



## Pressure on the Pump: The Future of Fuel Retail

September – 2020

# Energy Industry Report

The Abdullah Bin Hamad Al-Attiyah International Foundation for  
Energy & Sustainable Development





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## INTRODUCTION

### PRESSURE ON THE PUMP: THE FUTURE OF FUEL RETAIL

Roadside fuel retail is facing the biggest shake-up in its more than a century-old history. This stems from the rise of electric vehicles, combined with changing consumer tastes and needs, new geographies of fuel demand, and increasing digitalisation and automation. Battery cars will erode the demand for petrol and diesel, and make many traditional retail outlets unprofitable. However, there are new opportunities in offering more sophisticated services and food and beverages, tailoring these to consumers via data analytics, and developing in new geographies in emerging Asia and Africa. How will electricity and other fuels, and new mobility patterns, affect the traditional model of fuel retail? How should fuel retailers adapt?



## Energy Industry Report

This research paper is part of a 12-month series published by the Al-Attiyah Foundation every year. Each in-depth research paper focuses on a prevalent energy topic that is of interest to the Foundation's members and partners. The 12 technical papers are distributed in hard copy to members, partners and universities, as well as made available online to all Foundation members.



## EXECUTIVE SUMMARY

- Four forces are reshaping the traditional fuel retail: most importantly, electric vehicles; changing customer tastes; shifting geographies; and automation and digitalisation.
- The rise of electrification, along with the impact of Covid-19 and improved vehicle efficiency, will dramatically reduce overall fuel (petrol/gasoline and diesel) sales over the next one to two decades. Cars will likely be charged primarily at home or work or at retail and entertainment locations.
- This will result in lower throughput per station, particularly in urban locations, making many of them unprofitable. Highway locations, though, may gain, at least in the medium term.
- Changing customer tastes include desires for greater speed, convenience, customer service and quality of the offering, as well as improved environmental performance.
- Fuel demand growth will continue, at least for some time, in emerging Asian economies and Africa. These new geographies create opportunities for domestic upstarts as well as international players but come with their peculiarities. China, for instance, is quite open and fragmented while India is still dominated by the state-owned incumbents and a couple of large domestic conglomerates.
- In the medium term, digitalisation will be increasingly important to drive sales and margins, via approaches such as loyalty programmes, customisation, data analytics, and easy payment options.

- In the long term, autonomous vehicles are likely to take a more significant market share. They would change travel patterns substantially, and likely further erode the demand for roadside filling or charging.

### IMPLICATIONS FOR LEADING OIL AND GAS PRODUCERS

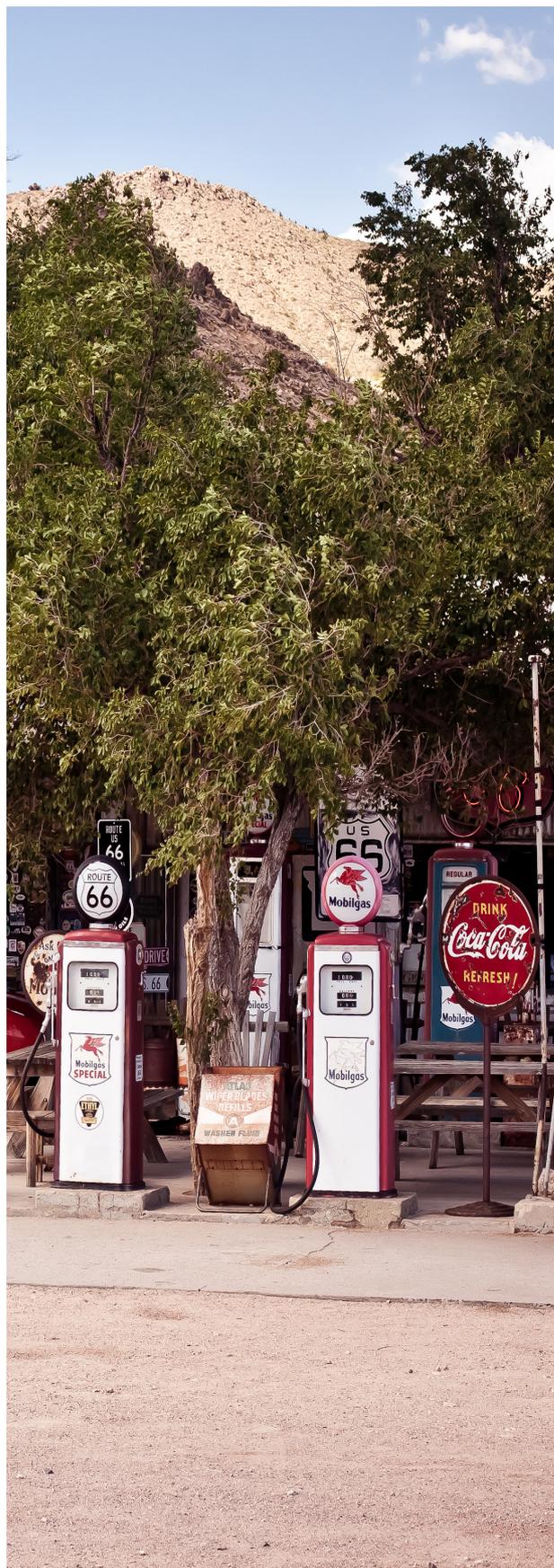
- Many leading international (IOCs) and national oil companies (NOCs) are vertically-integrated – having ownership of oil production, refining, and fuel retail. Their retail fuel businesses have historically been an important marketing channel as well as a hedge against volatile upstream earnings.
- However, if retail networks do not adapt, they will become increasingly unprofitable, initially in North America, Europe, and China, then in developing markets.
- Most NOCs have large domestic retail networks; a few have international operations. They will have to decide whether their domestic retail networks remain core and strategic, or should be sold or privatised. If they do stay in that business, they will need to transform it in line with consumer requirements.
- For vertically-integrated oil companies, their retail network could be a crucial part of adapting to a future of electrified mobility.

## THE TRADITIONAL FUEL RETAIL MODEL IS WELL-ESTABLISHED

Fuel retail, the selling of petrol, diesel, and other products and services to motorists, is big business: before the pandemic, it was expected to have \$2.7 trillion of global revenues by 2022. Now expectations are that it will drop from \$1.972 trillion in 2019 to \$1.937 trillion in 2020, before recovering to \$2.195 trillion in 2023 <sup>i</sup>.

It had evolved since the early days of the 20th century when petrol was often sold at groceries, then at small shops with a single pump. But despite increasing scale, sophistication, and diversity, the basic model has not shifted substantially. Fuel stations, located along busy highways and in urban areas, sell petrol and diesel, perhaps other fuels such as LPG and CNG, and offer additional services including non-fuel retail (food and drink, magazines, car accessories), car washes, maintenance services and so on. Margins on fuel are low; most profitability comes from other sales (60% in the US <sup>ii</sup>).

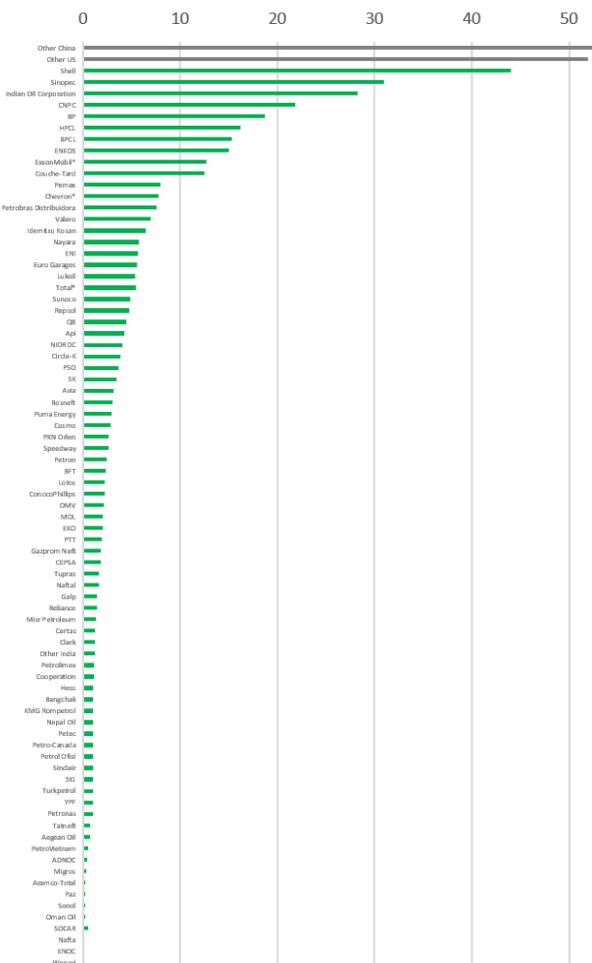
Fuel stations are typically branded by an oil company, though they are often franchises. Retail brands (such as supermarkets and convenience stores, such as 7-Eleven) have increasingly expanded their offering or partnered with oil companies. These oil companies may be fuel marketing specialists or may be vertically-integrated (i.e. also owning refinings, such as Valero in the US, or even upstream oil production, such as Shell, ExxonMobil (branded as Esso in many countries), and BP).



## THE TRADITIONAL FUEL RETAIL MODEL IS WELL-ESTABLISHED

In terms of number of stations (Figure 1), the world market is dominated by a few large international companies, notably Shell, BP, ExxonMobil (Esso), Chevron (Caltex) and Total, along with current or former state-owned companies that have a dominant role in their home markets, notably Sinopec, Indian Oil, CNPC, Hindustan Petroleum (HPCL), Bharat Petroleum (BPCL) and ENEOS (Japan). Only a few NOCs, such as Socar of Azerbaijan (in Eastern Europe) and Q8, a subsidiary of Kuwait Petroleum Corporation (in Europe), have expanded significantly outside their home base (in this case, to Eastern Europe).

**FIGURE 1 NUMBER OF FUEL RETAIL STATIONS BRANDED BY A COMPANY (THOUSANDS); SELECTED COMPANIES ONLY . \* INDICATES STATIONS ONLY COUNTED WITHIN A LIMITED GEOGRAPHIC AREA.** <sup>iii</sup>



These are vast retail networks. For instance, Shell has 44,000 stations worldwide, across 75 countries, and Sinopec (in China) 31,000; this compares to 42,000 outlets for Subway, 37,000 for McDonald's, 28,000 for Starbucks, and 12,000 for Walmart.

The US, Chinese, and Indian markets are the largest by numbers of stations; the US market is the most diverse, with numerous non-oil company retailers such as Circle-K and Speedway (now owned by 7-Eleven) having significant roles. The Middle Eastern countries are large consumers of road fuels but have relatively few stations due to small geographic areas and high throughput per station. With the notable exception of Q8 (owned by Kuwait Petroleum), Middle Eastern companies have not expanded much beyond their home bases.

The selection of firms in Figure 1 is not complete and excludes smaller operators (most of those below 1,000 stations). However, of this sample, 26 are classified as NOCs, four as former NOCs, 19 as vertically-integrated IOCs, 23 as specialist refining and retail players, and five as general retailers. The number of stations in this sample, excluding 'others', shows NOCs hold 41%, former NOCs hold 5%, IOCs hold 34%, specialists have 15%, and 5% by general retailers, mostly in the US.

The response of these companies to the coming transformation in fuel retail will partly depend on their origins and strategic aims, partly on their agility.

## FUEL RETAIL IS CHALLENGED BY FOUR MAJOR TRENDS

But now this fuel retail model faces its most considerable challenge in over a century, on four fronts:

- Electrification: there is a growing expectation that climate policy and cost-competitiveness will lead electric vehicles, at least light passenger vehicles, to dominate the market by the 2030s;
- Changing travel patterns and demographics: slow growth or falling vehicle-kilometres in developed markets, though some sectors (such as light vans) show strong growth, contrasting to overall strong growth in developing countries;
- Shifting geographies: stagnant or declining fuel demand in the OECD, but rising consumption in the large emerging economies; and
- Automation and customer innovation: in the near term, the greater use of digital technologies to serve customers; in the long term, the rise of 'self-driving' vehicles.



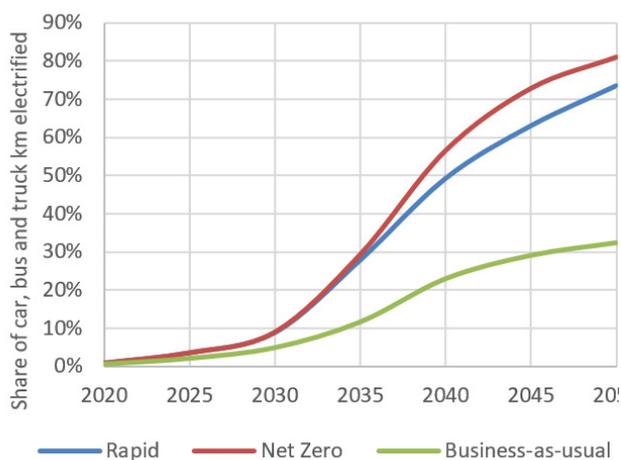
## ELECTRIFICATION IS THE MOST EXISTENTIAL CHALLENGE

Forecasts for the adoption of electric vehicles (EVs) have increased over time. In 2019, 2.1 million EVs were sold, 2.6% of total car sales worldwide, and reaching a share of 4.9% in China and 3.5% in Europe <sup>iv</sup>. Some countries have begun banning internal combustion engines (ICE) vehicles:

- Norway (new sales) by 2025;
- Paris from 2030;
- the UK (on new sales) by 2040, possibly to be advanced to 2030;
- California by 2035; and
- France and British Columbia by 2040.

Scenarios shown by BP (Figure 2) show a share of road mobility from 5-9% by 2030 and 32-81% by 2050. If achieved, this, along with improvements in ICE efficiency, and possibly modal shifts to rail, would substantially reduce fuel sales volumes.

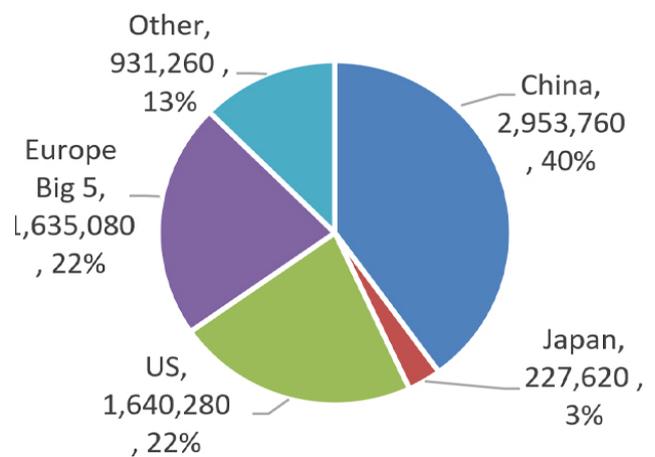
**FIGURE 2 SHARE OF VEHICLE KM TRAVELLED FROM ELECTRICITY <sup>v</sup>**



Building a charging network is a vital part of making EVs mainstream. Most charging points worldwide are currently private (home and work): 6.5 million personal chargers against only 598,000 publicly-available slow chargers and about 290,000 publicly-available fast

chargers. China dominates in all categories, particularly public fast chargers, where it has 82% of the world total (Figure 3).

**FIGURE 3 LIGHT EV CHARGERS BY COUNTRY, 2019 (EUROPE BIG FIVE = UK, GERMANY, FRANCE, NORWAY, NETHERLANDS) <sup>vi</sup>**



To meet this demand, retail fuel stations in Europe and the US are increasingly fitting charging points. This will have to be expanded to other large and fast-growing EV markets, particularly India. Currently, most chargers are in non-filling station locations: in the UK in 2019, only 6% were at service stations, 5% on car deal forecourts, while most were on-street (21%), in public car parks (18%), retail car parks (15%), hotels and accommodation (11%), and workplaces (6%) <sup>vii</sup>. Fuel retailers can acquire customers by providing extra-fast charging, along with the various ancillary services. They will have to decide how many chargers to install, and how to cover the cost, work with the government to secure grants and other financial support if available, and coordinate with electricity network operators to ensure adequate capacity in local distribution grids.

But merely becoming retailers of electricity as well as, and eventually, instead of, petrol and diesel is not a panacea for fuel retailers facing the EV revolution. Firstly, many jurisdictions do not allow the resale of retail electricity. Secondly, some developing countries, such as Pakistan, Nigeria, and Iraq, have an unreliable electricity supply, which would require retail operators to invest in on-site renewables, back-up power or work with the grid company to improve service.

More fundamentally, it is expected that a large share of charging would be done at home, work, hotels (for tourists), and other situations where cars are parked for lengthy periods (e.g. parking at malls). This may even be done via consumers' own renewable energy (rooftop solar panels). Being able to schedule charging for off-peak periods would reduce the cost of a charge.

Only for longer intercity journeys, or for drivers with short-range older vehicles, or who have forgotten to charge <sup>viii</sup>, would roadside charging remain necessary. Accordingly, toll-road operators in France now own stations to encourage usage of their roads. About 10% of the country's stations are on highways.

The longer charging period (currently around 30 minutes for an 80% charge) versus filling up with petrol or diesel would allow more time for shopping, meals, and using other retail station amenities. Long-distance heavy goods vehicles will be harder to power by batteries; even if they convert to hydrogen or LNG, they will still need fuelling. Fuel stations on highways may therefore survive better and expand their range of offerings, while most urban stations close in favour of fleet, home or office charging. However, improvements in battery charging

times, likely over the next 10-15 years, could reduce this opportunity too.

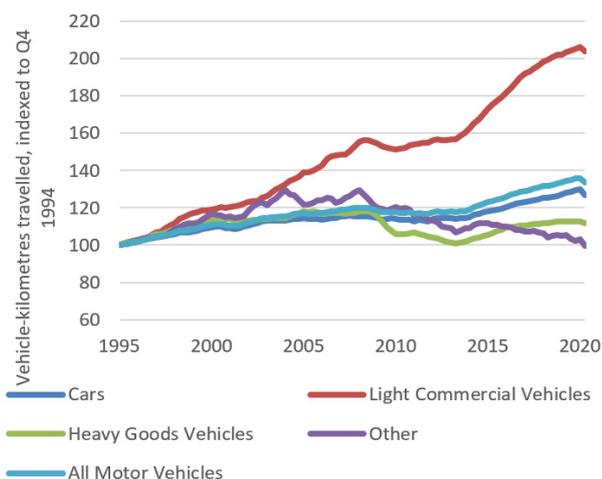
Leading fuel retailers are seeking to expand in the battery charging market. Shell has bought NewMotion, a European charging company, and GreenLots, an American firm whose software manages EV charging networks. BP acquired Chargemaster, the UK's largest charging company, while Total bought BluePoint London, the city's biggest charging network. However, they will face competition in this space from utilities, and potentially from electric automakers such as Tesla. Instead of merely providing the charging service, they will have to look at value-added systems such as grid balancing. They do not have to concentrate on their traditional model of putting chargers alongside pumps on forecourts; they can also develop charging networks in other locations.



## ECONOMICS, DEMOGRAPHICS AND HABITS HAVE CHANGED TRAVEL PATTERNS

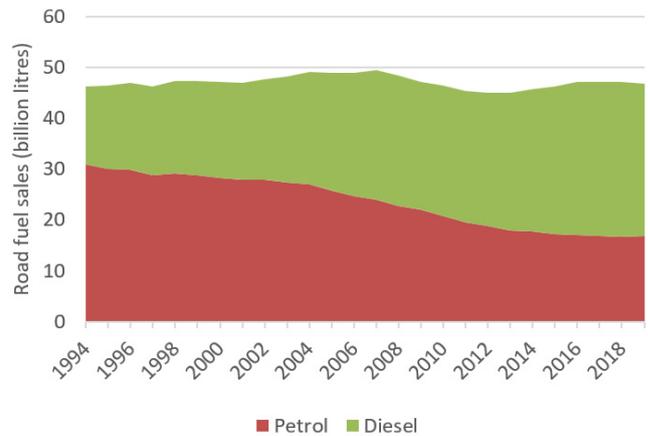
In mature OECD markets, road kilometres travelled have tended to show slow growth or shrinkage. For instance, in the UK (Figure 4), car travel stagnated in the period of high oil prices around 2005-14, falling during the Great Recession (2008-9). Travel in all classes has, of course, dipped sharply during 1Q 2020 with the Covid-19 pandemic. Light commercial vehicles have seen major growth, though, likely related to the growing popularity of internet shopping and food deliveries. The overall increase in car traffic was only 0.95% annually.

FIGURE 4 VEHICLE-KILOMETRES TRAVELLED IN THE UK 1996-2020, INDEXED TO 1996<sup>ix</sup>



With improving fuel efficiency, this means a slow overall drop in fuel consumption (Figure 5). UK fuel consumption has been virtually flat since 1994 and has fallen 0.3% annually since 2008. Within this, petrol (gasoline) consumption has sharply declined, while diesel has grown, because of the promotion of more efficient diesel engines. But, since the 'Dieselgate' scandal of 2015, the higher air pollution of diesel engines has slowed this trend.

FIGURE 5 UK FUEL CONSUMPTION 1994-2019<sup>x</sup>



Consumer habits have also shifted. Research suggests five things matter most to American drivers<sup>xi</sup>:

- Convenience and rapid filling (no queues, easy payment);
- Positive consumer experience;
- Convenience shop brands (rather than fuel brand);
- Safety of family and children (vulnerability when refilling); and
- Environmental consciousness.

Interestingly, these factors matter more than price. This could be related to the fact that fuel prices have been relatively low for the past six years; if they were to increase again, price consciousness would likely return.

The customer experience includes luxury offerings, such as Shell's VIP stations in Bangkok, which have personal attendants not only to fill cars but to serve coffee in the café<sup>xii</sup>. Consumers now expect healthier food options instead of traditional fast food. Americans spend more on food outside the home than at home, and spending on outside food is growing at 4.8% per year compared to 3.4% for food at home<sup>xiii</sup>.

This trend is likely to be repeated in other markets as incomes rise, and offers a further opportunity to filling stations.

On the other hand, earnings from some other products will fall like tobacco (because of declining smoking rates), lubricants, and spare parts because EVs are more straightforward and require less maintenance.

Environmental improvements include offering electric charging, other fuels (such as compressed natural gas (CNG), biofuels and hydrogen), waterless carwashes, more sustainable materials, and stations with solar panels on the canopy. Shell offers customers in the Netherlands the option to offset the carbon footprint of their fuel. With the growing disclosure of 'Scope 3' (supply chain) greenhouse gas emissions (GHG) and commitments to carbon neutrality, such schemes may soon become essential for European fuel retailers.

These factors vary by region, though. In countries such as India, drivers remain highly price-conscious, while environmental factors so far have lesser importance. In the GCC countries, high-income customers often have chauffeurs, making it less relevant to target the car driver with facial or voice recognition <sup>xiv</sup>. In hot climates, the drivers prefer to avoid self-service and may pay a premium.

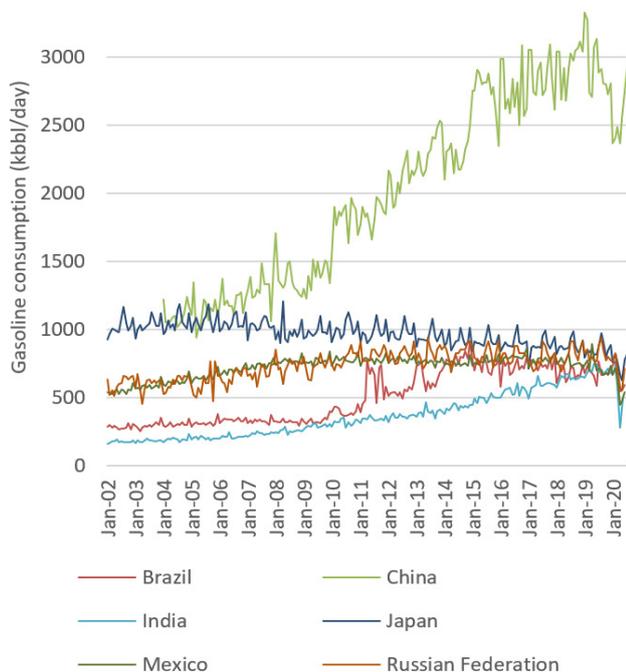
The rise of ride-hailing services, such as Uber, Lyft, and Careem, also poses challenges to the existing fuel retail model. But there are also opportunities for partnership and loyalty programmes.



## NEW GEOGRAPHIES OFFER GROWTH WITH CHALLENGES

In contrast to the stagnation or shrinkage in the OECD, emerging economies offer growth in fuel consumption – but even here, the pattern is not uniform (Figure 6). In Japan, probably the world's most mature large gasoline market, consumption has been falling steadily since around 2008. China has grown enormously and is by far the largest consumer (globally, only the US, with 8.3 million bpd of gasoline used in June 2020, exceeds China's 2.9 Mbbbl/day). India has grown fast, but its consumption is only equal to Mexico and Russia, which have both flatlined since 2011. South Korea's smaller consumption also seems to have flattened out. All these countries have, of course, seen a significant drop in gasoline demand in early 2020 because of Covid-19.

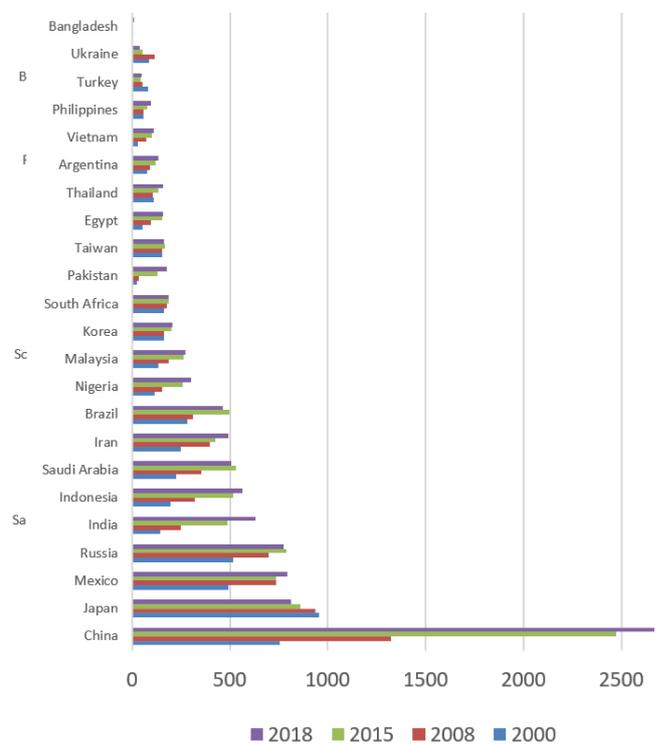
**FIGURE 6 GASOLINE CONSUMPTION IN MAJOR EMERGING AND ASIAN ECONOMIES <sup>xv</sup>**



Considering a broader range of countries (Figure 7) shows the dominance of China in gasoline demand growth again. China's growth between 2008 and 2018 was almost as massive as all 22 other countries in this

sample. China added on average 148 kbbbl/day each year during this period; the other big fast-growing market, India, only added 38 kbbbl/day. Nevertheless, other populous countries with fast growth offer exciting prospects for fuel retail, such as Bangladesh (exceptionally rapid growth from a small starting base), Pakistan, Vietnam, Indonesia, and Nigeria.

**FIGURE 7 GASOLINE DEMAND IN LEADING SELECTED DEVELOPING AND OTHER COUNTRIES, 2000-18 <sup>xvi</sup>**



Fuel is one of the largest and most internationalised retail operations. Nevertheless, many developing countries still have strong incumbents, often state-owned. In other regions, such as South East Asia, the market is highly fragmented, with unbranded small businesses owning most outlets, and offering few products other than fuel. This represents an opportunity for consolidation by more sophisticated domestic firms or international specialists. Consumer requirements are also different

from developed markets, given a much larger share of motorbikes and three-wheelers, with small individual fuel demand.

TABLE 1 FOREIGN COMPANIES' FUEL RETAIL IN CHINA <sup>xvii</sup>

Foreign company	Stations (2018)	Chinese partners	Provinces
Shell	1,300	CNPC, Sinopec, CNOOC, Shaanxi Yancheng	Beijing, Sichuan, Tianjin, Shandong, Shanxi, Guangdong, Jiangsu, Hebei, Zhejiang, Chongqing, Shaanxi
ExxonMobil	700	Sinopec	Fujian, Henan
BP	500	Sinopec, CNPC, Shandong Dongming	Guangdong, Zhejiang, Shandong
Total	500	Sinochem	Liaoning, Hebei, Beijing, Tianjin, Jiangsu, Zhejiang, Shanghai

In China, the market is now in principle, fully open for private investment, and foreign companies' share is small but expanding. Joint ventures have tended to be multiple and province-specific rather than nationwide. The percentage of the Chinese NOCs—Sinopec, CNPC, and CNOOC—is large but not overwhelming.

The Indian market is quite different – it is still dominated by large state companies: Indian Oil Corporation (IOC), Hindustan Petroleum (HPCL), and Bharat Petroleum (BPCL). International companies have sought to enter the fast-growing Indian market via joint ventures: Nayara (formerly Essar), part-owned by

Russia's Rosneft, is the largest private-sector retailer; BP has a partnership with domestic conglomerate Reliance known as Jio-BP; Total with Adani Gas, while Shell India has just 167 pumps.

Total claims to have the largest retail network of any company in Africa. Puma Energy, jointly owned by Sonangol, the national oil company of Angola, and trader Trafigura, is another leading player.



## NEW GEOGRAPHIES OFFER GROWTH WITH CHALLENGES

The GCC, a high-income market with historically rapid fuel demand growth, is another contrast. With relatively few but high-throughput stations, it is still mostly dominated by legacy NOC positions: Woqod in Qatar, ADNOC, ENOC, and Emarat in the UAE. But the removal or reduction of fuel subsidies has made the market more attractive, leading to interest from regional players, including NOCs seeking to expand into neighbouring countries.

Developing countries have the promise of rapid growth in fuel demand because of rising populations, expanding motor vehicle usage and goods transport, rising incomes to spend on non-fuel offerings, and improving road networks. However, they also bring challenges such as economic volatility, sometimes incumbent monopolies, poor logistics, fuel adulteration, and theft.



### AUTOMATION AND DIGITALISATION CREATE NEW WAYS TO SERVE CUSTOMERS...

Fuel retail companies have realised the potential for new technologies to evolve their offering. Customer knowledge, brand loyalty, and analytics have been adopted, as they have by supermarkets and online retailers. Mobile apps can add 1-2% to earnings, by promoting consumer loyalty and increasing their spending; targeting cross-selling can add 2-4%. Analytics can sharpen intra-day pricing, attracting price-sensitive consumers at certain times. However, this option is not available in jurisdictions with fixed prices or monthly-adjusted prices (most of the Middle East).

Payments are increasingly automated, including via mobile apps. Internet-connected cars could be another payment mode that enables personalised offers and integration with partner loyalty programmes. Such programmes can move 5-15% of consumers away from paying with their credit card, saving credit card fees of about 2% <sup>xviii</sup>.

Completely automated sites make use of automatic vehicle recognition to reduce theft. Alibaba in China has introduced a computerised customer shop and robotic fuelling. A German robot maker, Kuka, has produced a robot electric charger that can detect a vehicle's electric inlet <sup>xix</sup>. Such trends save on staffing costs and reduce worker exposure to toxic vapours.

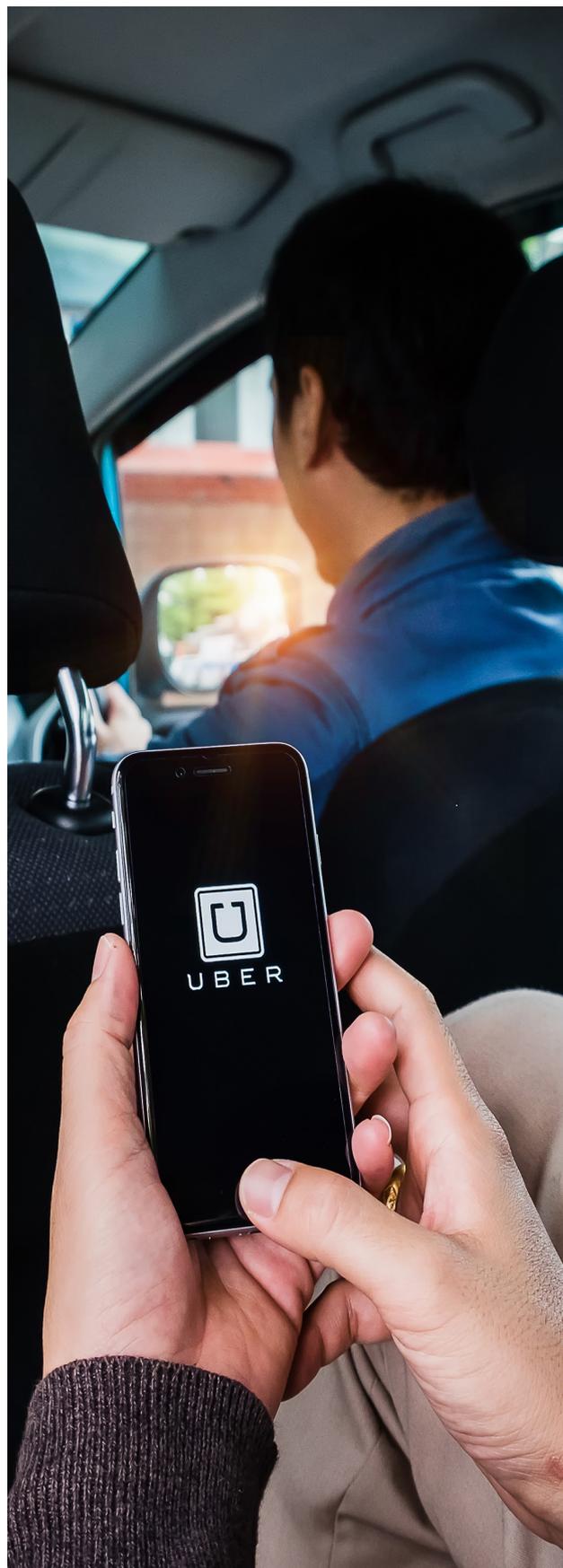
Drivers could pre-order food and drink before arriving at a location. Fuel retail companies increasingly have alliances with restaurant brands for co-location, a process that has

advanced more in the UK than the US <sup>xx</sup>. In developing markets, retail sites can learn from such experiences to build more sophisticated consumer service, improving, for instance, on the busy and disordered situation at Indian service stations.

Retail has traditionally concentrated on food and drink, including co-located fast-food restaurants, other items useful on journeys (for example, magazines), and automotive items (windscreen washer fluid, engine oil, car phone chargers, etc.). But other offerings, such as online shopping pick-up and drop-off, showers, banking services, business centres, pet services, or fitness centres <sup>xxi</sup>, could be considered.

Less visibly for the consumer, digitalisation can improve inventory management and procurement. This is important in a low-margin and highly competitive business. Integrating the fuel, convenience shop, and food and beverage sales can save on system costs while giving a holistic view of customers' behaviour and preferences.

But other digital models have emerged to challenge the fixed-site fuel retail model. These include automated, modular petrol stations for residential communities. More ambitious are fuel delivery start-ups, such as Yoshi <sup>xxii</sup> in the US, Zebra Fuel in the UK, and Cafu in the UAE, which offer convenient ordering via an app, competitive prices, and ancillary services. Shell has TapUp via app to provide a similar on-demand service.



## ...BUT AUTONOMOUS VEHICLES ARE A FURTHER CHALLENGE TO INCUMBENT FUEL RETAIL

Autonomous, 'self-driving' cars have been increasingly touted in recent years. Current widely-available self-driving technology has reached 'Level 2' <sup>xxiii</sup> – effectively autopilot where the car handles accelerating, braking and steering, but the driver has to be able to take control at any moment. Truly autonomous vehicles of 'Level 4' would be able to drive in well-defined areas without a need for human intervention. 'Level 5' vehicles could drive themselves in all situations and under all conditions.

It has generally been expected that autonomous vehicles would be electric, though this does not have to be the case. If autonomous vehicles are primarily in fleets (for instance, robo-taxis), they could charge at the base. If such cars drive to a charging point by themselves while unoccupied, that will remove the ancillary sales made by retail stations. On long-distance autonomous journeys, it would also be unnecessary for the passengers to stop as often as a human driver would.

Long-distance heavy goods haulage by autonomous vehicles (or also by greater use of rail) would reduce human-driven trucking. This can eventually erode one of the core retail station offerings.



## CONCLUSIONS

The century-old fuel retail market is entering a complete shake-up: mostly because of electric, and in future perhaps autonomous vehicles, but also because of shifting consumer tastes, new retail technologies, and the evolving geography of fuel demand.

In the short term, Covid-19 has depressed travel and fuel demand; in the long term, travel will probably rebound, but commuting patterns will change because of more virtual and home working. Fuel demand in developed markets will continue to drop, driven by electrification and improved efficiency. A large part of current fuel retail networks will become unprofitable—as much as 80% by 2035 in the case of rapid EV adoption—and will have to be closed or reconfigured.

As urban sites become less-frequented because of home and workplace charging, highway sites may become more used, at least in the medium term because of long charging times. Urban areas especially will have to adapt to multifaceted retail and service offerings.



Overall, fuel stations will adapt to a small number of basic models, including:

- Urban express store, with basic convenience shop and limited fuel/charging points;
- Urban community centre, with a variety of services;
- Expansive highway station, with several shops, restaurants, and the full range of fuel choices; and
- Long-distance haulage oriented, with rest areas for truck drivers.

The shifting landscape of fuel retail may change competition. New players could enter, including traditional generalist retailers, using their skills in customer identification and analysis to improve margins. On the other hand, NOCs may see this business as no longer so necessary or strategic. They could divest at home, or they could try to grow internationally. Vertically-integrated firms that are now shifting their upstream business away from oil and gas may see a smaller petrol/diesel retail presence as desirable. Still, electric vehicle charging is a vital part of the plans of companies such as BP, Shell, and Total.

The changing map of fuel retail thus represents a considerable challenge to the incumbents. They have to reorient their service offering around another core product with very different characteristics from their traditional petrol and diesel. They will have to seize the medium-term opportunities over the next decade and a half, while not over-investing in a model that may be out of date by the 2040s.

## APPENDIX

- i. <https://www.publicissapient.com/insights/fuel-station-2025-future-of-gas-stations-in-the-us#articleSeriesAnchor>
- ii. <https://www.publicissapient.com/insights/transforming-fuel-retail>
- iii. Qamar Energy research; company reports; <https://www.petrolplaza.com/fuel-retailers/Z>. ExxonMobil is for US + UK only; Chevron is for US and Caltex only; Total is for France + Germany + Netherlands only. Chart may include some overlap due to joint ventures and branding/franchises. Most companies <1000 stations excluded.
- iv. <https://www.iea.org/reports/global-ev-outlook-2020>
- v. Data from BP World Energy Outlook 2020
- vi. <https://www.iea.org/reports/global-ev-outlook-2020>
- vii. <https://www.ukpia.com/media/2471/ukpia-2020-statistical-review-a4.pdf>
- viii. <https://www.replgroup.com/fuel-retail-future-fore-court/>
- ix. Data from <https://www.gov.uk/government/statistical-data-sets/tra25-quarterly-estimates#table-tra2501>
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- xiv. <https://www.publicissapient.com/insights/the-future-of-gulf-cooperation-council-fuel-stations>
- xv. Data from Joint Organisations Data Initiative (JODI)
- xvi. Data from International Energy Agency, [iea.org/statistics](https://www.iea.org/statistics)
- xvii. <https://www2.deloitte.com/content/dam/Deloitte/cn/Documents/energy-resources/deloitte-cn-er-china-gasoline-retailing-development-trends-report-en-190527.pdf>
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- xxi. <https://www.lsretail.com/blog/trends-that-are-changing-the-gas-station-industry>
- xxii. <https://www.startyoshi.com>
- xxiii. <https://www.synopsys.com/automotive/autonomous-driving-levels.html>

## OUR MEMBERS

Currently, the Foundation has over fifteen corporate members from Qatar's energy, insurance and banking industries as well as several partnership agreements with business and academia.



Our partners collaborate with us on various projects and research within the themes of energy and sustainable development.





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