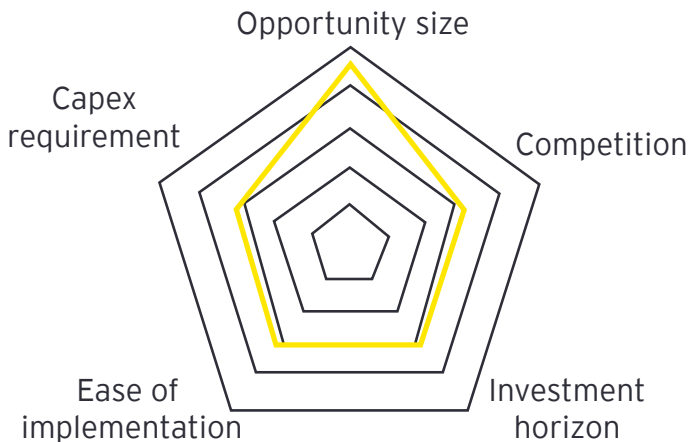
By 2023, the cost of a lithium-ion battery – one of the prime drivers of the cost of an EV – is likely to be just 10% of the cost in 2010.

2

The six most promising EV value pools for the oil and gas industry

The EV ecosystem encompasses five fields of play: network design and connection, fleet management, public charging, flexibility services and EV retail. Each of them requires capabilities, with some overlap between them. Overall, the objective for oil and gas majors is to develop an eMobility strategy based on assessing the impact of EVs – from upstream activities, to fuel refining and retail, to products and services – that satisfies customers. Defining the six associated value pools – public charging stations, point of interface, EV financing and leasing, fleet management, smart city planning, and battery swapping and management – helps guide where to invest.

Public charging stations

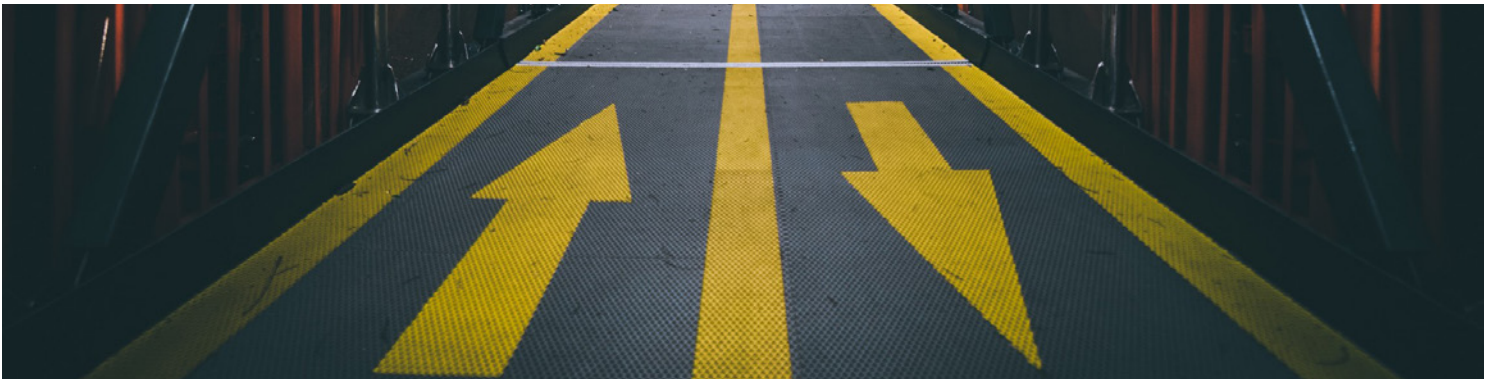


Note: The graphic represents attractiveness on the five parameters. The outermost ring reflects highest attractiveness and vice versa.

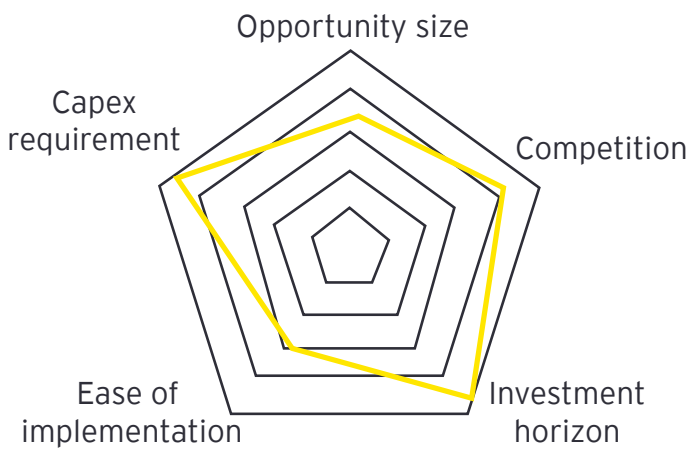
EV charging services can complement other offers, particularly during the transition period when gasoline and electricity will both be in demand.

The opportunity size of public charging stations is significant, and downstream players are particularly well-positioned to capitalize on it. Turnkey solutions can be offered for installing and deploying public EV charging stations, including site evaluation and selection of chargers (mostly the fast direct-current varieties). Companies can also operate and maintain a charging station network in a certain geography, just as they would for gasoline stations today. The synergies are enormous for those with an existing gasoline network and strong brand, along with the know-how for setting up and operating retail sites. EV charging services can complement other offers, particularly during the transition period when gasoline and electricity will both be in demand.

One major US energy multinational has already developed plans to deploy such stations and has signed multiple agreements with leading charging network operators. Even today, the multinational has a modest number of fast chargers (over a dozen) at its gasoline stations. It also put US\$240 million toward one of the largest EV charging station operators in North America through one funding round. In Europe, an Italian multinational forged a similar agreement with an EV charging network operator to install 180 high-power chargers at its 30 service stations. And in Asia, a Chinese energy company intends to install battery chargers at its service stations and build charging stations in a partnership with an automaker.



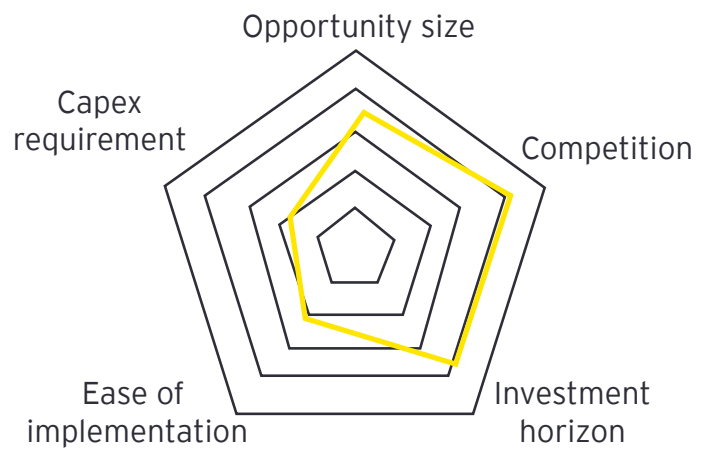
Point of interface (PoI)



PoI refers to any information and communications technology application that enables a contact between customers and the business solutions or site – involving, for example, a payment gateway, route or charging session information, or level of energy consumption. With a small capex requirement and short investment horizon, this opportunity is again well-suited for downstream oil and gas players. Most IOCs have already developed different digital applications to improve customer experience and offer seamless operations, which can be expanded to integrate EVs and related solutions.

In practice, this can take the form of a mobile application that helps customers find charging stations, learn price details, monitor and control charging, and make payments. That's one arrangement between one oil and gas supermajor and its charging network operator; the app can also be used to make payments at the supermajor's own charging stations, for a small transaction fee. A different supermajor offers a fuel card, providing users access to the public charging stations across Europe, as well as a mobile app.

EV financing and leasing

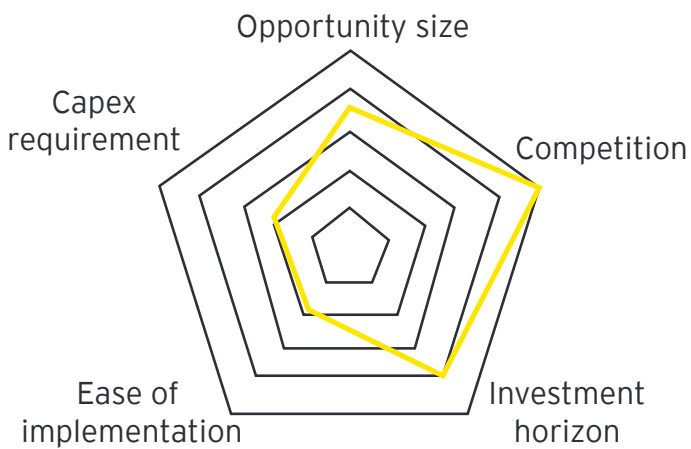


This value pool involves capital finance management for the purchase of new or used EVs for businesses and individuals, including leasing and lending. EV fleets are a promising area. In the near to medium term, corporates wanting to explore how to procure an EV fleet may find it more attractive to lease as the prices grow more favorable over the next five years or so. This trend is opening a secondary financing market. Another business model would be to offer ways to purchase a vehicle and separately lease the battery, which typically needs to be replaced after 7 to 10 years.

One supermajor uses its federal credit union, a nonprofit financial cooperative, to provide vehicle loans and other credit facilities to its employees and contractors worldwide, including for EVs. With such a framework already in place, efforts could be made to scale it for a different market without starting from scratch.



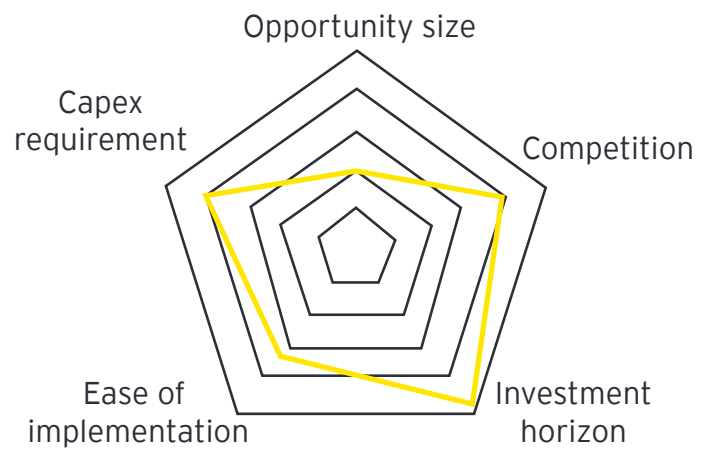
Fleet management



Companies that compete in this value pool are responsible for managing how an enterprise's internal combustion engine vehicle fleet is migrated to EVs (apart from providing services such as fuel management, asset utilization, payment gateways and accident management solutions). This value pool is particularly favorable for the oil and gas downstream sector, and it dovetails with businesses' environmental, social and governance (ESG) goals, driven by customers and investors. Fleet conversion is an attractive way to get immediate results in reducing carbon footprints, and this will only get more alluring as the costs of EVs decline.

One supermajor gives fleets access to charging stations, as well as the usual fuel stations, through a new fuel and charge card, offering fleet managers added flexibility when they choose to migrate to EVs. An app also enables fleets to find the nearby sites and process payments, regardless of whether they are consuming gasoline or electricity. Dashboards deliver a total cost of ownership comparison among different fuel types in a fleet. Such integrated solutions make the transition to electric easier.

Smart city planning



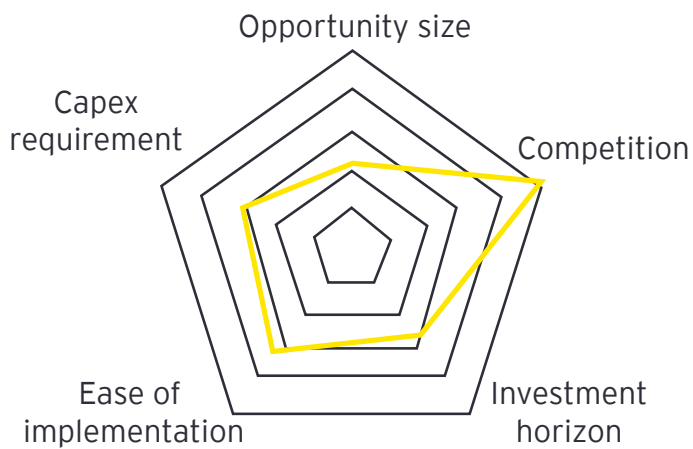
Oil and gas players are both positioned strongly in helping cities develop their EV strategy road maps. Existing city infrastructure is aging and requires additional investment to meet evolving citizen needs. EVs serve as a crucial enabler of these changes. Cities worldwide are looking to improve mobility and transportation through infrastructure, increased connectivity and intelligence.

City planning aims to address issues regarding traffic flows, EV adoption rates and location feasibility for EV supply equipment, creating investment cases for the market. Companies can design detailed EV routes and establish a profit analysis model to gauge the return on current and future routes, as well as other aspects of launch strategies.

In Brazil, the Government of Rio de Janeiro signed a memorandum of understanding with a leading gasoline station operator, an automaker alliance and three other organizations to accelerate EV transportation and recharging infrastructure throughout the state. The owner of the stations oversees the planning and feasibility studies for developing the recharging infrastructure at service stations as part of the Rio Capital Energy Program.



Battery swapping and management



Battery bank facilities can be set up for EVs so that consumers can swap their batteries for ones that are fully charged. Fuel retailers can provide this service, including with batteries for rent or lease. While batteries can be designed in many ways, making the process complex, this is an excellent opportunity for oil and gas players to develop a base of end consumers.

Customers see EVs more as pieces of technology and often feel wary of returning to the manufacturer for servicing, but having a simplified solution at a retail outlet, such as a charging station, can provide peace of mind and convenience, while oil and gas players gain an easy connection with the consumer. These players also have the ability to create secondary markets and trade the batteries, as well as recycle them for further uses – for example, as storage for renewable energy sources.

One European supermajor led a US\$31 million investment round in a technology firm trying to invent an “autonomous battery swap” solution that is economical, rapidly deployable and widely accessible, delivering a full charge to any electric car in minutes. And an Indian oil and gas company is also exploring the feasibility of setting up battery-swapping stations at retail outlets, having signed a memorandum of understanding with a distributor of electricity.

One European supermajor led a US\$31 million investment round in a technology firm trying to invent an “autonomous battery swap” solution that is economical, rapidly deployable and widely accessible.

3

Four scenarios for how the future could unfold

As companies develop strategies around particular value pools, it is important to evaluate them against future planning scenarios, because the return on investment will depend on expectations for when a market will transition to electrification, and how quickly. Each geography will be different, and we explore some regional drivers toward the end of this paper – for example, in some areas, governments and consumers are placing increasing pressure on the energy industry to decarbonize.

EY scrutinized five variables – consumer acceptance of EVs, efficiency, competition between gas and renewables, the future of nuclear and coal, and the concentration of economic growth – to develop four scenarios for oil and gas companies in which to prepare. EVs are definitely gaining momentum, but multiple unknowns – particularly the COVID-19 crisis and the resulting shock waves in the economy – can either slow or quicken the transition. The “long goodbye scenario” appears the most likely for now.

Scenario	Factors	Implications
The future is now	<ul style="list-style-type: none"> ▶ Alternative energy becomes cheap soon ▶ Pressure from regulators is high (for instance, through incentives and scrappage schemes) ▶ Important lifestyle changes take place 	<ul style="list-style-type: none"> ▶ All value pools are put on an accelerated timetable ▶ Investment cases for areas with the greatest opportunity, such as charging stations, become greatly more favorable
The long goodbye	<ul style="list-style-type: none"> ▶ Alternative energy keeps gaining momentum, but slowly ▶ Oil and gas companies eventually move their capital toward alternative and emerging energy technologies 	<ul style="list-style-type: none"> ▶ EV financing, smart city planning and PoI value pools enable the EV transition and therefore pose greater interest
Slow peak	<ul style="list-style-type: none"> ▶ Oil and gas companies make cost reductions ▶ Competition between hydrocarbons and renewables is not as fierce ▶ Peak oil happens, but not soon 	<ul style="list-style-type: none"> ▶ EV transition may decelerate but remains likely as sustainability efforts will continue to be a focus ▶ Oil and gas players gain a bit of breathing room to plot their efforts unless government policy pushes the green transition forward
Critical gas	<ul style="list-style-type: none"> ▶ Petroleum lives on, but it's gas and oil now ▶ Demand for energy is high, without enough investment to promote alternative energy ▶ Natural gas takes over 	<ul style="list-style-type: none"> ▶ This is seen as unlikely but would have dramatic repercussions on EV investment horizons

4

Emerging market strategies

Segmentation of current strategies

A few players, mostly European are setting a very clear and aggressive goal to go green and carbon neutral by 2050, while at the other end of the spectrum, another group – mostly US players – prefer for the industry to mature more and offer higher returns. In a middle-of-the-road strategy, we see some IOCs start to invest and explore new solutions around alternative sources of power without committing too much capex or incorporating those elements into their strategies and core businesses. To help you determine the course that's right for you, we describe each strategy with its pros and cons, as well as potential risks.

All in

The most ambitious leading European IOCs have set aggressive targets to become carbon neutral by 2050, or at least slash their greenhouse gas emissions by a significant percentage. European companies have been more vocal about their plans to cut carbon emissions, likely due to tightening emission standards. Driven by more strict regulation or other factors, some players have gone further: not merely investing in EVs, for example, but also moving toward becoming integrated energy companies instead of purely focusing on oil and gas. A few are investing in electricity generation and transmission.

European IOCs have committed up to 15% of their capital spending for low-carbon investments, Reuters reports, usually centering on renewable sources of energy, sometimes a mix of solar (led by PV), wind (mostly offshore), or biofuels and biomass. Some players are even putting money toward energy smart technologies and carbon capture, utilization and storage.

Pros	Cons	Risks
<ul style="list-style-type: none"> ▶ Learn more about technology and business models sooner ▶ Better suited in an environment when regulation is strong 	<ul style="list-style-type: none"> ▶ Longer investment horizon than usual ▶ Unclear investment case in some organizations 	<ul style="list-style-type: none"> ▶ Uncertainty of policy environment ▶ Unclear predictions around EV adoption ▶ Complex assessments of demand for different types of mobility

European IOCs have committed up to 15% of their capital spending for low-carbon investments.



Gaining traction

Following the path set by first movers, other IOCs start investing in new approaches to reduce operational emissions or support new technologies through R&D and venture capital. IOCs in this category are likely to multiply opportunities around different

value pools, such as charging infrastructure and smart mobility planning. They might also explore alliances with players along the value chain, such as OEMs or battery manufacturers.

Pros	Cons	Risks
<ul style="list-style-type: none"> ▶ Learning about technology and business models through partnership ▶ Lower risk ▶ Lower capital investments 	<ul style="list-style-type: none"> ▶ Reduced ability to steer initiatives ▶ Caught between conflicting priorities 	<ul style="list-style-type: none"> ▶ Potential mismanagement of capital and resources when objective of partnership is unclear or stakeholders disagree

Wait and see

These players, mostly US companies, are letting other IOCs and NOCs take the lead, explore the field and find value pools. Previous investments in renewable energy have shown little returns for them, and they continue focusing on their core businesses. They do not see a clear pathway to these aspirations and prefer to wait for the industry to further develop.

While some have set aside funds to invest in breakthrough technologies, they lack commitment. Solutions from this group would rather center on carbon capture than tap into a shift toward other sources of energy. They will also have low-impact actions or products around energy transition or EV adoption, such as a dedicated line of lubricants or marketing initiatives around mobility.

Pros	Cons	Risks
<ul style="list-style-type: none"> ▶ Learn from mistakes of first movers ▶ Gain additional insights to build the strategy ▶ Enter the industry when returns are better 	<ul style="list-style-type: none"> ▶ Miss out on first-mover advantages in a growing addressable market ▶ A market that will be more capital-intensive when it is more structured 	<ul style="list-style-type: none"> ▶ A transition pathway that is already underway ▶ Entering too late and not being able to catch up ▶ Reputational risk among environmental-minded customers



How to enable these strategies

Oil and gas players have existing capabilities in customer service, acquisition and churn, and back-office operations, but they may need to follow the traditional framework of buy, build or partner for the rest. Strategic partnerships and joint ventures make up the bulk of transactions around transitioning to EVs, offering turnkey solutions, quick results and lower risks, but more potential strategies are considered in more detail below.

Relatedly, oil and gas players now struggle to recruit the best talent, mostly due to perceptions from the younger generation that these companies are on the wrong side of the environmental sustainability equation. Oil and gas companies should also consider that they can gain greater access to this talent either by obtaining them through partnerships and acquisitions or be in a better position to recruit them through green-focused investments.

Acquisitions

To get a head start, companies should explore M&A and venture capital investments. From 2016 through 2019, oil majors have made multiple venture capital and M&A deals related to eMobility, a rate that is likely to intensify. In addition, companies should consider exploring avenues for inorganic growth to scale up eMobility solutions and offerings. Acquiring already established startups and EV specialist companies positions oil and gas majors ahead of the curve because they can leverage knowledge and technical know-how from already existing teams, as well as ensure that capabilities and established customer bases are efficiently transferred.

For instance, to build the EV ecosystem of tomorrow, the local challenge of sparse charging infrastructure must be addressed. Oil and gas players must scale their business models and infrastructure to reach new geographies while maintaining commercial viability, a potentially tricky task without outside help. The oil and gas industry can replicate the efforts of utilities, which have relied on acquisitions to support charging infrastructure build-out.

But, concerned with returns and risks, oil and gas players have not aggressively pursued acquisitions so far – to date, they have usually been restricted to single capabilities. Smaller players with an existing charging infrastructure network have been most commonly targeted. Some actors are making much bolder moves by considering other companies along the gas-electrical value chain – for electricity and gas generation and distribution, for instance.

Partnerships

Most partnerships center around charging networks, in which access to the electrical grid is crucial. Partnerships between oil and gas players and utilities should be explored. Smaller and specialized actors provide an already built charging network infrastructure, as well as proprietary technology. Oil and gas companies bring know-how, geographical locations (their existing fuel stations) and funds to scale and expand this infrastructure. But note that regulatory implications also exist, such as property access and permitting rights for lines to connect to the grid, depending on the geography. A network is likely to cross multiple utility jurisdictions, so there will be multiple complex points of contact. There's also a need for load forecasting and energy procurement, and metering of usage and billing will come into play. Either party can undertake some functions as long as the two coordinate closely.

Partnerships are also effective for powering smart cities and enabling the clean-environment agenda of governments around the world. The public sector is encouraging the shift to a cleaner environment through incentives and regulation, as well as the purchase and operation of EV fleets. For instance, the first 20 smart cities in India will require about US\$700 million in investment in smart mobility solutions, according to International Association of Public Transport (UITP). By leveraging existing relationships, energy companies can help to fast-track the smart city movement by providing complete mobility and energy solutions.

Given their B2B business model, oil and gas players are looking for ways to increase engagement across the mass consumer market, which is crucial in the coming eMobility revolution.

Horizontal diversification

This tactic is especially helpful for finding trusted platforms to share data and enable a collaborative EV ecosystem. China collects a gigabyte of data per EV each month, according to an estimate from 2018. Energy companies will depend on such data from other parties to succeed. They will need to find ways to collaborate on data sharing within a secure architecture that maintains the trust of all stakeholders.

Oil and gas companies should also consider fractional ownership of assets to help incentivize eMobility investment. In a future energy world, assets will likely be disaggregated from EVs. A fractional ownership model could help energy companies to support pay-per-use revenue streams and manage the depreciation of assets, incentivizing investment by assuring investors of more consistent returns.

At a lower scale, oil and gas companies should consider expanding or adjusting existing marketing offers or products to address EVs. This is the case for fleet cards programs, an initiative to consider as road freight companies and ride-hailers are increasingly announcing that they want to move toward a partial or complete fleet of EVs. On the product side, some brands are now offering products for EVs.

Collaboration for acceleration

Overall, one path seems to yield more promising results: broader collaboration with a range of stakeholders along the value chain—such as OEMs, mobility actors and utility companies—that have the required skills and relationships to win customers. Given their B2B business model, oil and gas players are looking for ways to increase engagement across the mass consumer market, which is crucial in the coming eMobility revolution. Collaborating with stakeholders that have already achieved deep customer relationship capabilities will put oil and gas companies a step ahead.

Investment capital commitment

In the last few years, oil and gas companies have increased their investments in the eMobility space. Shorter payback periods are generally in high demand right now. The payback period for each volume pool differs:

Quick wins (under two years)	Medium term (two to four years)	Longer term (four to eight years)
Pol Smart city planning	Fleet management EV financing/leasing	Public charging stations Battery swapping/management

An uncertain demand environment increases the implied discount rate for new projects, which penalizes very capital-intensive investments and favors opportunities with shorter lead times between approval and first production. However, most eMobility investments have been made through corporate venture capital arms, mainly focusing on charging infrastructure, which seems to indicate acceptance from the oil and gas companies that those investments are necessary but will not bring interesting returns in the short to medium term—perhaps percentages in the mid to high single digits.

Reconciling capital access and returns

Investment models are still largely unproven, and there is uncertainty around what “getting it right” looks like. Even so, there is unlikely to be a shortage of capital in the market to invest when the opportunities grow clearer, initially in infrastructure. In some early-adopting nations, such as those in the Nordics, companies are beginning to see the behavior of how drivers like to charge their cars, patterns that will be useful in clarifying business cases for investment.

With the right alliances and broad capabilities, oil and gas companies can view the value pool for charging stations.

Oil and gas companies should recognize that investment cases can be slightly different, not just focused on the multiple, and clarify the terms of the exit, unless it's a permanent play. Changing to a core business division out of a joint venture is more challenging. Understanding that returns can be several years in the future, oil and gas companies need to see where they can be a differentiator in the market – not just a “me too” in a potentially cluttered landscape – and use their expertise and global brands to facilitate the new world of electrification, whether through a mobility service or offerings typically found through utilities.

Transition regional drivers

It's important to consider that the EV landscape looks different across regions and even specific countries. IOCs doing the most work around EVs are usually located in countries where regulations on carbon emission are tightening.

China is expected to retain its position as the biggest market for EVs in the coming years, thanks to credits and subsidies, which are driving investments from global EV manufacturers. According to Linklaters, the country plans to deploy 12,000 stations to swap batteries, 4.3 million private EV supply equipment outlets and 500,000 publicly accessible chargers – by this year. Elsewhere in Asia, India is moving forward with a mandate of electrification of all new vehicles by 2030, and Japan and South Korea have ambitious targets as well.

In Europe, high fuel taxes and tightening emission standards – with some nations, such as Sweden and Germany, considering outright bans on internal combustion engine vehicles within the next 10 to 20 years – will also boost the EV market going forward. The European Union has requested its member governments to set charging station deployment targets for this year, 2025 and 2030.

The market in the US is more uncertain because of the current policy on emission standards, although rapid penetration is expected in states with zero-emission plans, such as California. That state announced revisions to its infrastructure deployment target for 2025 and plans to have five million zero-emission vehicles deployed by 2030. Regulatory policies, rebates and incentives are particularly favorable on the West Coast and in the Northeast for EV owners of all types. By 2025, the governors of just eight states say they will have 3.3 million zero-emission vehicles on the road, an Associated Press report said.

Convergence with other sectors

EVs fall outside how customers typically view automobiles – instead, they're seen as pieces of technology. Consider phones: now they're “mobile devices” that are merged with the internet, and there's no question about how to charge or fix them. Today, the world that customers see around them is geared around the reality of gasoline pumps and oil changes, and if the EV needs maintenance, then the sole refuge is the EV manufacturer. Building this world requires acquisitions, partnerships, alliances and JVs – reflecting how large and complex the opportunities are, but also how the traditional boundaries between sectors are growing hazier.

As decarbonization poses a challenge to oil and gas players, power and utilities groups are confronting distributed renewable generation and the rise of the “prosumer” (electricity consumers who are also producers). Within vehicle electrification, they can unite their strengths in a truly transformative way, with help from the retail, automotive, technology and real estate sectors as well, along with the public sector.

With the right alliances and broad capabilities, oil and gas companies can view the value pools for charging stations, PoL, and battery swapping and management as one big opportunity to deliver compelling and flexible customer propositions around EV maintenance that largely do not exist now. A better platform would allow them to purchase charging and maintenance seamlessly without having to pay for point transactions, perhaps including home energy services. Those players in the market that can put forth convenient offerings will not only capture a first-mover advantage in a nascent market but also act as enablers.

But, will we see oil and gas players diversify into electricity generation? Probably not, unless it's contiguous with an existing business within the company. Prior initiatives in this area have not panned out, so oil and gas companies and others are understandably wary. Distribution and transmission will likely remain suited for infrastructure funds because it offers a low, stable return.

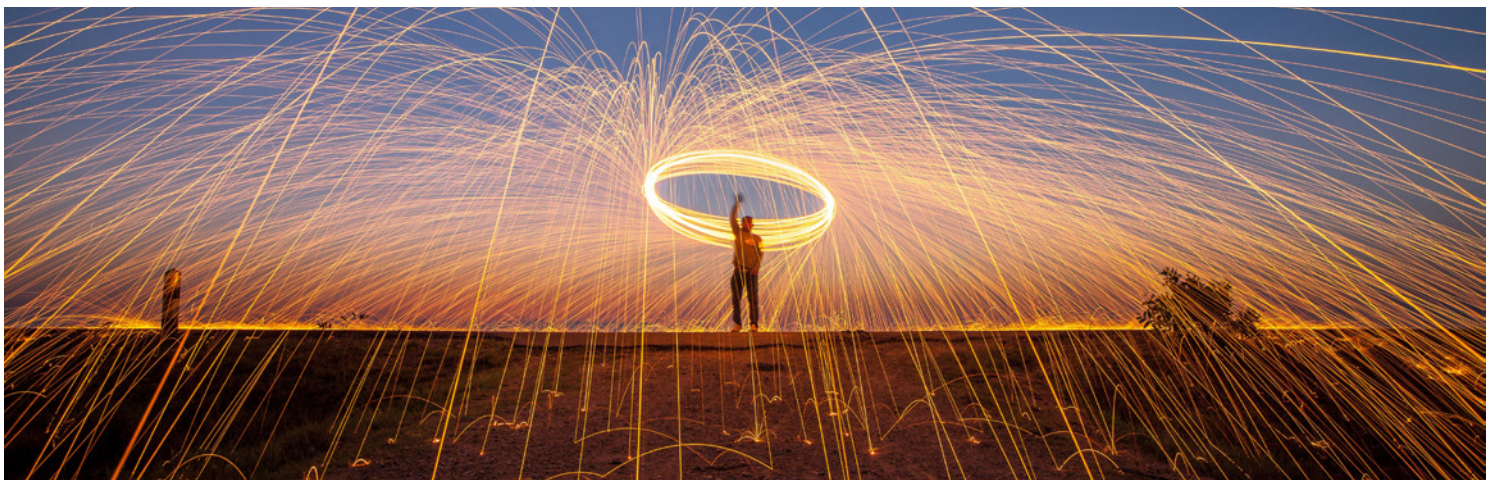
5

How EY teams can help

With a global network of engineering, science, business, finance and operations professionals, coupled with a deep understanding of specific policy and regulatory instruments, the EY organization is well-equipped to position oil and gas companies to shape new strategies and diversify their holdings. We can help your organization:

- ▶ **Identify new opportunities and new business partners.** Key players must be brought together across the electrification ecosystem, and EY teams have sector-focused insights and engagement experience with top companies worldwide.
- ▶ **Turn plans into actions, rapidly.** Our proprietary tools and accelerators, along with existing relationships, help identify potential partnerships and acquisition targets to quicken your go-to-market efforts.
- ▶ **Better target consumers.** We have extensive experience in customer strategies and developing branding loyalty. EY professionals have helped clients form new businesses and develop an overall portfolio of unified offerings – such as for both charging and gasoline – to appeal to evolving customer demands.

- ▶ **Understand the regulatory landscape.** Our continuous market research, along with experienced practitioners with regulatory and policy knowledge, helps clients navigate evolving requirements across the globe. Moving to a lower-carbon footprint can present opportunities for tax credits and other opportunities.
- ▶ **Manage risks and reduce costs.** In addition to helping clients respond to regulatory and market drivers, as well as to the impact of climate change on infrastructure and supply chains, our teams can help clients benefit from opportunities related to new carbon markets and renewable energy market drivers.
- ▶ **Create strategies in emerging markets.** By developing and deploying modeling, forecasting and simulation tools, we equip clients with a deeper understanding of market data, insight and analysis. For instance, some markets offer unique infrastructure considerations, wherein they can make the leap to charging stations without relying on as-yet-undeveloped conventional fuel stations.



About EY

EY is a global leader in assurance, tax, strategy, transaction and consulting services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization, and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. Information about how EY collects and uses personal data and a description of the rights individuals have under data protection legislation are available via ey.com/privacy. For more information about our organization, please visit ey.com.

The oil and gas sector is constantly changing. Increasingly uncertain energy policies, geopolitical complexities, cost management and climate change all present significant challenges. EY's Global Oil & Gas Sector supports a global network of more than 10,000 oil and gas professionals with extensive experience in providing assurance, consulting, strategy, tax and transaction services across the upstream, midstream, downstream and oil field subsectors. The Sector team works to anticipate market trends, execute the mobility of our global resources and articulate points of view on relevant sector issues. With our deep sector focus, we can help your organization drive down costs and compete more effectively.

©2020 EYGM Limited.
All Rights Reserved.

EYG no. 006023-20Gb1
CSG no. 2007-3545433
ED None

This material has been prepared for general informational purposes only and is not intended to be relied upon as accounting, tax or other professional advice. Please refer to your advisors for specific advice.

ey.com

Contacts information



Andy Brogan
EY Global Oil & Gas Leader
abrogan@uk.ey.com
+44 20 7951 7009



Fay Shong
EY Americas Oil & Gas Digital
Strategy Leader
fay.shong@ey.com
+1 312 879 2133



Jaideep Malik
Senior Manager, Power & Utilities
Advisory, Ernst & Young LLP
jaideep.malik1@parthenon.ey.com
+1 404 817 5291



Simon J.J. Watson
Managing Director, Power & Utilities
Advisory, Ernst & Young LLP
simon.watson@ey.com
+1 703 747 0760

Contributing:
Andrew Perkins, John Simlett, Paul Bogenrieder