Energy Stations of the Future

How fuel distribution networks will have to reshape their businesses by 2050

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Background

The profitability of traditional gas stations worldwide has been declining for more than a decade, in a context of stricter regulations, higher taxations and fuel consumption reductions.

Focusing on regulatory, technological and behavioral long-term trends, Sia Partners has analyzed how global fuel consumption will evolve over the next 30 years and has estimated that the number of traditional gas stations in certain continents could potentially drop by 50% in 2050 if they do not transform their businesses. This decline is related to a decrease in average vehicle fuel consumption, transformation of fleets from traditional gasoline engines to hybrid and electric, and a continuous decrease in distance travelled.

Depending on their locations and thus their customer needs, traditional gas stations will evolve in different ways. Due to their high volume of sales and vehicle traffic, highway gas stations might be thought more likely to withstand market changes, followed by urban gas stations. On the contrary: rural gas stations are at risk.

To thrive in the evolving landscape, fuel retail businesses must deploy four essential levers: energy diversification by expanding the array of energy products offered; elevation of the customer experience through premium services and digital innovations; provision of adjacent services via retail activities or by bolstering mobility hubs; and driving cost and time efficiencies through strategic partnerships.

How will these factors shape the Energy Stations of the Future? Companies will have to transform their operating models, elevate customer experiences and fully capitalize on end-to-end loyalty programs in order to thrive.

Welcome to Energy Stations of the Future!

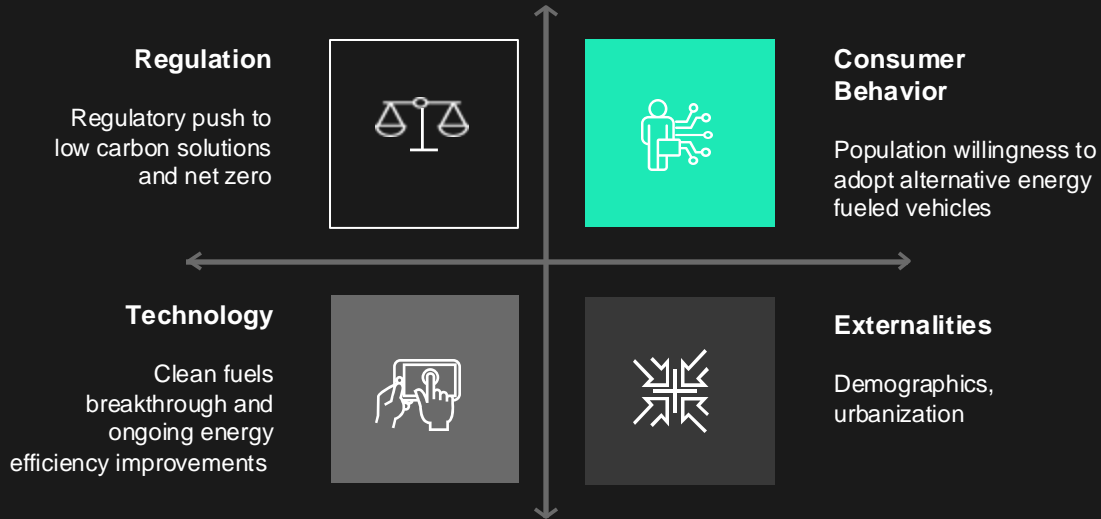## Objectives

The main objectives of this study are to assess the impact of energy transition on the fuel distribution sector in Europe, North America and Middle East by 2050 and identify recommendations to anticipate this transformation.

This study focused on light-duty fleet vehicles which represent approximately 80% of total fleet.

Four Forces Disrupting the Energy Retail Business

Sia Partners analyzed four forces that will have a direct impact on the evolution of energy station markets for decades to come.

Regulation

Regulatory push to low carbon solutions and net zero

Consumer Behavior

Population willingness to adopt alternative energy fueled vehicles

Technology

Clean fuels breakthrough and ongoing energy efficiency improvements

Externalities

Demographics, urbanization

Scope of the Study

A group of four factors were analysed to assess the global fuel consumption, and ultimately the projection of the number of fuel retail stations across North America, Europe and Middle East by 2050.

Average

- Gasoline: 7-9 L/100km
- Diesel: 7-8 L/100km
- Hybrid: ~6L/100km

Engine Fuel Efficiency

Vehicle Fleet

Light-vehicle spectrum*

- Gasoline: 50-100%
- Diesel: 0-40%
- Hybrids: 0-10%
- Electric Vehicles (EVs): 0-4%.
- Other Types: less than 2%

*Differs depending on the region

Global Fuel Consumption

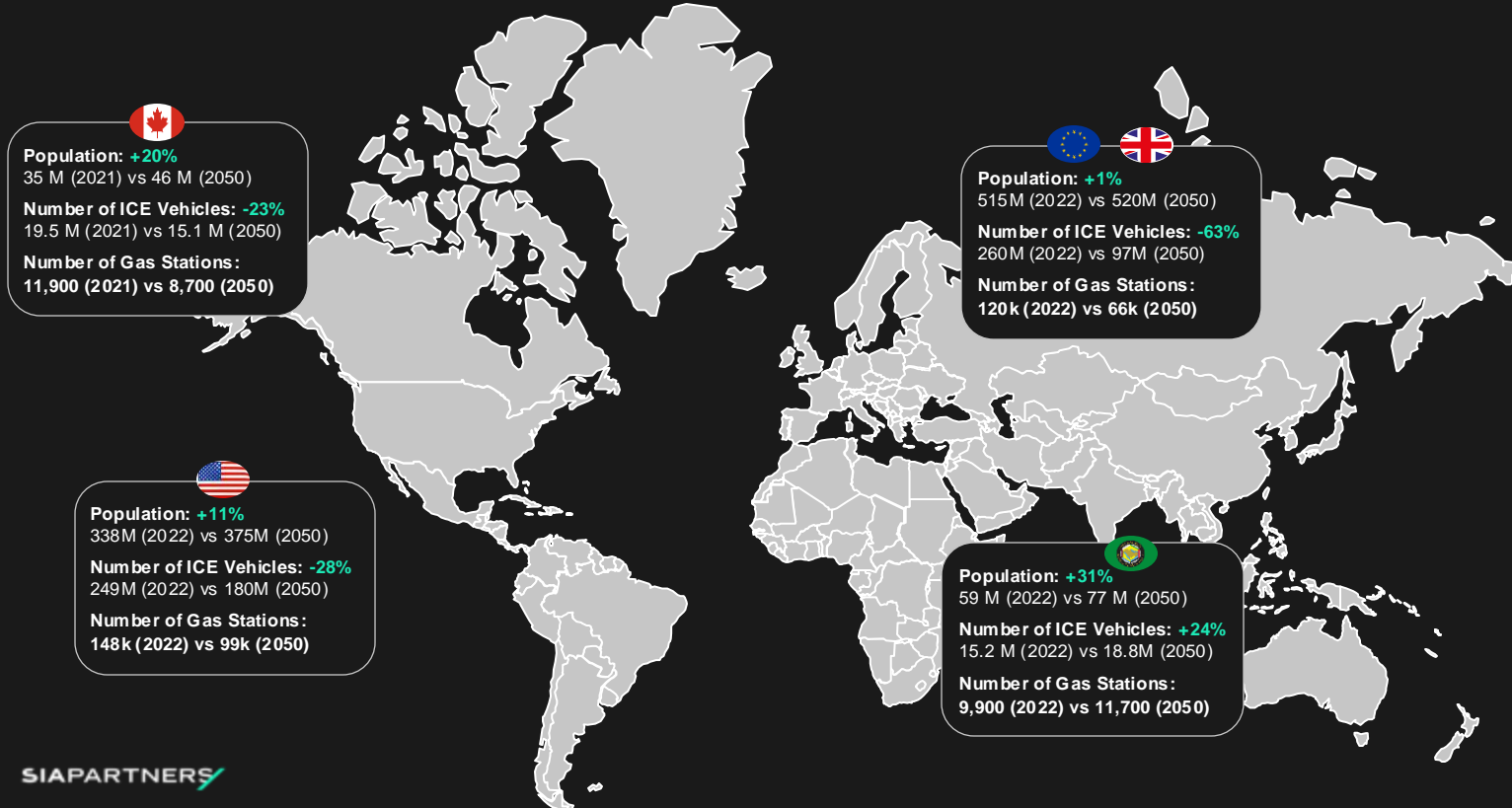**Average distance travelled per year**

- Europe – 10k km/year
- North America – 15k km/year
- Middle East – 15km/year

Source: European Union's statistical office

Average Distance Traveled

Population Growth

Trend to 2050

- Europe – Flat
- North America – Slightly positive
- Middle East – Steep growth

Est. No. Traditional Gas Stations = Total Est. Sales Volume / Hist. Avg Sales Volume by Station

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With a changing landscape, traditional gas stations could potentially suffer a structural decline if they don't transform their businesses

Canada
Population: +20%
35 M (2021) vs 46 M (2050)
Number of ICE Vehicles: -23%
19.5 M (2021) vs 15.1 M (2050)
Number of Gas Stations:
11,900 (2021) vs 8,700 (2050)

EU / UK
Population: +1%
515M (2022) vs 520M (2050)
Number of ICE Vehicles: -63%
260M (2022) vs 97M (2050)
Number of Gas Stations:
120k (2022) vs 66k (2050)

USA
Population: +11%
338M (2022) vs 375M (2050)
Number of ICE Vehicles: -28%
249M (2022) vs 180M (2050)
Number of Gas Stations:
148k (2022) vs 99k (2050)

GCC
Population: +31%
59 M (2022) vs 77 M (2050)
Number of ICE Vehicles: +24%
15.2 M (2022) vs 18.8M (2050)
Number of Gas Stations:
9,900 (2022) vs 11,700 (2050)

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Energy Station Evolution in the Age of Hyper Transformation

Fuel retail businesses have been undergoing significant evolution over the past years, with a major shift from fuel revenue to non-fuel revenue, underpinned by companies' ability to understand client preferences and monetize from there.

Fuel Distribution Evolution

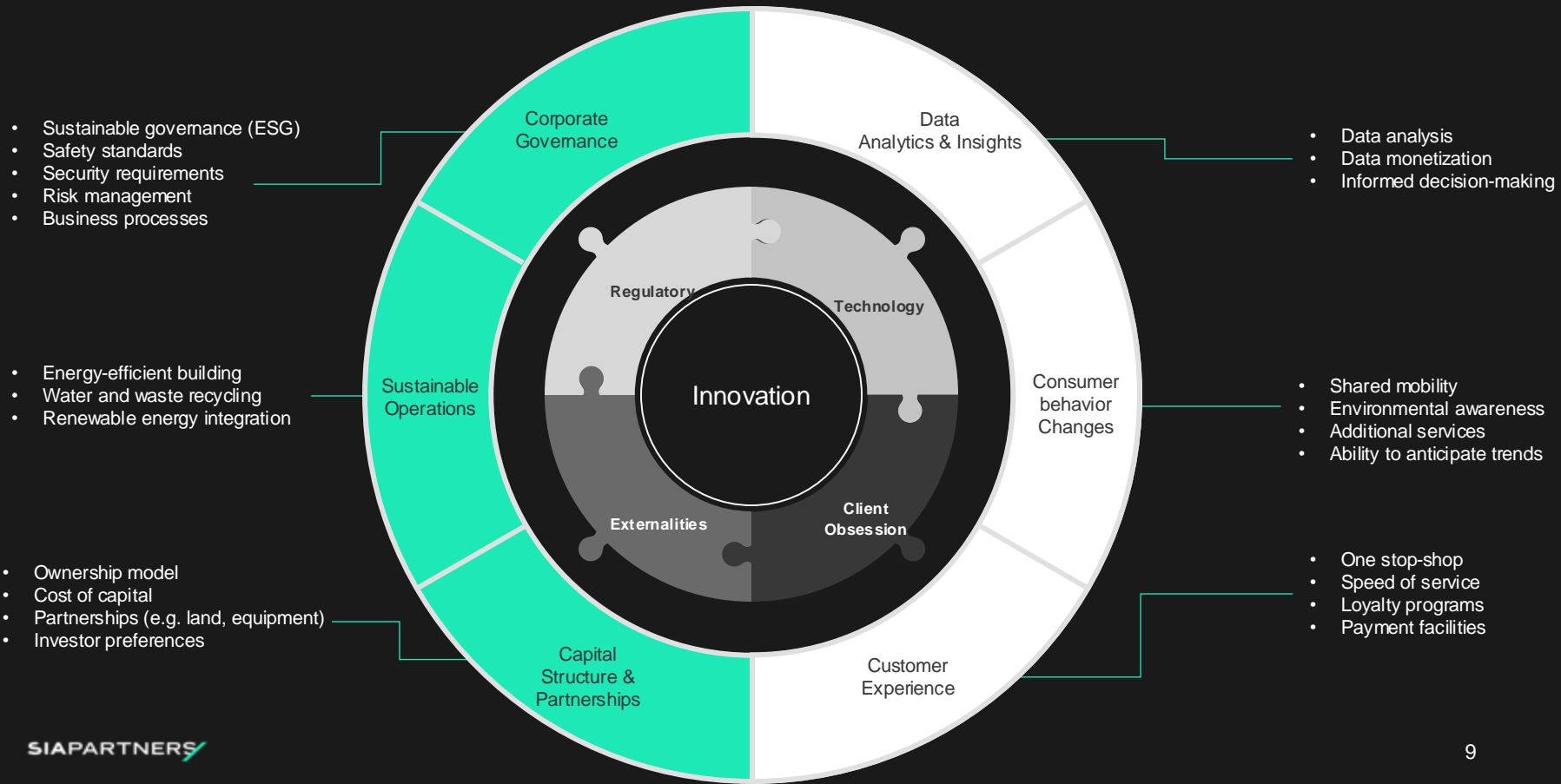| Vintage	Minimalist	Standard	Integrated	Intelligent
Remote Gas Stations:	Urban Convenience Stores:	Self-Service Fuel Stations:	Full-Service Stations:	Single integrated place for consumer:
• Fuel distribution only • Regulatory commitment	• Fuel pumps • Parcel pickup • Low entry convenience store items	• Silver Standard • Parcel pickup • Convenience store items • Car wash or tires or fluid checks • Balance focus between fuel supply and services	• Gold Standard • Pleasant experience • Restaurants, lodging, others • Extra services (fluid, wash, tires, etc.) • ERP, CRM, Loyalty program, others • Focus on services is greater than fuel supply	• Platinum Standard • Customer Obsession • One-stop-shop approach • Hyper automated with data monetization • Dinner and shopping experience • Focus shift from fuel supply to services

Energy Stations Target Operating Model Framework

For traditional gas stations to survive, companies should put innovation as a core of their Target Operation Model (TOM)

- Sustainable governance (ESG)
- Safety standards
- Security requirements
- Risk management
- Business processes

Corporate Governance

Data Analytics & Insights

- Data analysis
- Data monetization
- Informed decision-making

- Energy-efficient building
- Water and waste recycling
- Renewable energy integration

Sustainable Operations

Regulatory

Technology

Innovation

Consumer behavior Changes

- Shared mobility
- Environmental awareness
- Additional services
- Ability to anticipate trends

Externalities

Client Obsession

- Ownership model
- Cost of capital
- Partnerships (e.g. land, equipment)
- Investor preferences

Capital Structure & Partnerships

Customer Experience

- One stop-shop
- Speed of service
- Loyalty programs
- Payment facilities

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Methodology, Assumptions and Limitations:

Methodology:
- Predicted evolution in the urbanization rate has been considered to modify the distance covered per car per year in each state and province by 2050.
- 2050 vehicle fleet numbers have been projected from historical trends of the reference years (2016-2022*)

Assumptions:
- The ratio of car/person has been kept constant between the latest historical year (2021/2022) and 2050.
- The average fuel efficiency in 2050 has been projected to be 5L/100km for hybrids cars, 6L/100km for diesel cars and 7L/100km in Europe for gasoline cars (7.5L/100km in North America and the Middle East).
- The distance traveled per car per year has been kept constant between states and is based on federal data**.
- The average distance travelled per car per year in the Middle East is assumed to be similar to the one in the U.S.**
- Only gasoline, hybrids and electric vehicles are the only ones to be considered in the Middle East region.
- The vehicle fleet in Oman, Bahrain, Kuwait, Qatar and Saudi Arabia have been modelled around the data from the UAE.
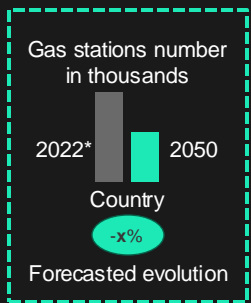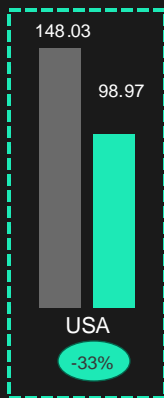
Limitations:
- Bio-diesel and ethanol-powered vehicles have been left out of the scope of the study.
- California energy stations numbers include all types of retail fuel stations while other state-level data only includes gasoline stations.
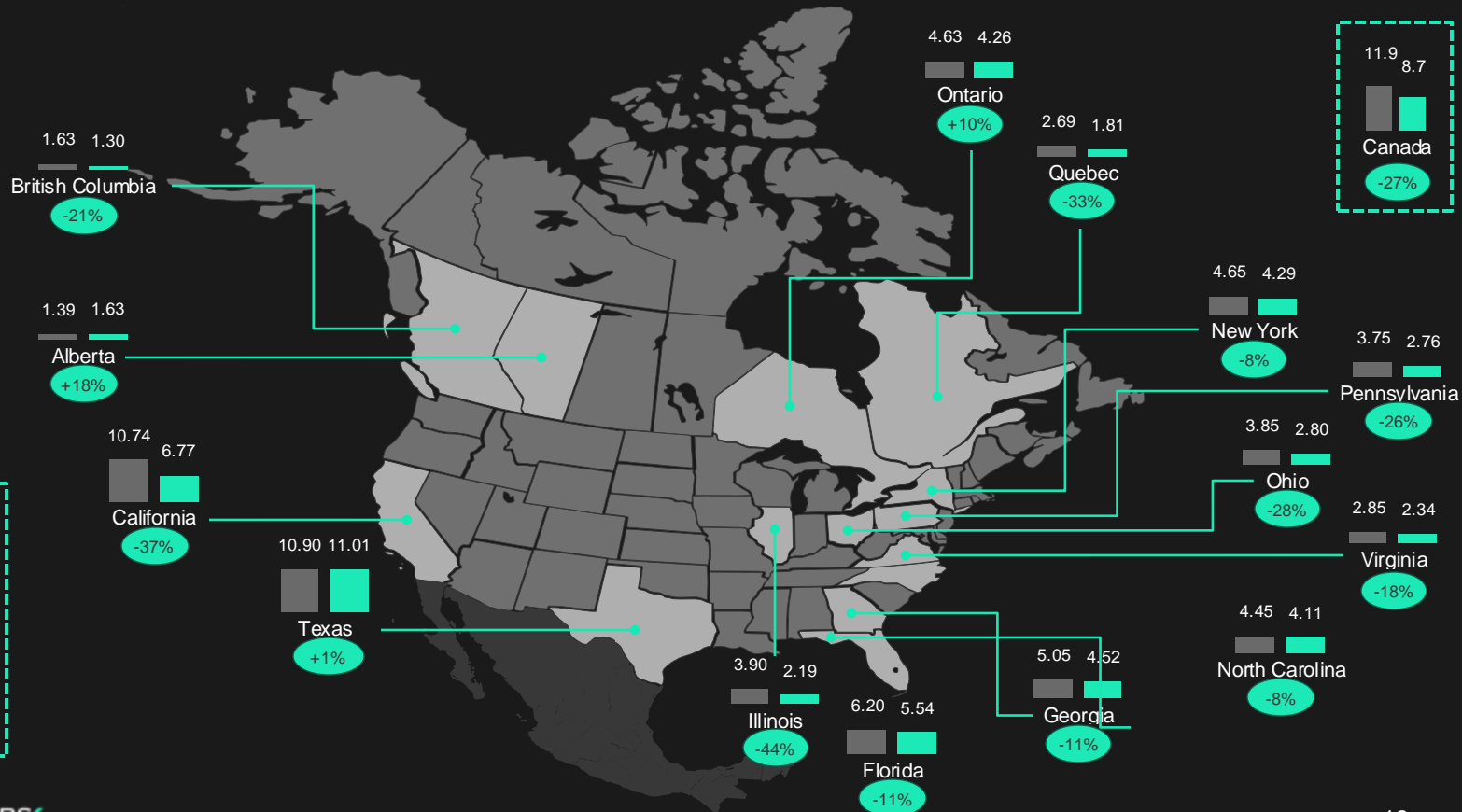
North America

The gas stations market in 2050

American and Canadian gas stations will respectively fall by 33% and 27% between 2022* and 2050

USA
148.03 → 98.97
-33%

British Columbia
1.63 → 1.30
-21%

Alberta
1.39 → 1.63
+18%

California
10.74 → 6.77
-37%

Texas
10.90 → 11.01
+1%

Illinois
3.90 → 2.19
-44%

Florida
6.20 → 5.54
-11%

Georgia
5.05 → 4.52
-11%

Ontario
4.63 → 4.26
+10%

Quebec
2.69 → 1.81
-33%

Canada
11.9 → 8.7
-27%

New York
4.65 → 4.29
-8%

Pennsylvania
3.75 → 2.76
-26%

Ohio
3.85 → 2.80
-28%

Virginia
2.85 → 2.34
-18%

North Carolina
4.45 → 4.11
-8%

Legend:
Gas stations number in thousands
2022* | 2050
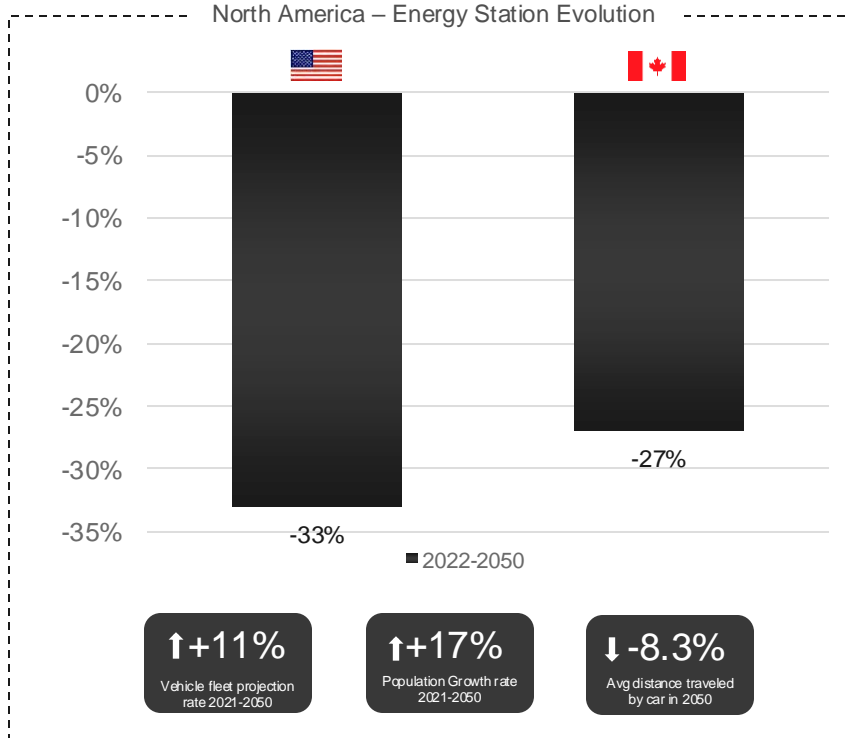Country
-x%
Forecasted evolution

*2021 for Canada

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North America – Energy Station Evolution

Our research indicates that in both the USA and Canada traditional gas station* numbers are forecasted to contract significantly unless they undertake transformative measures in their operating models.

North America – Energy Station Evolution

🇺🇸 🇨🇦

0%	
-5%	
-10%	
-15%	
-20%	
-25%	
-30%	-27%
-35%	-33%

■ 2022-2050

↑ +11%
Vehicle fleet projection rate 2021-2050

↑ +17%
Population Growth rate 2021-2050

↓ -8.3%
Avg distance traveled by car in 2050

*Traditional gas stations provide diesel and gasoline fuel types as their main revenue streams.
Source: Population (Macrotrends USA & Canada), World Bank (GDP), US Dept. of Energy & Statcan (Vehicles)

Influencing factors

The reduced number of traditional gas stations in North America can be explained by a restrictive environment linked to:

- Regulatory changes with federal and state/provincial governments adopting bans on the sale of new ICE vehicles by 2035 and others promoting technology neutrality.
- Consumer adoption of EVs and hybrid vehicles motivated by a lower total cost of ownership and environmental awareness.
- Technology improvements around EVs are anticipated to improve battery lifetime and autonomy, making the product appealing to an even wider consumer base.

Anticipated growing population with a constant ratio of vehicles per person is however increasing the vehicle fleet size allowing ICE cars to keep a dominant position.

	🇺🇸	🇨🇦
Population	338 M (2022)	38 M (2021)
GDP per capita (in USD)	$ 76,399 (2022)	$ 52,359 (2021)
Ratio Vehicles / Pop	0.77	0.52

🇺🇸 States with highest number of stations (2022):

1. 10,900 – Texas
2. 10,742 – California
3. 6,200 – Florida
4. 5,050 – Georgia

🇨🇦 Provinces with highest number of stations (2021):

1. 4,632 – Ontario
2. 2,961 – Québec
3. 1,627 – British Columbia
4. 1,390 – Alberta

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USA

Consumer behavior:
EVs represented **less than 1 percent** (0.9%) of the United States vehicle fleet in 2022.

Externalities:
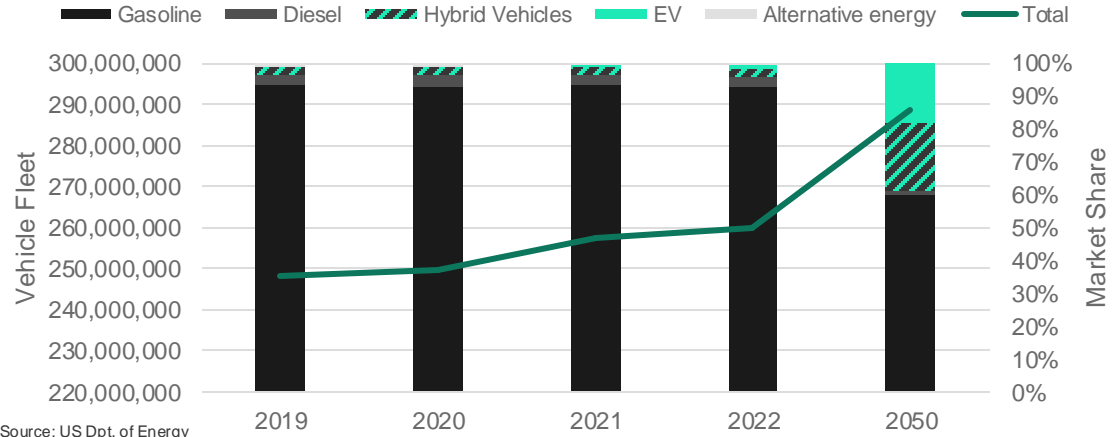*The U.S. should experience a **strong demographic growth** (+11% on the 2022-2050 period). Population will increase from **338.3 million in 2022**[1] to **375.4 million in 2050**[2], meanwhile its urbanization rate should increase from **82%** to **89%**[3].*
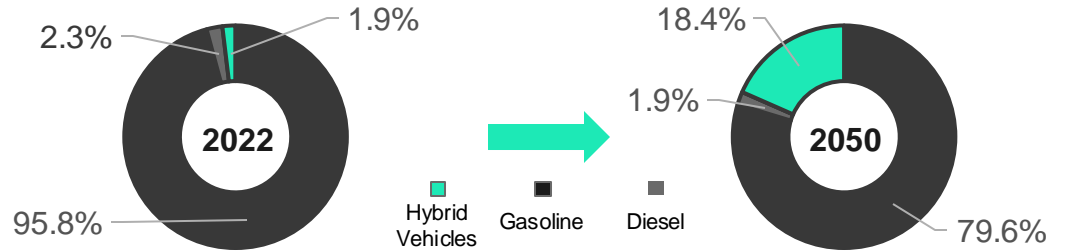
Regulation:
12 U.S. states governments are engaged in banning the sales ICE gas-powered vehicles by 2035[4].

Passenger car fleet by engine type

Legend: Gasoline | Diesel | Hybrid Vehicles | EV | Alternative energy | Total

Source: US Dpt. of Energy

Aggregate fuel sales per engine type (in liters)

2022 — 2.3%, 1.9%, 95.8%

Legend: Hybrid Vehicles | Gasoline | Diesel

2050 — 18.4%, 1.9%, 79.6%

Estimated volume of fuel sales: 343.7 *billion*

Forecasted volume of fuel sales: *226.8 billion*

Source: Census

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Canada

Consumer behavior:
EVs represented **less than 1 percent** (0.8%) of the Canadian vehicle fleet in 2021.
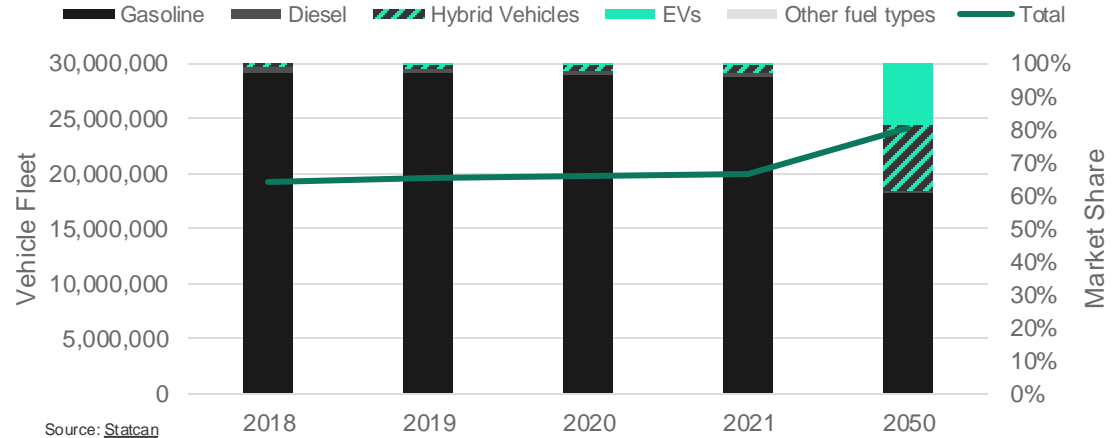
Externalities:
*Canada should experience a **very strong demographic growth** (+20% on the 2021-2050 period). Population will increase from **38.2 million in 2021** to **45.9 million in 2050**[1], meanwhile its urbanization rate should increase from **82% to 87%**[2].*
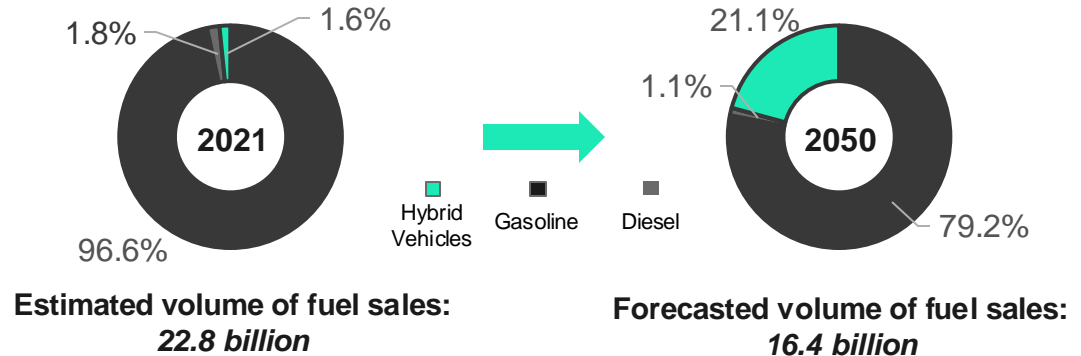
Regulation:
The Government of Canada has announced a ban on new ICE vehicle sale by 2035[3].

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Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EVs, Other fuel types, Total

Source: Statcan

Aggregate fuel sales per engine type (in liters)

2021
- 1.8%
- 1.6%
- 96.6%

Legend: Hybrid Vehicles, Gasoline, Diesel

2050
- 21.1%
- 1.1%
- 79.2%

Estimated volume of fuel sales: 22.8 billion

Forecasted volume of fuel sales: 16.4 billion

USA – Energy Station Evolution

Our research indicates that in both the USA and Canada traditional gas station[*] numbers are forecasted to contract significantly unless they undertake transformative measures in their operating models.

USA - Energy Station Growth Ratio

Chart bar values (2022-2050):
- Illinois: -43%
- California: -37%
- Ohio: -28%
- Pennsylvania: -26%
- Virginia: -18%
- Florida: -11%
- Georgia: -11%
- New York: -8%
- North Carolina: -8%
- Texas: +1%

■ 2022-2050

| +11% Vehicle fleet growth rate 2022-2050 | +11% Population growth 2022-2050 | -9% Avg distance traveled by car in 2050 | -33% Regional gas stations growth rate 2022-2050 |
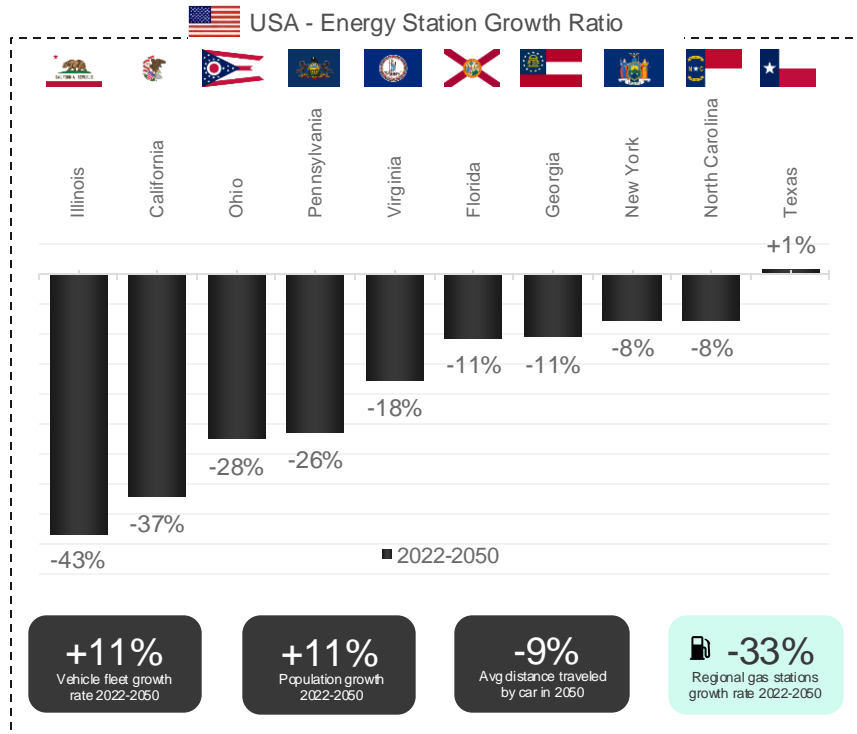
*Traditional gas stations provide diesel and gasoline fuel types as their main revenue streams.

Source: Census, Tax Foundation, *How high are Gas Taxes in Your State?* (2023)

The 3 Most Resilient States

Texas (10,900 → 11,008)
Consumer behavior: Low EV adoption rate (0.7% fleet share in 2022 vs 0.9% fleet share at US level).
Externalities: Strong demographics (+35.6% predicted population increase by 2050 compared to 2022).
Regulation: The State of Texas applies one of the lowest state tax rates in the USA on both gasoline and diesel. A legislation preventing any restriction in the sale of a vehicle based on its fuel type in the state's local government has been enforced since September 1, 2023.

North Carolina (4,450 → 4,106)
Consumer behavior: Low EV adoption rate (0.5% fleet share in 2022 vs 0.9% fleet share at US level).
Externalities: Strong demographics (+30.9% predicted population increase by 2050 compared to 2022).

New York (4,650 → 4,289)
Externalities: Booming demographics (+41.7% predicted population increase by 2050).
Regulation: The State of New York has aligned its vehicle emission standards to California and will therefore enforce the new emissions standards effectively banned the sale of new ICE passenger cars by 2035.

The 3 Least Resilient States

Illinois (3,900 → 2,213)
Externalities: Declining demographics (-14.2% predicted population decline by 2050).
Regulation: The State of Illinois applies the third highest state tax rate on gasoline and diesel.

California (10,742 → 6,771)
Consumer behavior: High EV adoption rate (2.5% fleet share in 2022 vs 0.9% at US level).
Externalities: Stagnant demographics (+2.6% predicted population increase by 2050).
Regulation: The State of California has enforced new emissions standards effectively banning the sale of new ICE passenger cars by 2035.
The State of California also applies the highest state tax rate in the USA on gasoline and the second highest for diesel.

Ohio (3,850 → 2,792)
Externalities: Slightly declining demographics (-5.4% predicted population decline by 2050).

Consumer behavior   Regulation   Technology   Externalities

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Illinois

Consumer behavior:
Low EV adoption rate[1] (0.7% fleet share in 2022 vs 0.9% fleet share at national level)
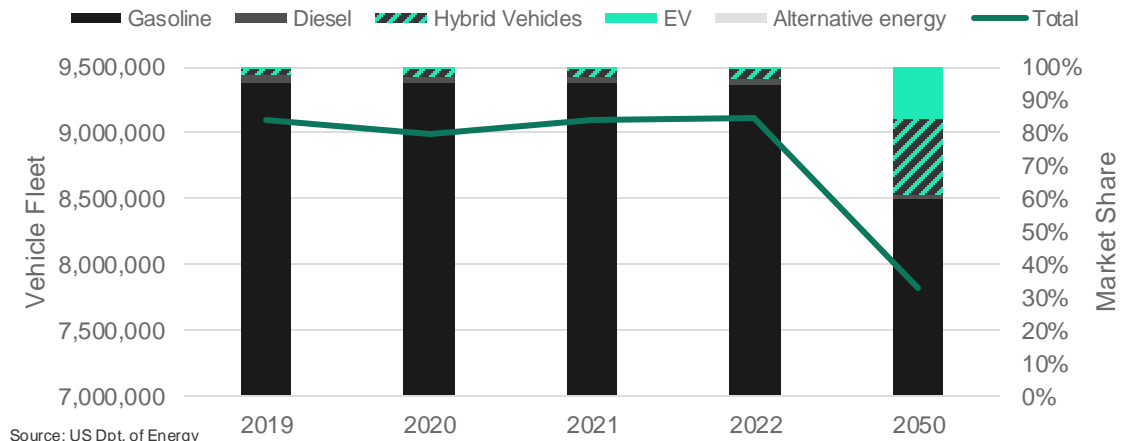
Externalities:
*Illinois should experience a **strong demographic decline** (-14% on the 2022-2050 period). Population will decrease from **12.6 million in 2022**[2] to **10.6 million in 2050**[3], meanwhile its urbanization rate will go from **87%** to **95%**[4].*
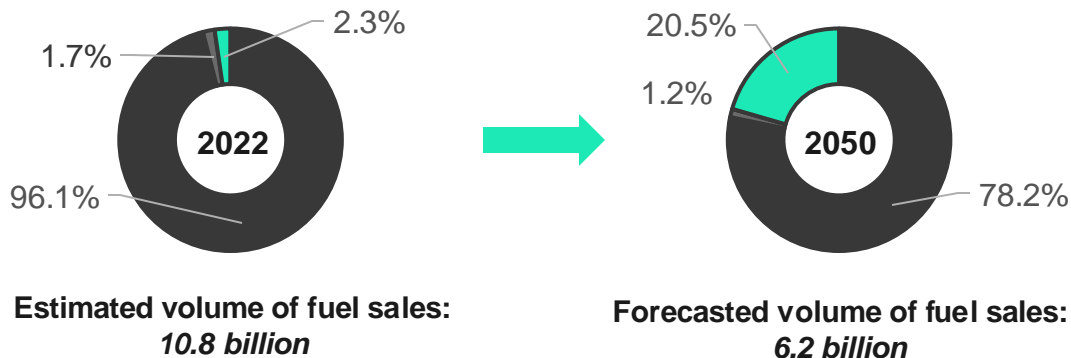
Regulation:
The State of Illinois applies the third highest state tax rate on gasoline and diesel.

Sources: US Dpt. of Energy[1], Census[2], CMAP[3], New Geography[4]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total

Source: US Dpt. of Energy

Aggregate fuel sales per engine type (in liters)

2022: 2.3%, 1.7%, 96.1%

2050: 20.5%, 1.2%, 78.2%

Estimated volume of fuel sales: *10.8 billion*

Forecasted volume of fuel sales: *6.2 billion*

California

Consumer behavior:
The highest EV adoption rate[1] of all U.S. states (2.5% fleet share in 2022 vs 0.9% at national level)
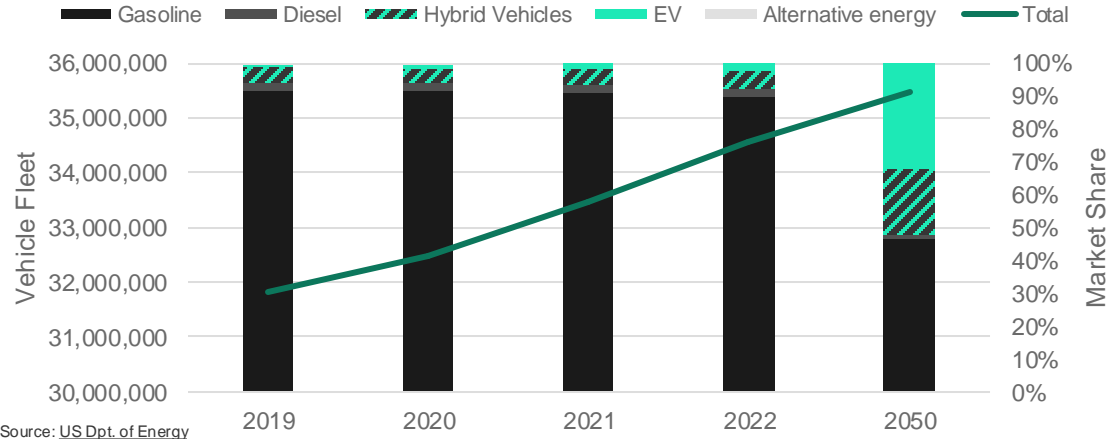
Externalities:
*California should experience **stable demographics** (+3% predicted on the 2022-2050 period). Population will increase from **39 million in 2022**[2] to **40.5 million in 2050**[3], meanwhile its urbanization rate will go from **94%** to **95%**[4].*
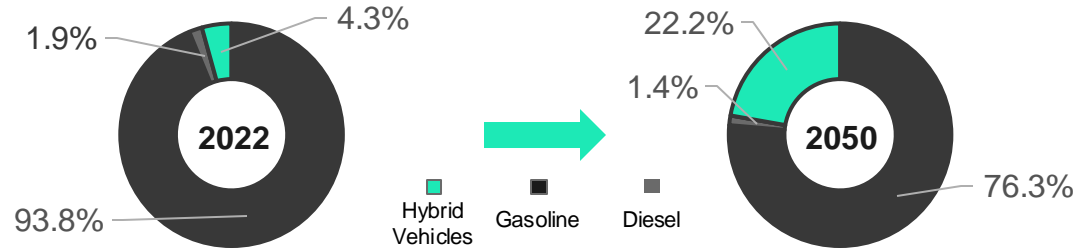
Regulation:
The State banned the sale of new ICE passenger cars by 2035[5] and applies the highest state tax rate in the USA on gasoline and the second highest for diesel.

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Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total

Source: US Dpt. of Energy

Aggregate fuel sales per engine type (in liters)

2022 donut: 4.3%, 1.9%, 93.8%

Legend: Hybrid Vehicles, Gasoline, Diesel

2050 donut: 22.2%, 1.4%, 76.3%

Estimated volume of fuel sales:
40 billion

Forecasted volume of fuel sales:
24.5 billion

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Ohio

Consumer behavior:
One of the lowest EV adoption rate[1] (0.3% fleet share in 2022 vs 0.9% at national level)
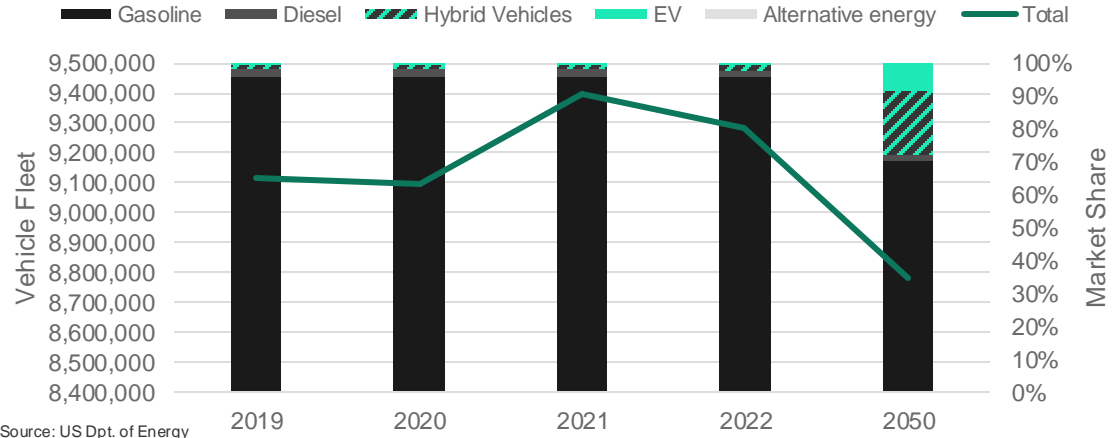
Externalities:
*Ohio should experience a **slight demographic decline** (-5% on the 2022-2050 period). Population will decrease from **11.8 million in 2022**[2] to **11.1 million in 2050**[3], meanwhile its urbanization rate will go from **76%** to **81%**[4].*
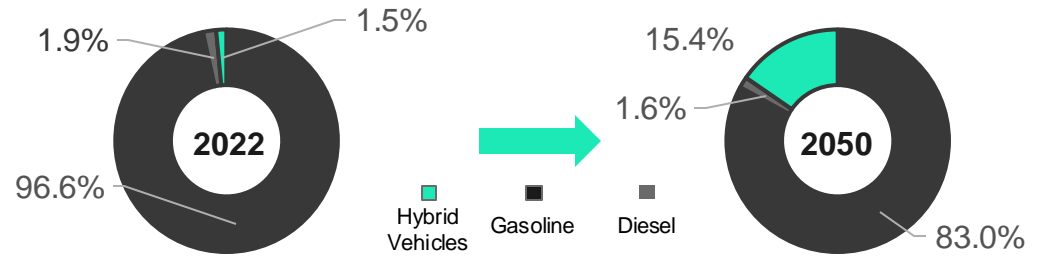
Regulation:
No significant regulatory changes are anticipated to 2050.

Sources: US Dpt. of Energy[1], Census[2], Ohio Government[3], New Geography[4]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total

Source: US Dpt. of Energy

Aggregate fuel sales per engine type (in liters)

2022: 1.9%, 1.5%, 96.6%

2050: 15.4%, 1.6%, 83.0%

Legend: Hybrid Vehicles, Gasoline, Diesel

Estimated volume of fuel sales: *11.1 billion*

Forecasted volume of fuel sales: *8.03 billion*

New York

Consumer behavior:

Low EV adoption rate[1] (0.7% fleet share in 2022 vs 0.9% fleet share at national level)
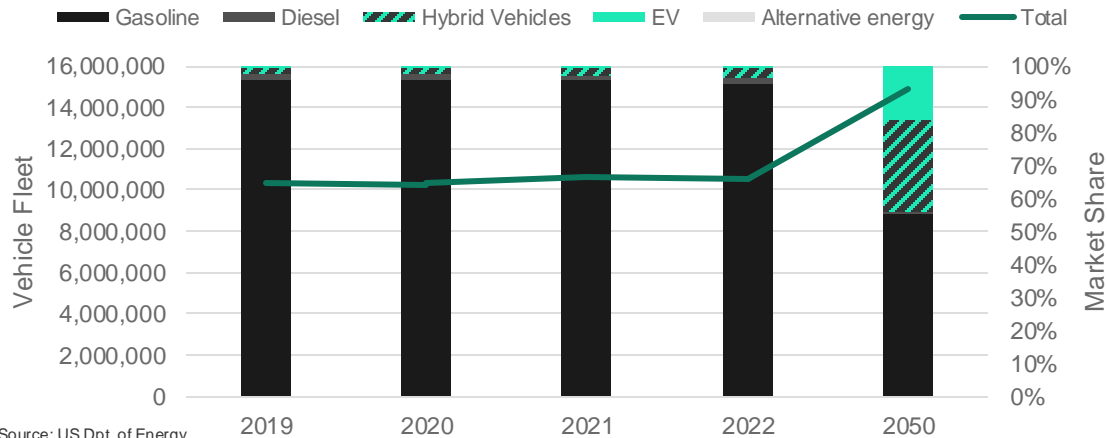
Externalities:

*New York State should experience **booming demographics** (+42% on the 2022-2050 period). Population will increase from **19.7 million in 2022**[2] to **27.9 million in 2050**[3], meanwhile its urbanization rate will go from **87%** to **95%**[4].*
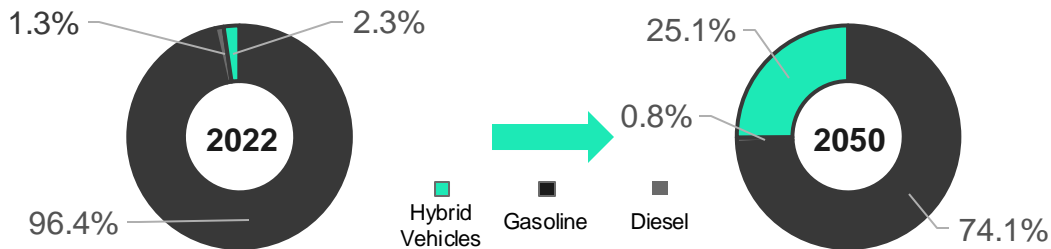
Regulation:

The State has aligned its vehicle emission policy to California and will ban the sale of new ICE passenger cars by 2035[5].

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Sources: US Dpt. of Energy[1], Census[2], Edr State[3], New Geography[4], New York State[5]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total

Source: US Dpt. of Energy

Aggregate fuel sales per engine type (in liters)

2022: 1.3%, 2.3%, 96.4%

Hybrid Vehicles, Gasoline, Diesel

2050: 25.1%, 0.8%, 74.1%

Estimated volume of fuel sales: *12.5 billion*

Forecasted volume of fuel sales: *11.6 billion*

North Carolina

Consumer behavior:
Low EV adoption rate[1] (0.5% fleet share in 2022 vs 0.9% fleet share at national level)
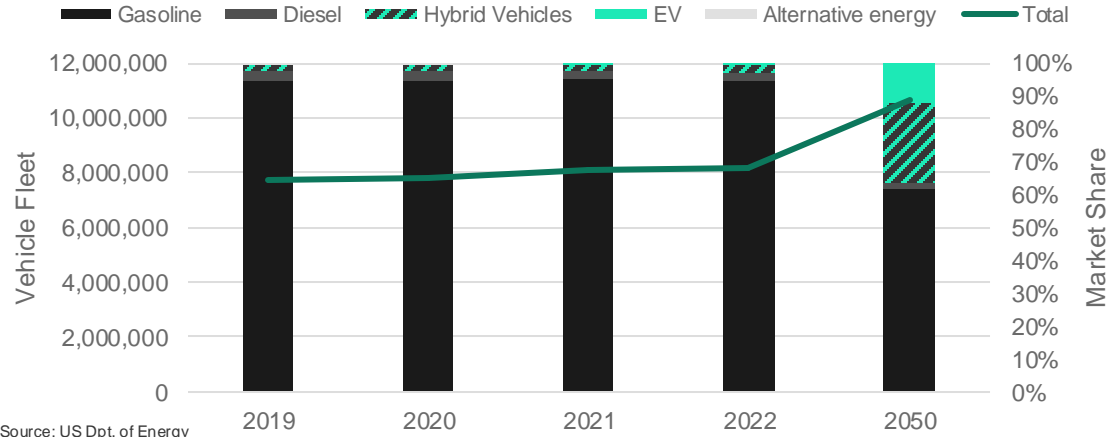
Externalities:
*North Carolina should experience **very strong demographic growth** (+31% on the 2022-2050 period). Population will increase from **10.7 million in 2022**[2] to **14 million in 2050**[3], meanwhile its urbanization rate will stay constant from **67% to 74%**[4].*

Regulation:
No significant regulatory changes are anticipated to 2050.

Sources: US Dpt. of Energy[1], Census[2], OSBM[3], New Geography[4]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total

Source: US Dpt. of Energy

Aggregate fuel sales per engine type (in liters)

2022:
- 1.8%
- 2.3%
- 95.9%

Legend: Hybrid Vehicles, Gasoline, Diesel

2050:
- 20.2%
- 1.8%
- 78.0%
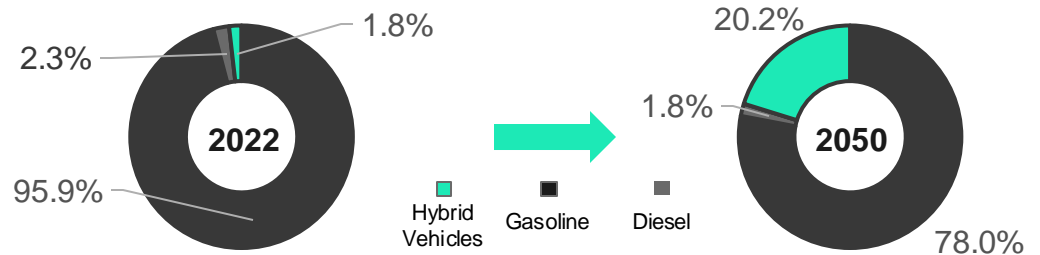
Estimated volume of fuel sales: *9.7 billion*

Forecasted volume of fuel sales: *8.65 billion*

Texas

Consumer behavior:

Low EV adoption rate[1] (0.7% fleet share in 2022 vs 0.9% fleet share at national level)

Externalities:

*Texas should experience **very strong demographic growth** (+36% on the 2022-2050 period). Population will increase from **30 million in 2022**[2] to **40.6 million in 2050**[3], meanwhile its urbanization rate will go from **84%** to **90%**[4].*
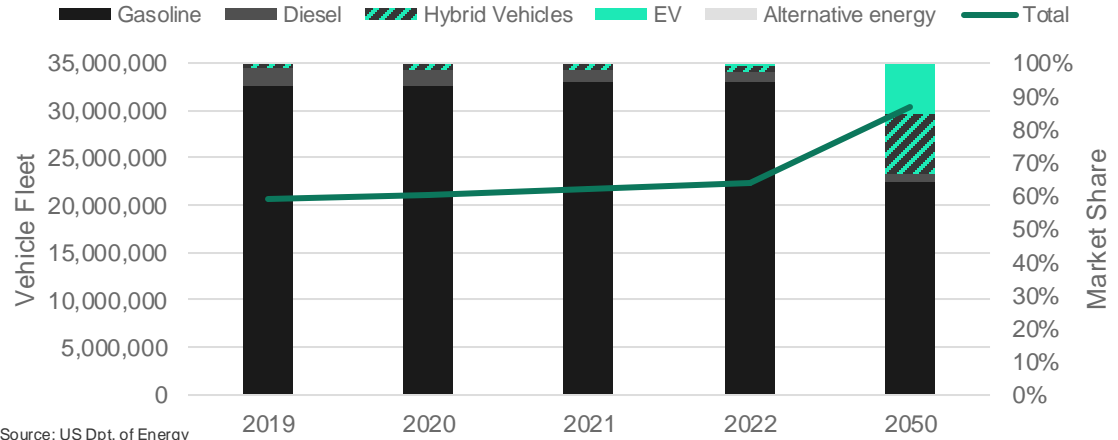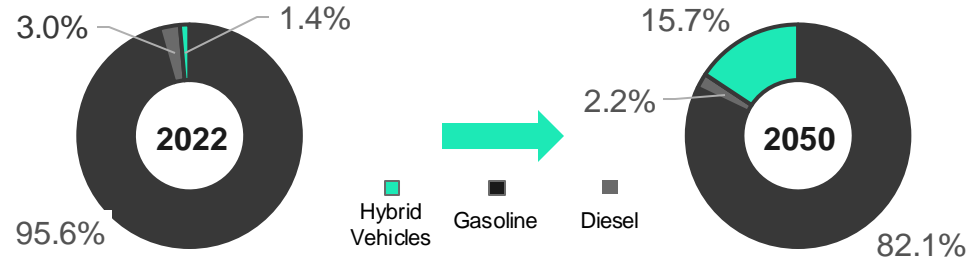
Regulation:

One of the lowest state tax rates in the USA on both gasoline and diesel and a legislation preventing any restriction in the sale based on the fuel vehicles type[5].

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Sources: US Dpt. of Energy[1], Census[2], Texas Demo.[3] New Geography[4], Legiscan[5]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total

Source: US Dpt. of Energy

Aggregate fuel sales per engine type (in liters)

2022: 3.0%, 1.4%, 95.6%

2050: 15.7%, 2.2%, 82.1%

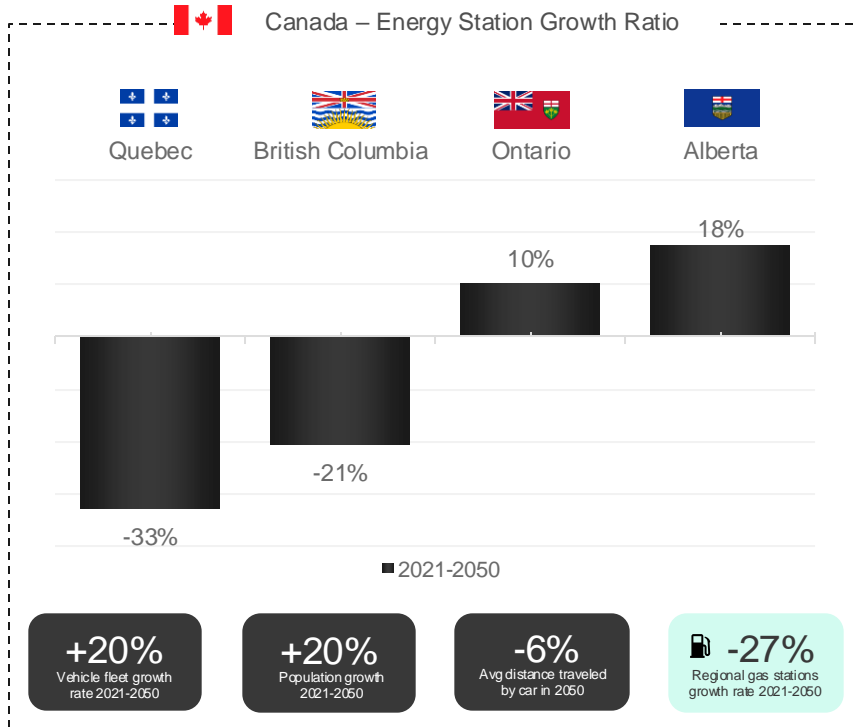Legend: Hybrid Vehicles, Gasoline, Diesel

Estimated volume of fuel sales:
26.6 billion

Forecasted volume of fuel sales:
25.2 billion

Canada – Energy Station Evolution

Our research indicates that in both the USA and Canada traditional gas station[*] numbers are forecasted to contract significantly unless they undertake transformative measures in their operation models.

Canada – Energy Station Growth Ratio

Quebec	British Columbia	Ontario	Alberta
-33%	-21%	10%	18%

■ 2021-2050

+20% Vehicle fleet growth rate 2021-2050	+20% Population growth 2021-2050	-6% Avg distance traveled by car in 2050	⛽ -27% Regional gas stations growth rate 2021-2050

*Traditional gas stations provide diesel and gasoline fuel types as their main revenue streams.

Source: Statcan

The 2 Most Resilient Provinces

Alberta (1,390 → 1,633)
Consumer behavior: Low EV adoption rate (0.2% fleet share in 2021 vs 0.8% fleet share at Canada level => 5.5% in 2050 vs 16.7% at Canada level).
Externalities: Booming demographics (+66%) predicted population increase by 2050 compared to 2021).
Regulation: The Government of Canada has announced a ban on new ICE vehicle sales by 2035.
The Government of the Province of Alberta is going to implement an electric vehicle registration tax.

Ontario (4,632 → 5,110)
Consumer behavior: Low EV adoption rate (0.5% fleet share in 2021 vs 0.8% at Canada level => 8.3% in 2050 vs 16.7% at Canada level).
Externalities: Booming demographics (+55% predicted population increase by 2050).
Regulation: The Government of Canada has announced a ban on new ICE vehicle sale by 2035.

The 2 Least Resilient Provinces

Quebec (2,691 → 1,802)
Consumer behavior: High EV adoption rate (1.2% fleet share in 2021 vs 0.8% at Canada level => 25.3% in 2050 vs 16.7% at Canada level).
Externalities: Small population increase (+13% predicted population increase by 2050).
Regulation: The Province of Quebec directly subsidizes the purchase of EVs and has an ambitious EV charging strategy throughout the province.

British Columbia (1,627 → 1,288)
Consumer behavior: High EV adoption rate (1.8% fleet share in 2021 vs 0.8% at Canada level => 15.3% in 2050 vs 16.7% at Canada level).
Externalities: Booming demographics (+60% predicted population decline by 2050).
Regulation: The Government of Canada has announced a ban on new ICE vehicle sale by 2035.
The Province of British Columbia has a target of 10k public EV charging stations by 2030, directly supporting greater EV adoption.

Contributing factors: Consumer behavior | Regulation | Technology | Externalities

Quebec

Consumer behavior:

High EV adoption rate (1.2% fleet share in 2021 vs 0.8% at Canada level and 25.3% in 2050 vs 16.7% at national level)[1].

Externalities:

*Quebec should experience **growing demographics** (+13% on the 2021-2050 period). Population will increase from **8.5 million in 2021** to **9.7 million in 2050**[3], meanwhile its urbanization rate from **81%** to **87%**[4].*

Regulation:

Subsidizes available for EV purchase[5], in addition to strong financial policies to expand EV charging infrastructure[6].

SIAPARTNERS

Passenger car fleet by engine type

Legend: Gasoline — Diesel — Hybrid Vehicles — EVs — Other fuel types — Total

Source: Statcan

Aggregate fuel sales per engine type (in liters)

2022
- 1.0%
- 2.5%
- 96.5%

Legend: Hybrid Vehicles — Gasoline — Diesel
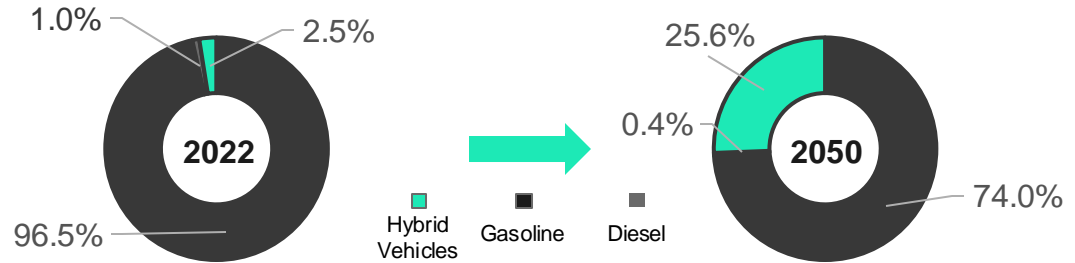
2050
- 25.6%
- 0.4%
- 74.0%

Estimated volume of fuel sales:
3.64 billion

Forecasted volume of fuel sales:
2.50 billion

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British Columbia

Consumer behavior:

High EV adoption rate (1.3% fleet share in 2021 vs 0.8% at Canada level => 15.3% in 2050 vs 16.7% at Canada level)[1].

Externalities:

*British Columbia should experience **booming demographics** (+60% on the 2021-2050 period). Population will increase from **5 million in 2021** to **8 million in 2050**[2], meanwhile its urbanization rate from **89%** to **93%**[3].*
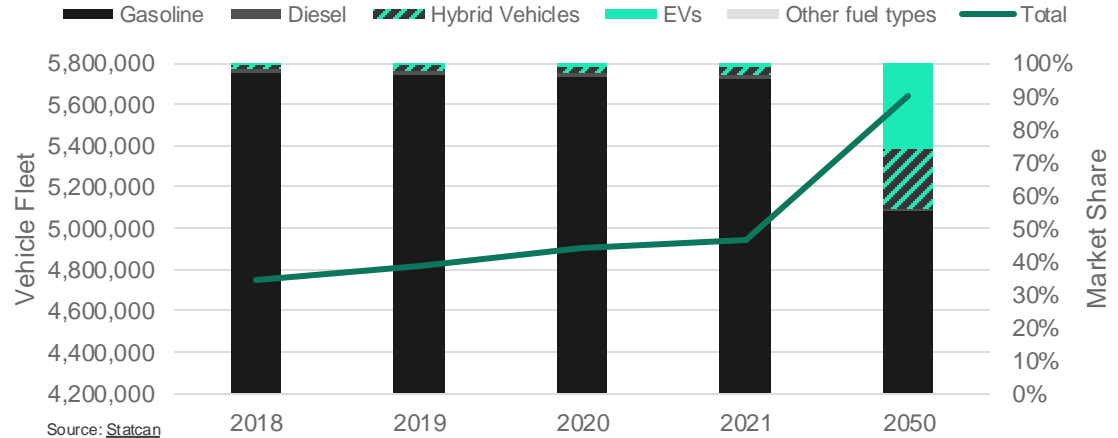
Regulation:

The Province of British Columbia has a target of 10k public EV charging stations by 2030, directly supporting greater EV adoption[4].

Sources: Statcan[1], Statistics Canada[2], Statistics Canada & Estimation (2050)[3], BC Government[4]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EVs, Other fuel types, Total

Source: Statcan

Aggregate fuel sales per engine type (in liters)

2022: 2.8%, 2.7%, 94.6%

Legend: Hybrid Vehicles, Gasoline, Diesel

2050: 34.4%, 63.8%, 1.80%

Estimated volume of fuel sales:
2.43 billion

Forecasted volume of fuel sales:
1.92 billion

Ontario

Consumer behavior:
Low EV adoption rate (0.5% fleet share in 2021 vs 0.8% at Canada level and 8.3% in 2050 vs 16.7% at Canada level)[1].

Externalities:
*Ontario should experience **booming demographics** (+55% on the 2021-2050 period). Population will increase from **14.2 million in 2021** to 22 **million in 2050**[2], meanwhile its urbanization rate from **90%** to **93%**[3].*
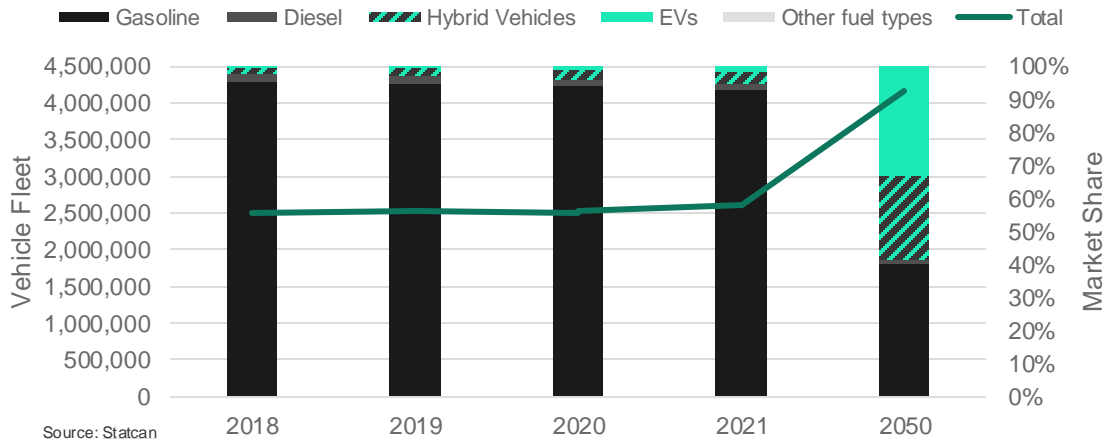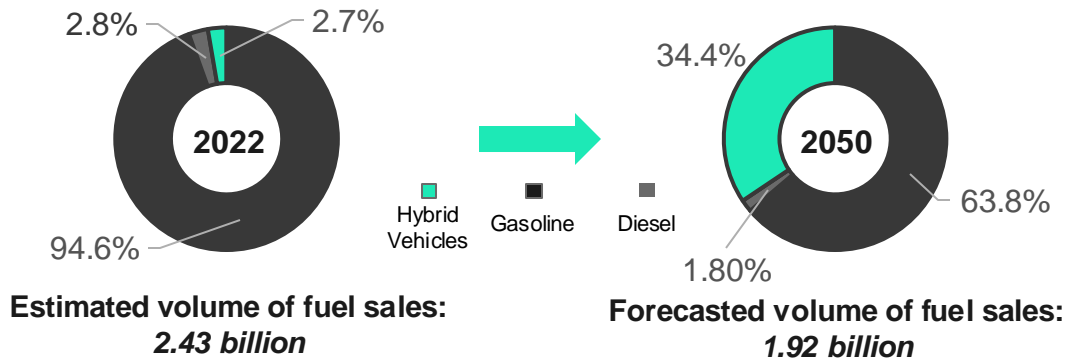
Regulation:
No major regulation influence in the Ontarian province.

Sources: Statcan[1], Statistics Canada[2], Statistics Canada & Estimation (2050)[3]

SIA PARTNERS

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, Evs, Other fuel types, Total

Source: Statcan

Aggregate fuel sales per engine type (in liters)

2022
- 2.0%
- 1.3%
- 96.7%

Legend: Hybrid Vehicles, Gasoline, Diesel

Estimated volume of fuel sales: 8.52 billion

2050
- 16.8%
- 1.2%
- 81.9%

Forecasted volume of fuel sales: 9.20 billion

Alberta

Consumer behavior:
Low EV adoption rate (0.2% fleet share in 2021 vs 0.8% at Canada level and 5.5% in 2050 vs 16.7% at national level)[1].

Externalities:
*Alberta should experience **booming demographics** (+64% on the 2021-2050 period). Population will increase from **4.3 million in 2021** to **7 million in 2050**[3], meanwhile its urbanization rate from **81%** to **87%**[4].*
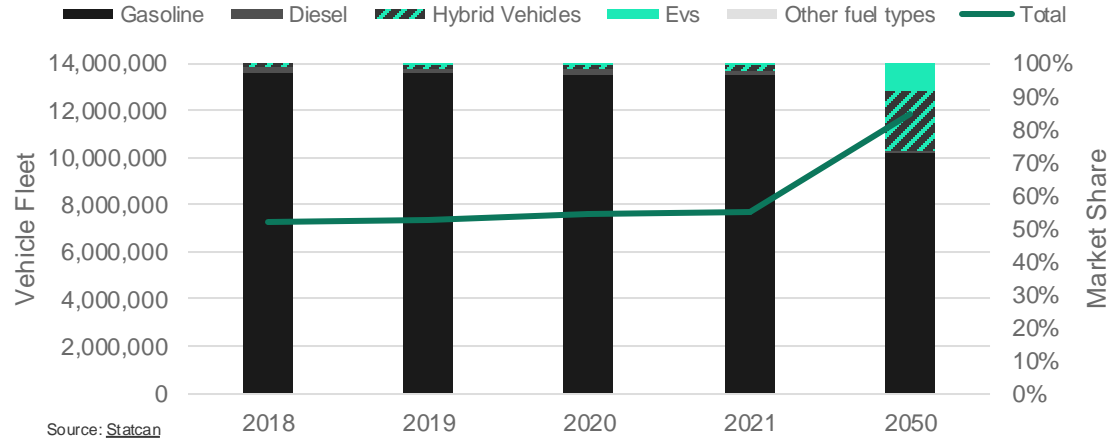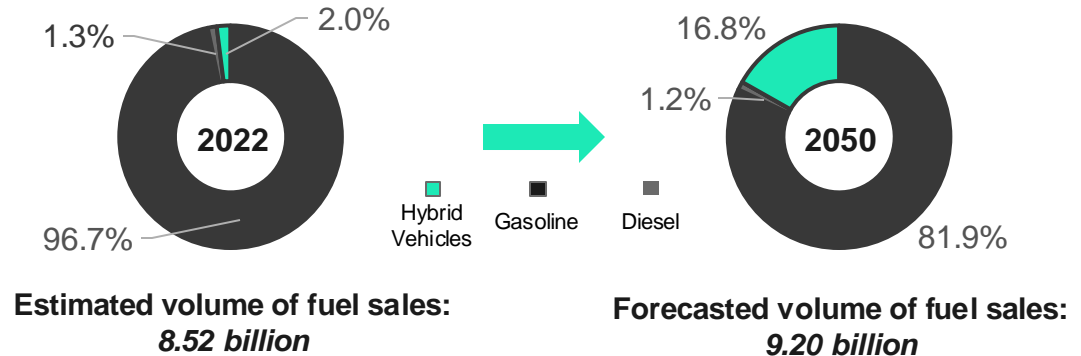
Regulation:
The Government of the Province of Alberta is going to implement an electric vehicle registration tax[5].

Sources: Statcan[1], Alberta OSI[2], Statistics Canada[3], Statistics Canada & Estimation (2050)[4], CBC[5]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EVs, Other fuel types, Total

Source: Statcan

Aggregate fuel sales per engine type (in liters)

2022:
- 1.7%
- 1.0%
- 97.3%

2050:
- 17.6%
- 1.2%
- 81.2%

Legend: Hybrid Vehicles, Gasoline, Diesel
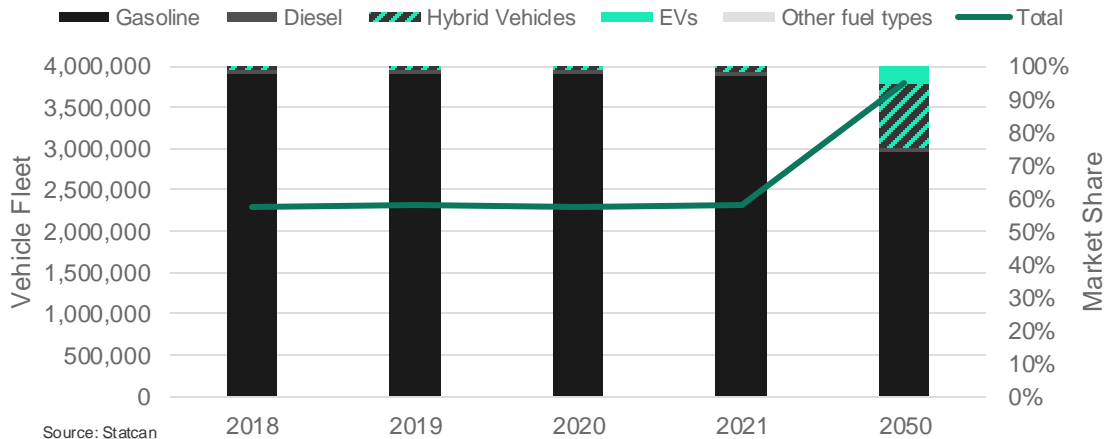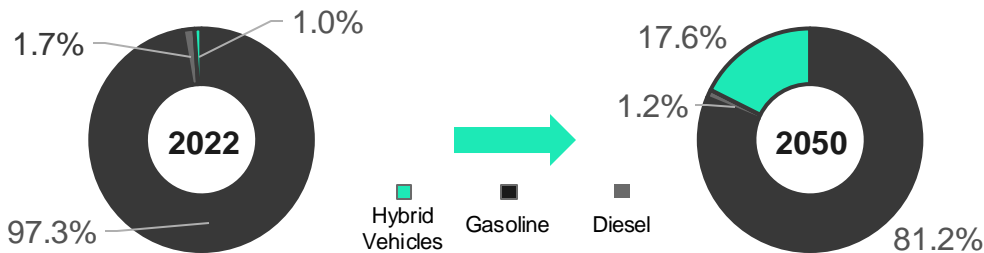
Estimated volume of fuel sales: *3.08 billion*

Forecasted volume of fuel sales: *3.58 billion*

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During the next decades, North American traditional gas station market will be challenged and upended by vehicle fleets transformation.

By 2050, low carbon solutions will prevail, tightening fuel sales volume.

As a result, the volume of traditional gas stations is anticipated to fall by 33% in the United States and 27% in Canada.

Only those which reinvent themselves and become customer-centric will survive.

Europe

The gas stations market in 2050

European gas stations will fall by 45% between 2022 and 2050
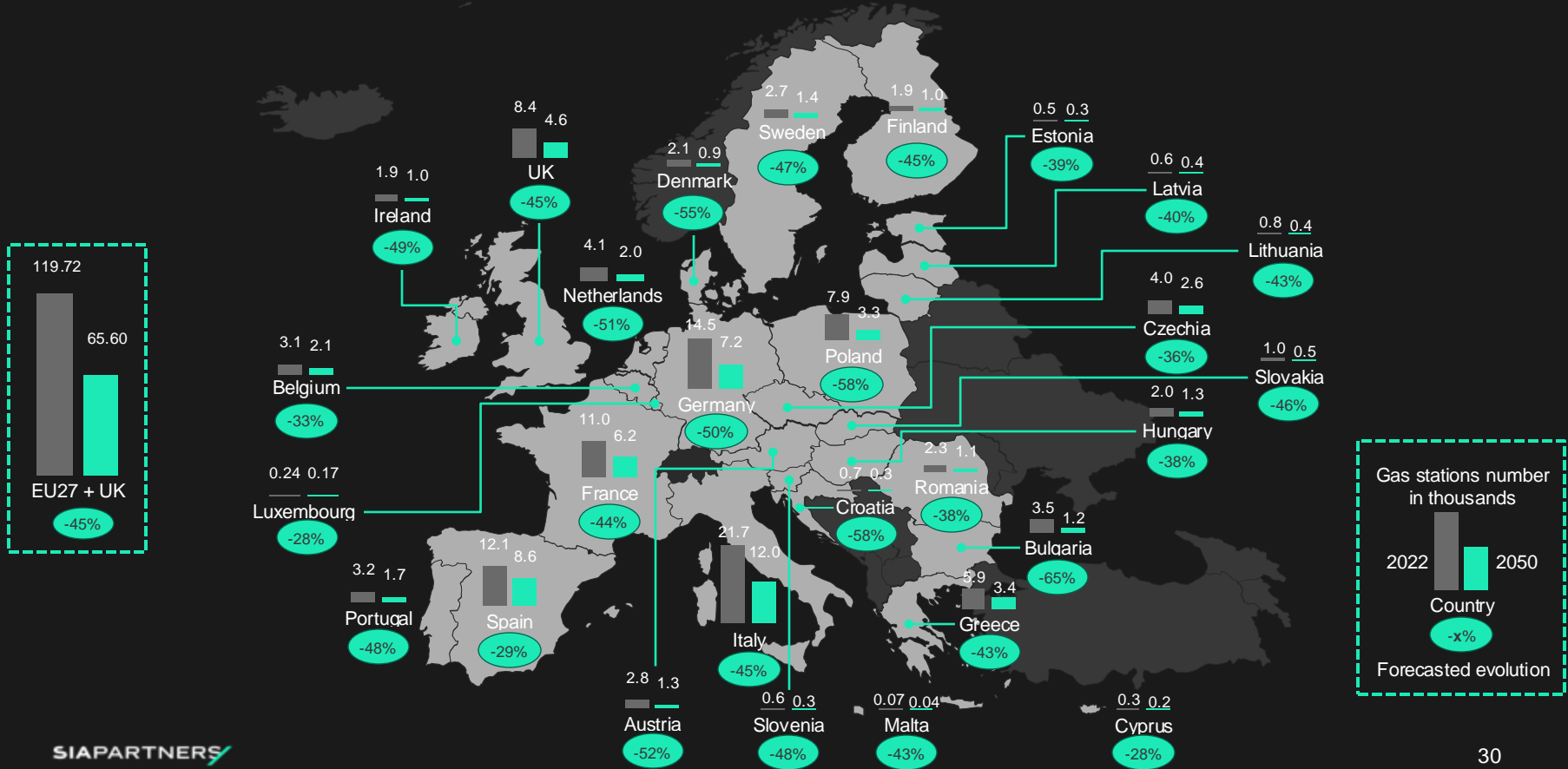

EU27 + UK
119.72 / 65.60
-45%

Sweden 2.7 / 1.4 -47%
Finland 1.9 / 1.0 -45%
Estonia 0.5 / 0.3 -39%
Latvia 0.6 / 0.4 -40%
Lithuania 0.8 / 0.4 -43%
UK 8.4 / 4.6 -45%
Denmark 2.1 / 0.9 -55%
Ireland 1.9 / 1.0 -49%
Netherlands 4.1 / 2.0 -51%
Poland 7.9 / 3.3 -58%
Czechia 4.0 / 2.6 -36%
Slovakia 1.0 / 0.5 -46%
Belgium 3.1 / 2.1 -33%
Germany 14.5 / 7.2 -50%
Hungary 2.0 / 1.3 -38%
Luxembourg 0.24 / 0.17 -28%
France 11.0 / 6.2 -44%
Croatia 0.7 / 0.3
Romania 2.3 / 1.1 -38%
Bulgaria 3.5 / 1.2 -65%
Portugal 3.2 / 1.7 -48%
Spain 12.1 / 8.6 -29%
Italy 21.7 / 12.0 -45%
Greece 5.9 / 3.4 -43%
Austria 2.8 / 1.3 -52%
Slovenia 0.6 / 0.3 -48%
Malta 0.07 / 0.04 -43%
Cyprus 0.3 / 0.2 -28%
Croatia -58%

Gas stations number in thousands

2022 / 2050
Country
-x%
Forecasted evolution

SIA PARTNERS

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EU27+UK– Energy Station Evolution

Our research indicates that the same fate await traditional gas stations in Europe: their activities are expected to decline in all regions, doing so more drastically in Eastern Europe and more moderately in Southern Europe
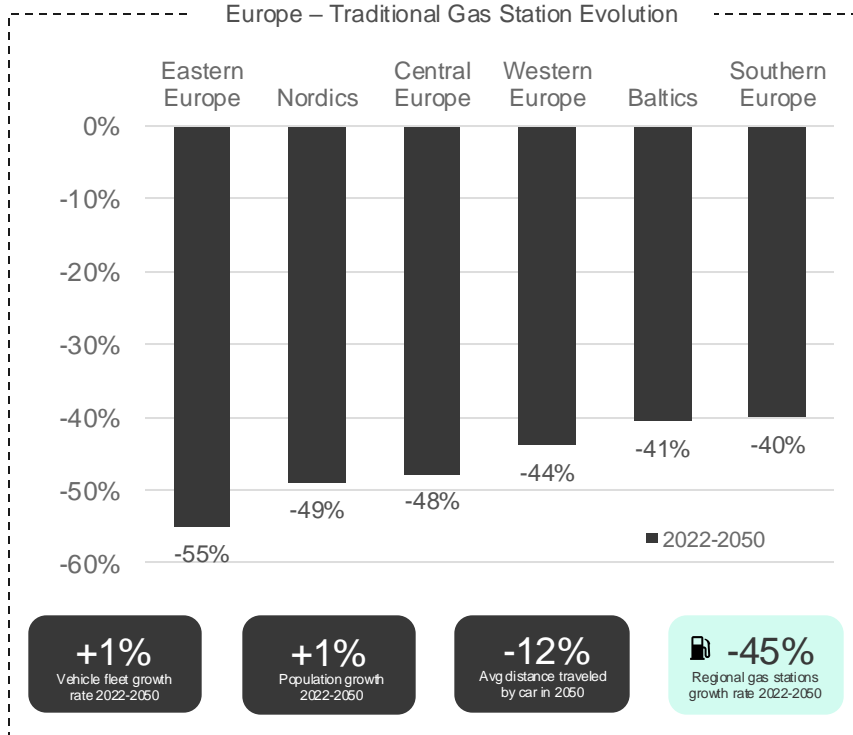
Europe – Traditional Gas Station Evolution

Bar chart "2022-2050":
- Eastern Europe: -55%
- Nordics: -49%
- Central Europe: -48%
- Western Europe: -44%
- Baltics: -41%
- Southern Europe: -40%

+1%	+1%	-12%	-45%
Vehicle fleet growth rate 2022-2050	Population growth 2022-2050	Avg distance traveled by car in 2050	Regional gas stations growth rate 2022-2050

*Traditional gas stations provide diesel and gasoline fuel types as their main revenue streams.
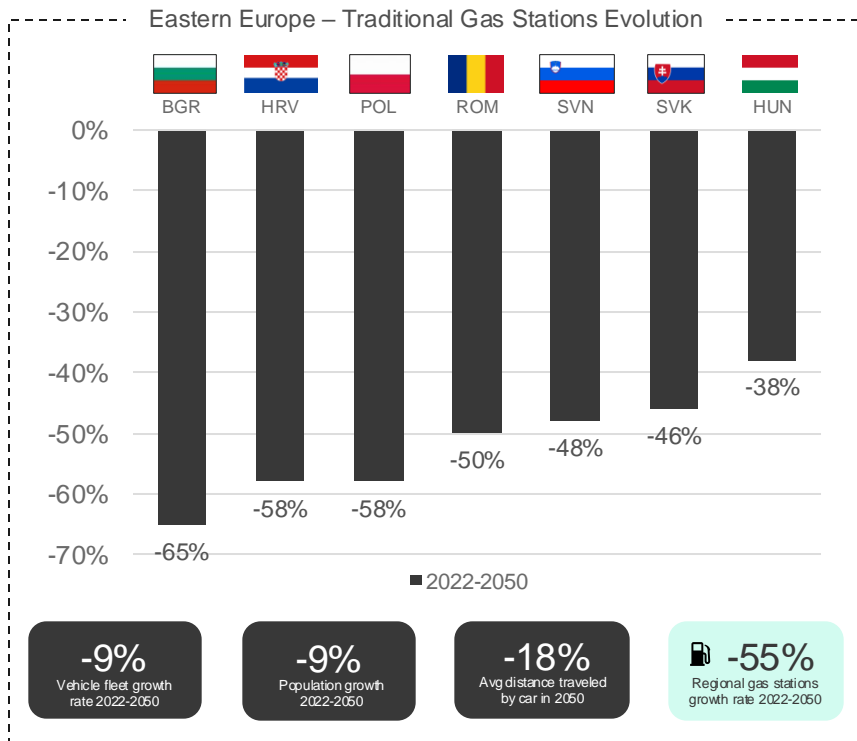
Influencing factors

- In the context of the European Union Green Deal "Fit for 55", every countries from the EU have to make their own strategy to deal with the 2035 rule forbidden the sell of brand-new petrol cars (UK voted the same law)

- Overall, all regions are gradually moving towards promoting EV adoption as part of their efforts to reduce emissions, as a result the number of gas stations will decrease in every parts of Europe, from -40% to -56%

- The global evolution of populations fluctuates among the zones, increasing in the Western, Central and Northern Europe, decreasing in the other parts

Population (2022)		515,296,063
GDP per capita (in USD, 2022)		$ 38,580
Ratio Vehicles / Pop (2022)		0.55
Number of gas stations (2022 / 2050)		119,715 / 65,598

Eastern Europe – Energy Station Evolution

Traditional service stations activities in Eastern Europe will all experience significant decline but at a different pace: the ones in Bulgaria, Croatia and Poland will do so drastically, while the ones in Hungary will do so moderately.

Eastern Europe – Traditional Gas Stations Evolution

Country	Value
BGR	-65%
HRV	-58%
POL	-58%
ROM	-50%
SVN	-48%
SVK	-46%
HUN	-38%

■ 2022-2050

-9% Vehicle fleet growth rate 2022-2050

-9% Population growth 2022-2050

-18% Avg distance traveled by car in 2050

-55% Regional gas stations growth rate 2022-2050

*Traditional gas stations provide diesel and gasoline fuel types as their main revenue streams.

Influencing factors

- Overall, all regions are gradually moving towards promoting EV adoption as part of their efforts to reduce emissions, mostly translated by a tax reduction or exemption.

- Other countries impulse the favorable policy further by issuing grants or loans at subsidized rate when buying new EVs.

- Poland, Romania and Hungary, the three most populated countries, also stand out as the most ambitious ones with additional incentives.

	BGR	HRV	POL	ROM
Population (2022)	6,643,324	3,856,600	37,203,992	10,048,502
GDP per capita (in USD, 2022)	$ 13,974	$ 18,570	$ 18,688	$ 15,787
Ratio Vehicles / Pop (2022)	0.43	0.47	0.49	0.41
Number of gas stations (2022 / 2050)	3,531 / 1,245	658 / 276	7,898 / 3,328	2,292 / 1,141

	SVN	SVK	HUN
Population (2022)	2,112,076	5,431,752	9,644,377
GDP per capita (in USD, 2022)	$ 28,439	$ 21,257	$ 18,390
Ratio Vehicles / Pop (2022)	0.55	0.42	0.43
Number of gas stations (2022 / 2050)	553 / 290	970 / 526	2,012 / 1,256

Source: IEA, European Commission, Eurostat, World Bank & FuelsEurope

Bulgaria

Major regulatory influence and policy targets:
Annual circulation tax exemption as well as free parking in larger cities for non-thermal vehicles[1].

Technologies:
*2024: **2,200** public EV charging points[2]*
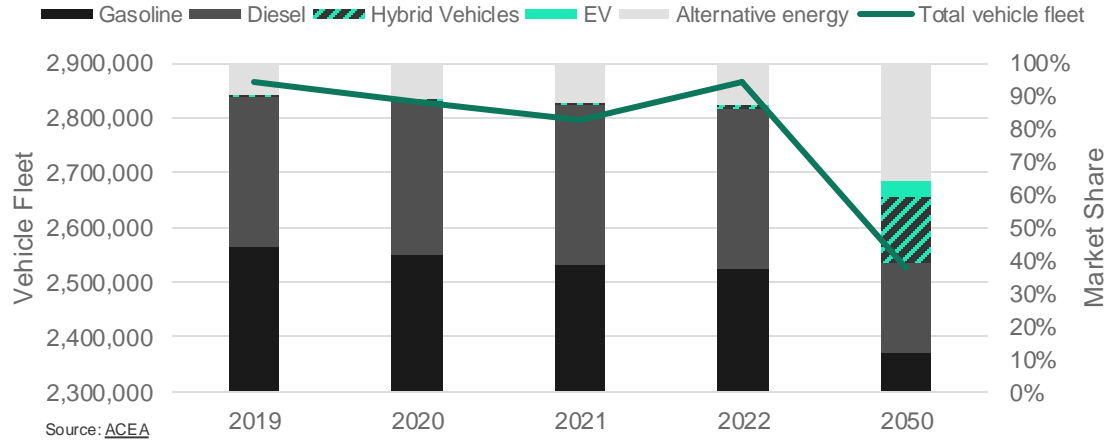*2026 target: **10,000** charging **stations**[3]*

Population evolution:
*Bulgarian population will decrease from **6.64 million in 2022** to **5.86 million in 2050**[4], meanwhile its urbanization rate will go from **76.4%** to **84.9%**[5].*
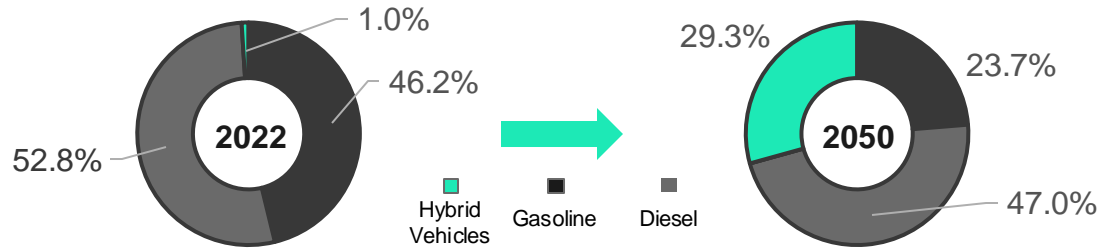
Average distance per car in a year:
*In **2022**, a Bulgarian car travelled **10,266 km**[6], this distance should decrease to **9,124 km in 2050**.*

Sources: European Commission (incentives[1] and summary[2]), MOEW Bulgarian Government)[3], Eurostat (present and projected demographics)[4], UN[5], Odyssee-mure[6]

SIA PARTNERS

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 1.0%, 46.2%, 52.8%

2050: 29.3%, 23.7%, 47.0%

Legend: Hybrid Vehicles, Gasoline, Diesel

Estimated volume of fuel sales:
1.87 billion

Forecasted volume of fuel sales:
801 million

Source: FuelsEurope

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Croatia

Major regulatory influence and policy targets:
Co-financing from the government for citizens and legal entities buying non-thermal vehicles[1].

Technologies:
*2024: **1,300** public EV charging points[2]*
2030 target: Not announced

Population evolution:
*Croatian population will decrease from **3.86 million in 2022** to **3.31 million in 2050**[3], meanwhile its urbanization rate will go from **58.3%** to **71.2%**[4].*
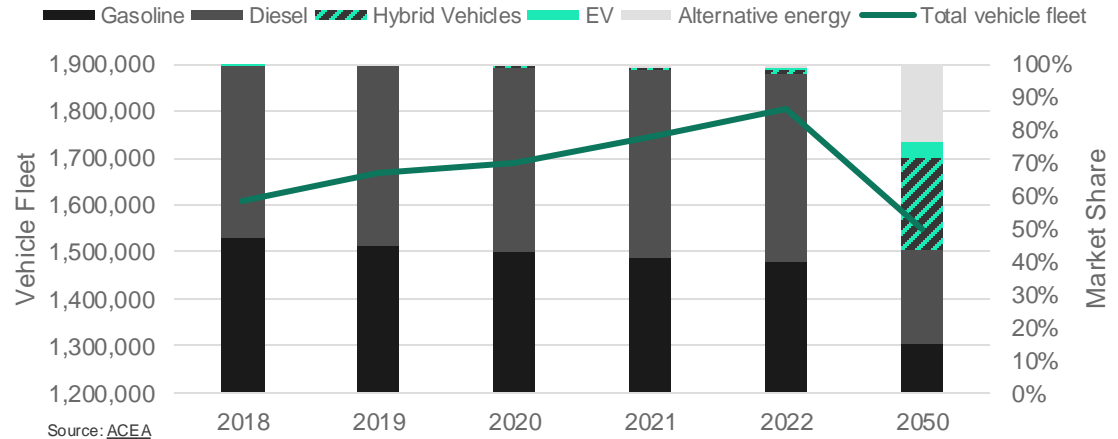
Average distance per car in a year:
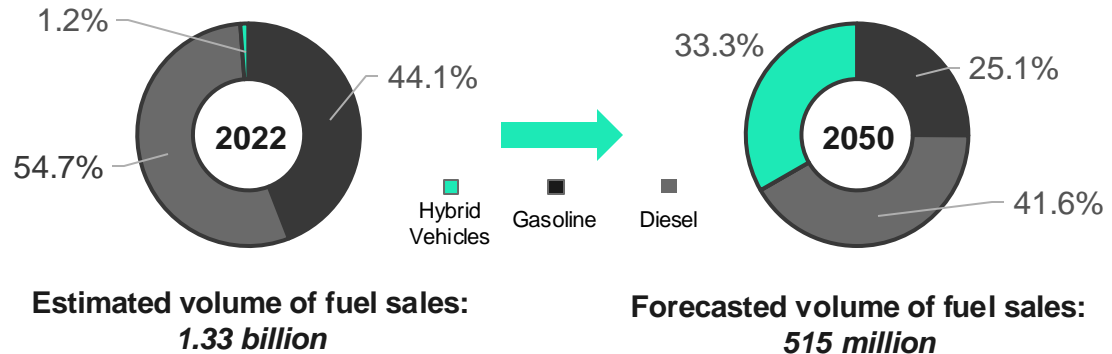*In **2022**, a Croatian car travelled **10,266 km**[5], this distance should decrease to **7,994 km in 2050**.*

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 1.2%, 44.1%, 54.7%

Legend: Hybrid Vehicles, Gasoline, Diesel

2050: 33.3%, 25.1%, 41.6%

Estimated volume of fuel sales: *1.33 billion*

Forecasted volume of fuel sales: *515 million*

Source: FuelsEurope

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Poland

Major regulatory influence and policy targets:
Discounted to free public EV-charging and free-to-use bus lanes for EVs in addition to numerous financial incentives.[1]

Technologies:
*2024: **6,500** public EV charging points[2]*
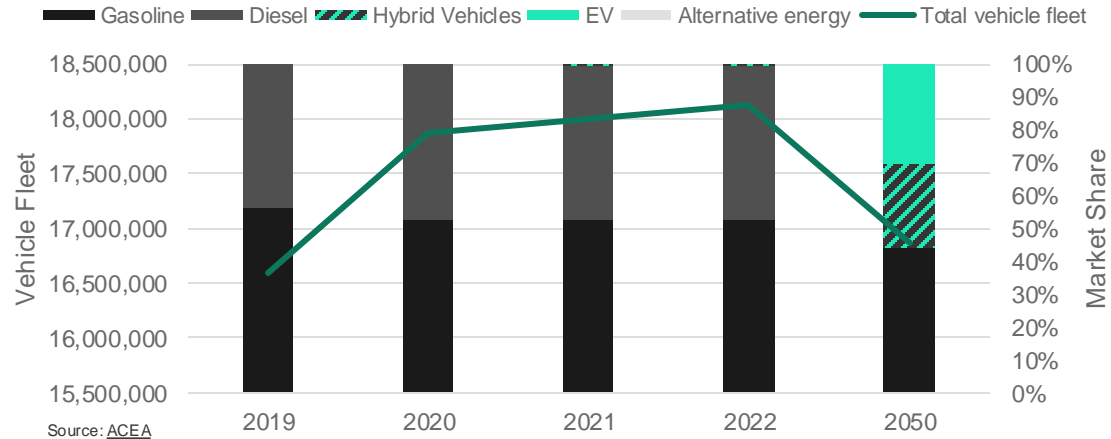*2030 target: **60,000**[3]*

Population evolution:
*Polish population will slightly decrease from **37.2 million in 2022** to **34.6 million in 2050**[4], meanwhile its urbanization rate will go from **60.1%** to **70.4%**[5].*
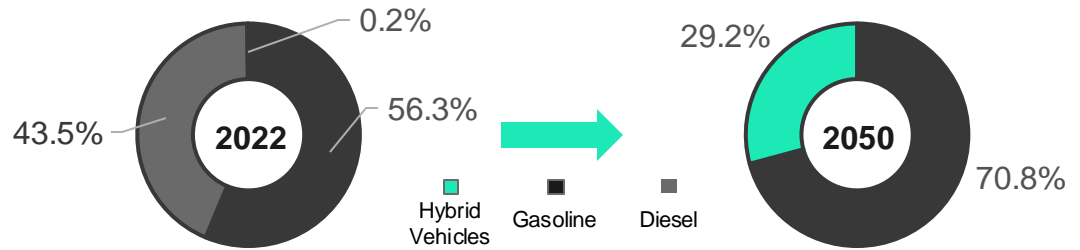
Average distance per car in a year:
*In **2022**, a Polish car travelled **10,266 km**[6], this distance should decrease to **8,507 km in 2050**.*

SIA PARTNERS

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 0.2%, 43.5%, 56.3%

Hybrid Vehicles, Gasoline, Diesel

2050: 29.2%, 70.8%

Estimated volume of fuel sales:
13.8 billion

Forecasted volume of fuel sales:
6.26 billion

Source: FuelsEurope

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Romania

Major regulatory influence and policy targets:
Free or discounted public charging, preferential parking, as well as lower insurance premiums for EVs[1].

Technologies:
*2024: **3,000** public charging points[2]*
*2030 target: **600,000**[3]*
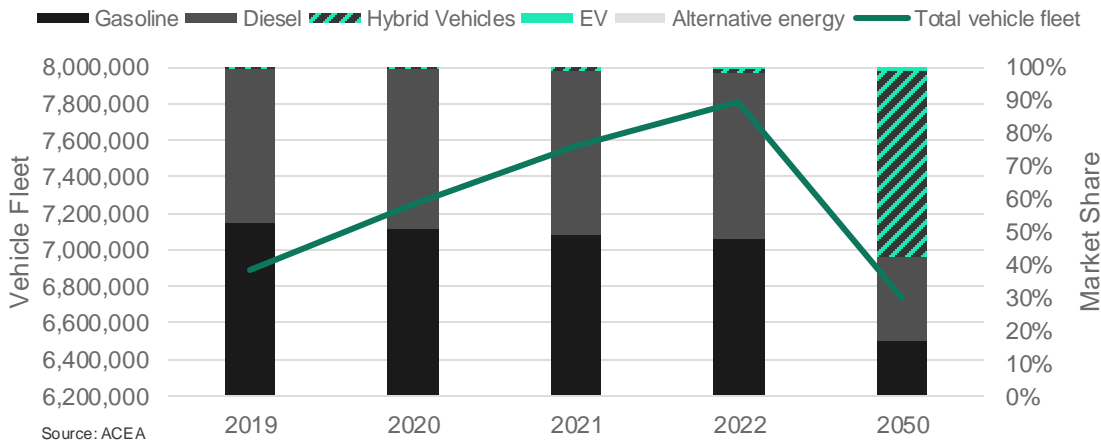
Population evolution:
*Romanian population will decrease from **19 million in 2022** to **16.5 million in 2050**[4], meanwhile its urbanization rate will go from **54.5%** to **66.7%**[5].*

Average distance per car in a year:
*In **2022**, a Romanian car travelled **10,266 km**[6], this distance should decrease to **7,968 km in 2050**.*

SIAPARTNERS

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 1.3%, 51.2%, 47.5%

2050: 21.4%, 27.5%, 51.2%

Legend: Hybrid Vehicles, Gasoline, Diesel
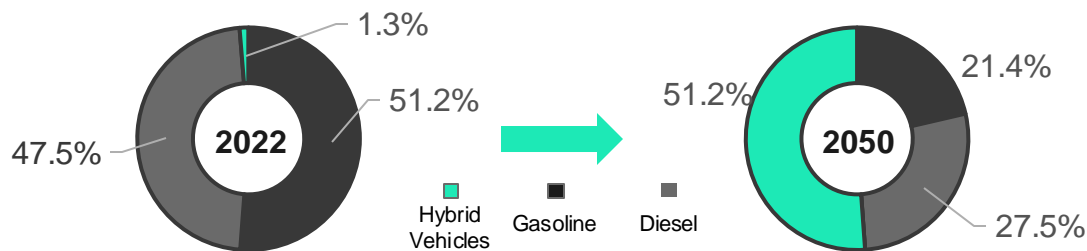
Estimated volume of fuel sales:
5.87 billion

Forecasted volume of fuel sales:
2.97 billion

Source: FuelsEurope

Slovenia

Major regulatory influence and policy targets:
Minimum tax rate of 0.5% for BEVs and up to 7,500€ of purchase subsidies granted for private customers[1].

Technologies:
*2024: **1,600** public EV charging points[2]*
*2030 target: **22,300**[3]*

Population evolution:
*Slovenian population will slightly decrease from **2.11 million in 2022** to **2.10 million in 2050**[4], meanwhile its urbanization rate will go from **53.9%** to **65.7%**[5].*
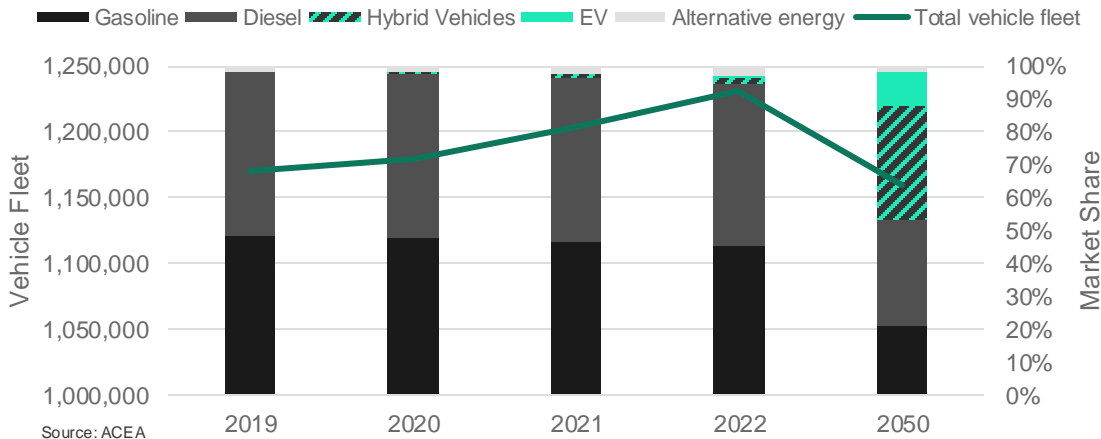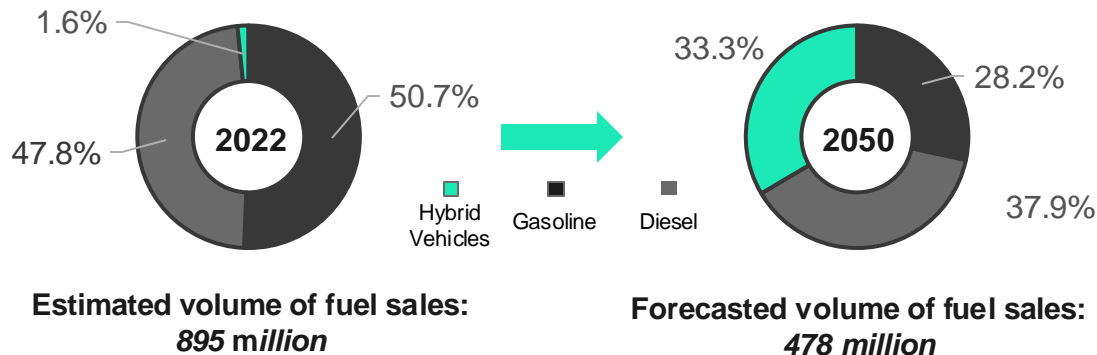
Average distance per car in a year:
*In **2022**, a Slovenian car travelled **10,266 km**[6], this distance should decrease to **8,019 km in 2050**.*

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 1.6%, 50.7%, 47.8%

Legend: Hybrid Vehicles, Gasoline, Diesel

2050: 33.3%, 28.2%, 37.9%

Estimated volume of fuel sales: *895 million*

Forecasted volume of fuel sales: *478 million*

Source: FuelsEurope

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Slovakia

Major regulatory influence and policy targets:
No annual ownership tax for private EV owners, in addition to a reduced company car tax benefit for business EV owners[1].

Technologies:
*2024: **2,500** public EV charging points[2]*
2030 target: Not announced

Population evolution:
*Slovakian population will slightly decrease from **5.43 million in 2022** to **5.18 million in 2050**[3], meanwhile its urbanization rate will go from **53.9%** to **65.7%**[4].*
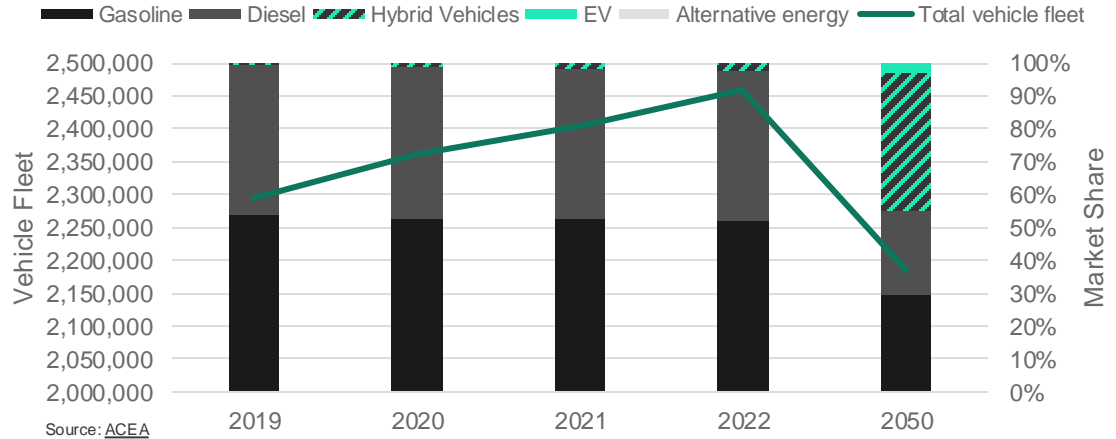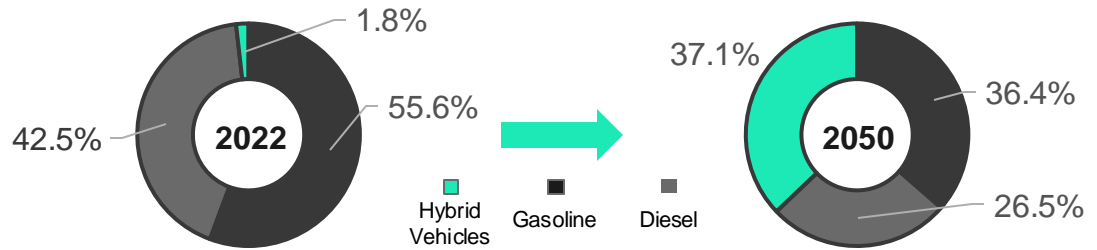
Average distance per car in a year:
*In **2022**, a Slovakian car travelled **10,266 km**[5], this distance should decrease to **8,019 km in 2050**.*

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 1.8%, 55.6%, 42.5%

Hybrid Vehicles, Gasoline, Diesel

2050: 37.1%, 36.4%, 26.5%

Estimated volume of fuel sales: 1.86 billion

Forecasted volume of fuel sales: 997 million

Source: FuelsEurope

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Hungary

Major regulatory influence and policy targets:
Budget of 79 M€ available for supporting EV-purchase for companies, completed by free parking for green-plate vehicles[1].

Technologies:
*2024: **3,500** public charging points[2]*
2030 target: Not announced

Population evolution:
*Hungarian population will decrease from **9.64 million in 2022** to **9.23 million in 2050**[3], meanwhile its urbanization rate will go from **72.6%** to **81.8%**[4].*
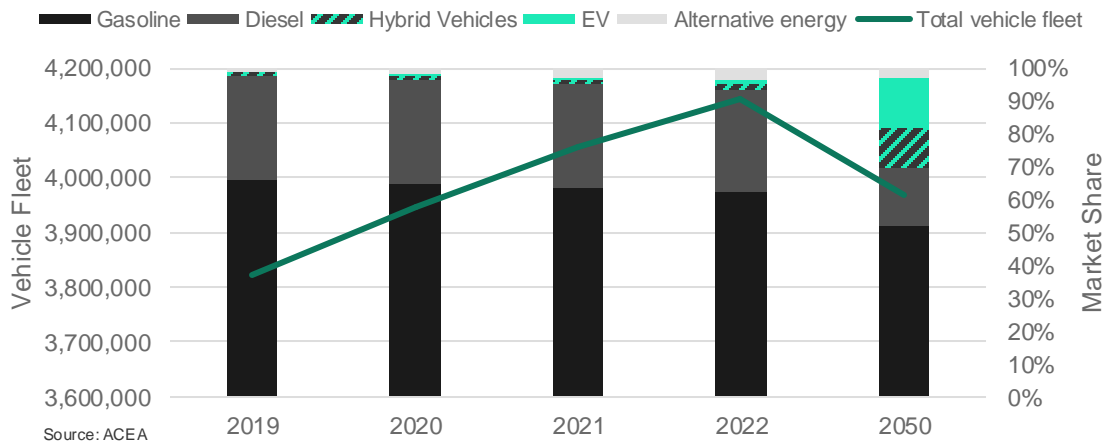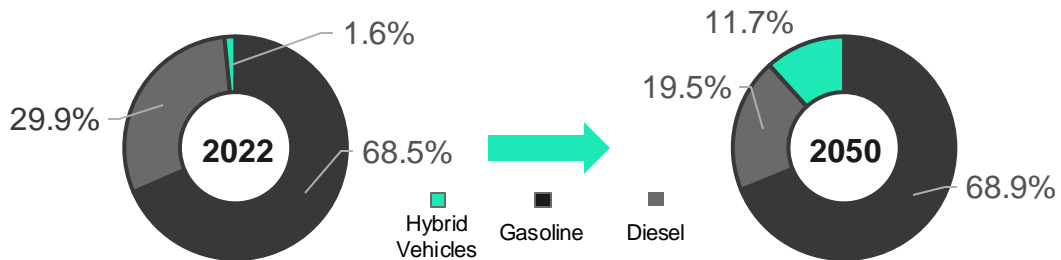
Average distance per car in a year:
*In **2022**, a Hungarian car travelled **10,266 km**[5], this distance should decrease to **8,965 km in 2050**.*

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 1.6%, 29.9%, 68.5%

2050: 11.7%, 19.5%, 68.9%

Legend: Hybrid Vehicles, Gasoline, Diesel

Estimated volume of fuel sales: 3.05 billion

Forecasted volume of fuel sales: 1.89 billion

Source: FuelsEurope

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Nordics – Energy Station Evolution

Our research indicates that similar fates await traditional gas stations in the Nordic region: they are forecasted to contract significantly while it appears that their operations could be the most compromised in Denmark.
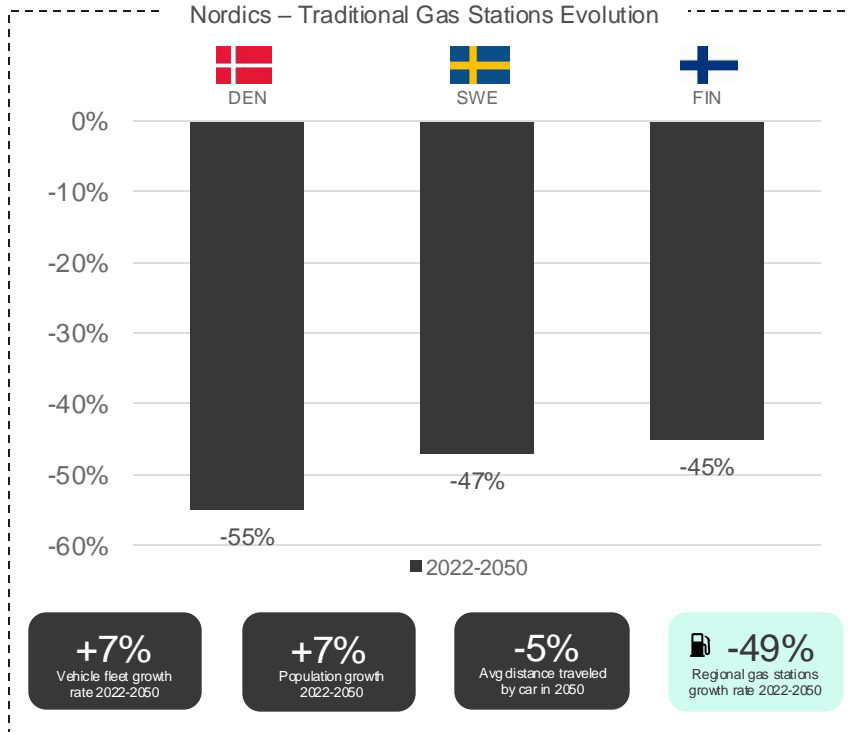
Nordics – Traditional Gas Stations Evolution

DEN | SWE | FIN

	DEN	SWE	FIN
2022-2050	-55%	-47%	-45%

2022-2050

| +7% Vehicle fleet growth rate 2022-2050 | +7% Population growth 2022-2050 | -5% Avg distance traveled by car in 2050 | -49% Regional gas stations growth rate 2022-2050 |

*Traditional gas stations provide diesel and gasoline fuel types as their main revenue streams.

Influencing factors

- Overall shared ambition between Scandinavian countries to promote electric vehicles and favorable financial incentives for EV charging stations network development as a part of energy policies.

- Governments aim to reduce greenhouse gas emissions and dependence on fossil fuels through : Subsidies, tax reduction to exemption for both private and legal entities that own and use non-thermal vehicles, charging infrastructure benefits as well as discounted to free parking for low emission vehicles such as hybrids and BEVs.

- The three countries have implemented low-emission zones and even zero-emission zone in its mots populated urban areas, compromising thermal vehicles circulation.

Country specific legislations and ambitions

- **Sweden:** Grants of 50% for home charging infrastructure and of 20% for public transport vehicles
- **Finland**: 0% import taxes on zero-emission cars and grants for buying new and used EV cars and trucks until 2024, the country aims to have 700,000 EVs by 2030 (of which 50% are BEVs)
- **Denmark:** End of petrol and diesel cars from 2030, and tax reimbursements for home charging stations and at work (2023-2026)

	SWE	DEN	FIN
Population (2022)	5,932,939	10,612,086	5,549,886
GDP per capita (in USD, 2022)	$ 67,790	$ 56,424	$ 50,872
Ratio Vehicles / Pop (2022)	0.47	0.47	0.66
Number of gas stations (2022 / 2050)	2,066 / 1,880	2,700 / 1,985	1,869 / 1,026

Sweden

Major regulatory influence and policy targets:
Stockholm will set up a zero-emission zone by the end of 2024 in part of its center[1] in addition to promotional EV incentives[2].

Technologies:
*2024: **43,200** public EV charging points[3]*
2030 target: Not announced

Population evolution:
*Swedish population will increase from **10.5 million in 2022** to **12.1 million in 2050**[4], meanwhile its urbanization rate will go from **85.5% to 93.2%**[5].*

Average distance per car in a year:
*In **2022**, a Swedish car travelled **10,266 km, this distance should** decrease to **9,721 km in 2050**[6].*

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 9.0%, 55.6%, 33.4%

2050: 51.2%, 17.0%, 12.2%

Legend: Hybrid Vehicles, Gasoline, Diesel
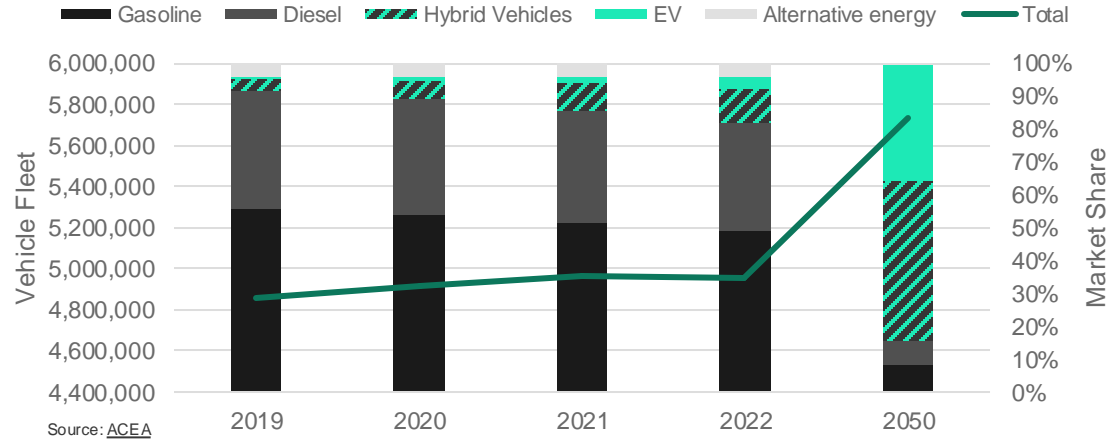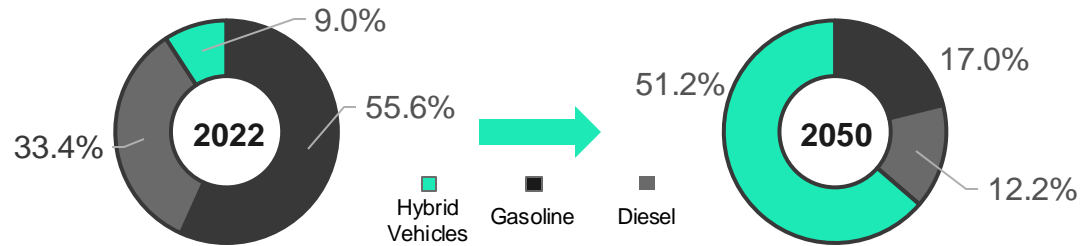
Estimated volume of fuel sales:
4.43 billion

Forecasted volume of fuel sales:
1.93 billion

Source: FuelsEurope

SIAPARTNERS

Denmark

Major regulatory influence and policy targets:
A large low-emission and small zero-emission zones have been introduced in Copenhagen to reduce air pollution[1].

Technologies:
*2024: **25,700** public EV charging points[2]*
*2030 target: **67,000**[3]*

Population evolution:
*Danish population will slightly increase from **5.93 million in 2022** to **6.15 million in 2050**[4], meanwhile its urbanization rate will go from **88.4%** to **92.3%**[5].*

Average distance per car in a year:
*In **2022**, a Danish car travelled **10,266 km**[6], this distance should decrease to **9,813 km in 2050**.*

SIA PARTNERS

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022
- 3.2%
- 26.8%
- 73.2%

Hybrid Vehicles, Gasoline, Diesel

2050
- 51.2%
- 31.4%
- 11.5%
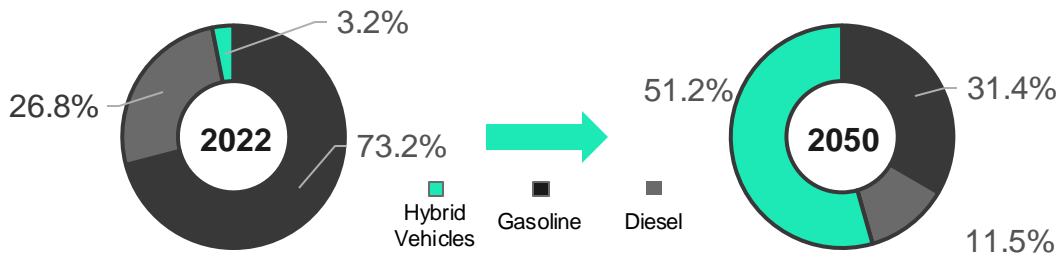
Estimated volume of fuel sales:
2.01 billion

Forecasted volume of fuel sales:
958 million

Source: FuelsEurope

Finland

Major regulatory influence and policy targets:
Low-emission zones[1] as well as discounted to free parking for EVs in certain cities[2].

Technologies:
*2024: **12,700** public EV charging points[3]*
2030 target: Not announced

Population evolution:
*Finnish population will slightly decrease from **5.56 million in 2022** to **5.50 million in 2050**[4], meanwhile its urbanization rate will go from **85.7%** to **90%**[5].*
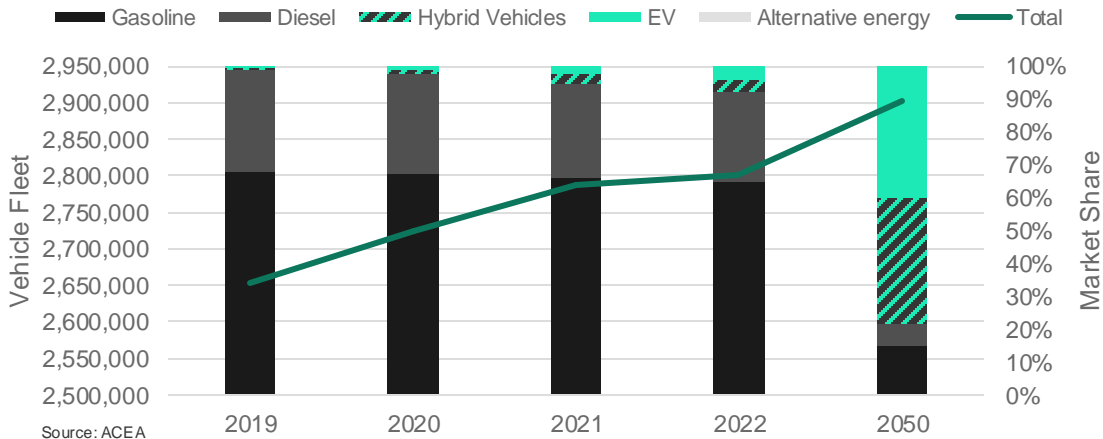
Average distance per car in a year:
*In **2022**, a Finnish car travelled **10,266 km**[6], this distance should decrease to **9,751 km in 2050**.*

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 5.6%, 24.8%, 75.2%

Legend: Hybrid Vehicles, Gasoline, Diesel

2050: 57.2%, 31.4%, 11.1%
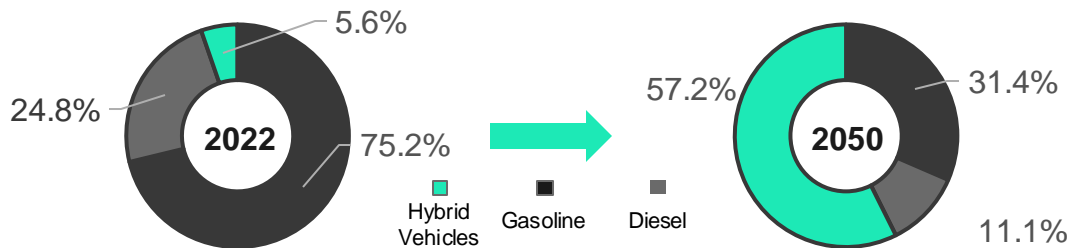
Estimated volume of fuel sales: 2.63 billion

Forecasted volume of fuel sales: 1.56 billion

Source: FuelsEurope

SIAPARTNERS

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Central Europe – Energy Station Evolution

Traditional service stations activities in Central Europe will all experience significant decline, however they will do so at a different pace : the ones in Germany and Austria will do so drastically, while the ones in Czechia should do so moderately.
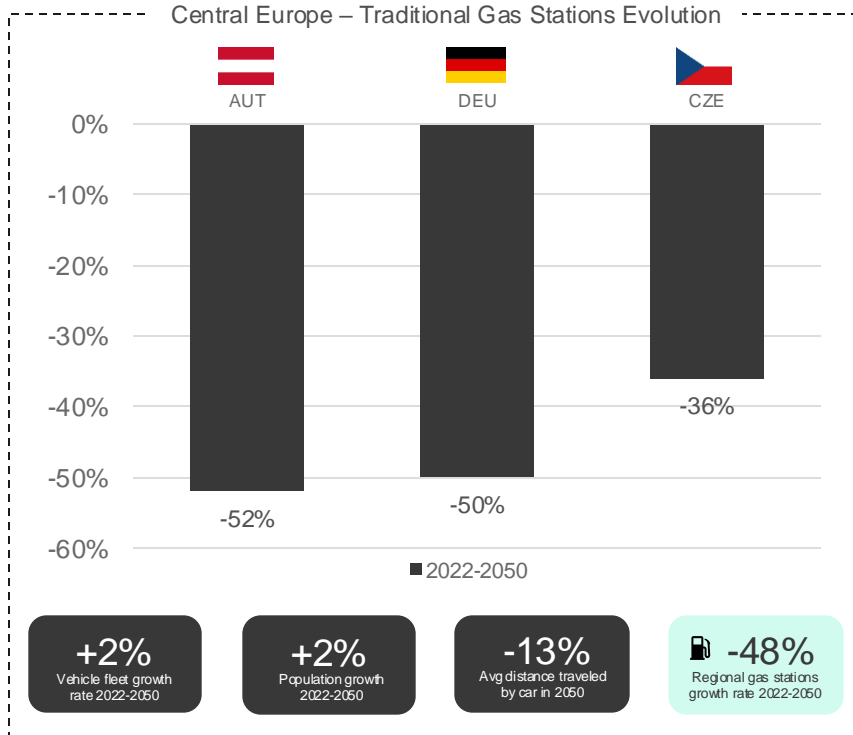
Central Europe – Traditional Gas Stations Evolution

AUT | DEU | CZE

	AUT	DEU	CZE
	-52%	-50%	-36%

■ 2022-2050

+2%
Vehicle fleet growth rate 2022-2050

+2%
Population growth 2022-2050

-13%
Avg distance traveled by car in 2050

-48%
Regional gas stations growth rate 2022-2050

*Traditional gas stations provide diesel and gasoline fuel types as their main revenue streams.

Influencing factors

- Shared ambition between the three countries to promote the adoption of EVs.

- Governments aim to reduce gashouse emissions and dependence on fossil fuels through : Subsidies, tax incentives, and charging infrastructure benefits for EV users

- Germany is although the only country to have cut out the EV purchase subsidies granted so far, from January 1st, 2024.

Country specific legislations and ambitions

- **Germany**: 10-year ownership tax exemption for BEVs and FCEVs granted until December 31st, 2030. €130 billion budget for infrastructure development, tax cuts and further subsidies.
- **Czech Republic:** Registration and annual road tax cut for EVs for private and companies. Financial support granted for the purchase of EVs and free parking for EVs-workers in Prague.
- **Austria**: 100% tax exemption (except VAT) for all EVs. Ownership tax is only paid for the thermal motor for PHEVs. Various purchase subsidies applying from 2024 for companies and privates.

	AUT	DEU	CZE
Population (2022)	9,041,851	83,797,985	10,672,118
GDP per capita (in USD, 2022)	$ 52,084	$ 48,718	$ 27,227
Ratio Vehicles / Pop (2022)	0.57	0.58	0.60
Number of gas stations (2022 / 2050)	2,704 / 1,316	14,771 / 7,193	4,008 / 2,633

SIA PARTNERS

Source: IEA, European Commission, Eurostat, World Bank & FuelsEurope

Austria

Major regulatory influence and policy targets:
In addition to purchase subsidies for EVs, only the thermal counterpart of hybrid vehicles are submitted to tax payment.[1]

Technologies:
2024: 22,049 public EV charging points[2]
2030 target: Not announced

Population evolution:
Austrian population will increase from 9.04 million in 2022 to 9.53 million in 2050[3], meanwhile its urbanization rate will go from 59.3% to 70.9%[4].
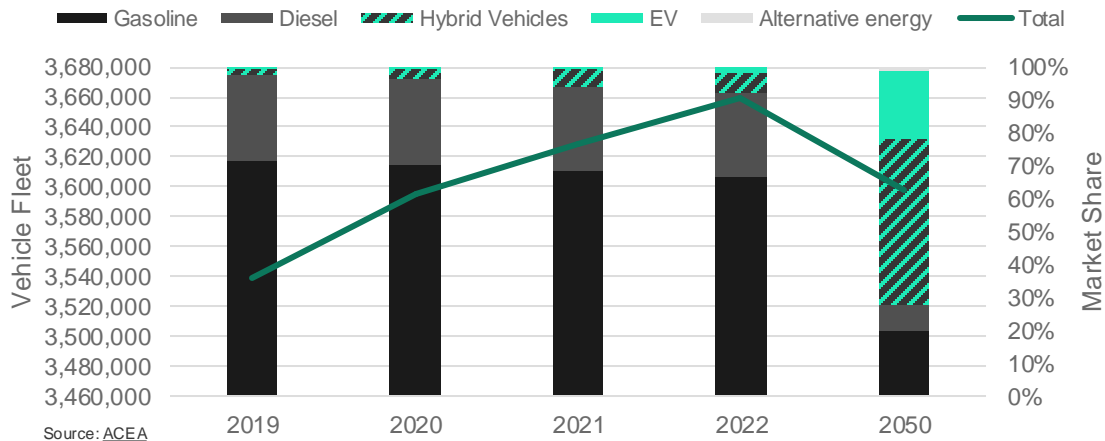
Average distance per car in a year:
In 2022, an Austrian car travelled 11,828 km[5], this distance should decrease to 9,514 km in 2050.

SIAPARTNERS

Sources: European Commission[1], Austriatech[2], Eurostat (present and projected demographics)[3], UN[4], Odyssee-mure[5]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 3.1%, 47.2%, 49.7%

Hybrid Vehicles, Gasoline, Diesel

2050: 49.3%, 25.6%, 24.7%
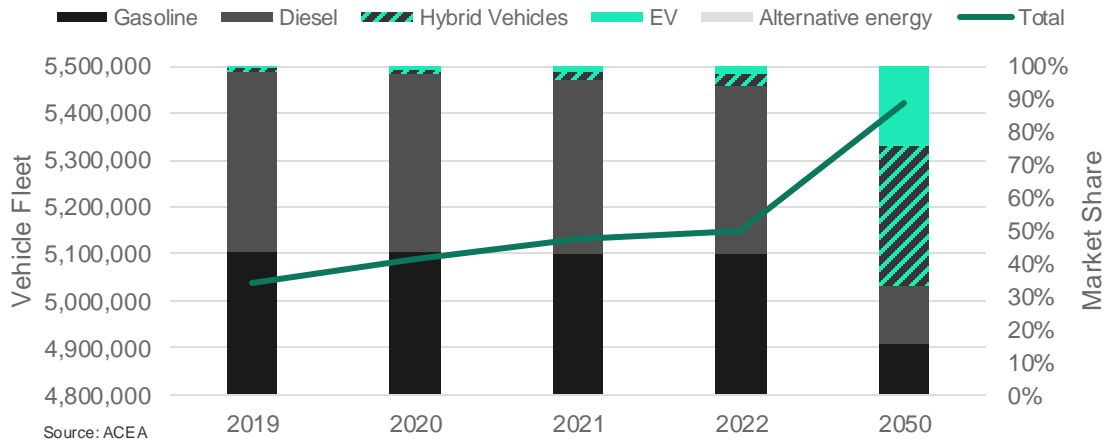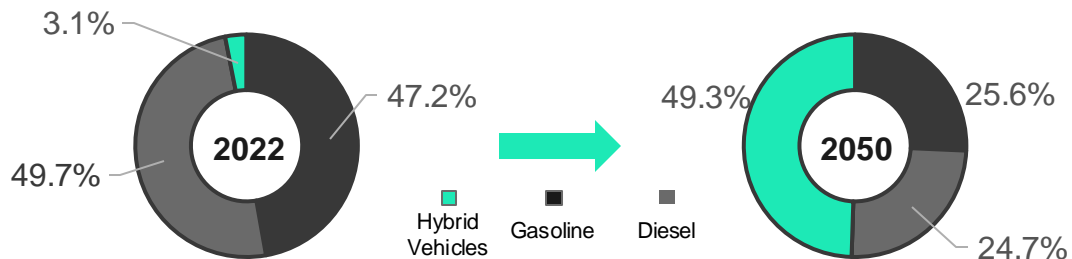
Estimated volume of fuel sales:
4.34 billion

Forecasted volume of fuel sales:
2.21 billion

Source: FuelsEurope

Germany

Major regulatory influence and policy targets:
Several cities in Germany have introduced low-emission zones banning vehicles not meeting Euro 5 or 6 emission standards.[1]

Technologies:
*2024: **130,800** public EV charging points[2]
2030 target: **a million**[3]*

Population evolution:
*German population will slightly increase from **83.8 million in 2022** to **84.8 million in 2050**[4], meanwhile its urbanization rate will go from **77.6%** to **84.3%**[5].*

Average distance per car in a year:
*In 2022, a German car travelled **12,034 km**[6], this distance should decrease to **10,995 km in 2050**.*

Sources: The German Emissions Sticker[1], European Commission[2], Nationale Leistelle[3], Eurostat (present and projected demographics)[4], UN[5], Odyssee-mure[6]

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Passenger car fleet by engine type

Source: ACEA
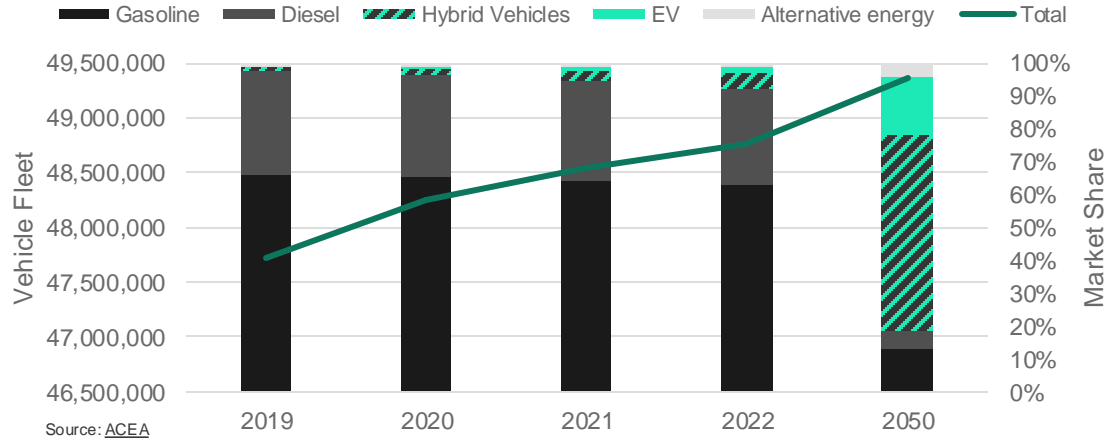
Aggregate fuel sales per engine type (in liters)
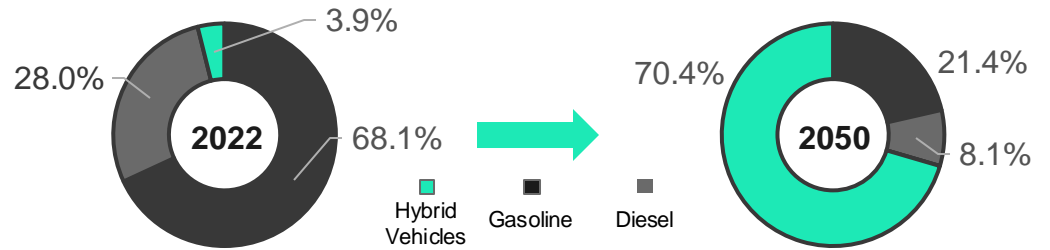
Estimated volume of fuel sales:
42.7 billion

Forecasted volume of fuel sales:
22.9 billion

Source: FuelsEurope

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Czechia

Major regulatory influence and policy targets:
Non-thermal vehicles benefit from multiple financial benefits such as tax reduction, purchase subsidies or free parking.[1]

Technologies:
*2024: **5,000** public EV charging points[2]*
*2030 target: **35,000**[3]*

Population evolution:
*Czech population will decrease from **19 million in 2022** to **16.5 million in 2050**[4], meanwhile its urbanization rate will go from **74.4% to 82.2%**[5].*

Average distance per car in a year:
*In 2022, a Czech car travelled **10,266 km**[6], this distance should decrease to **9,190 km in 2050**.*

Sources: European Commission (incentives[1] and summary[2]), Nationale Leistelle[2], Eurostat (present and projected demographics)[4], UN[5], Odyssee-mure[6]

SIA PARTNERS

Passenger car fleet by engine type

Source: ACEA
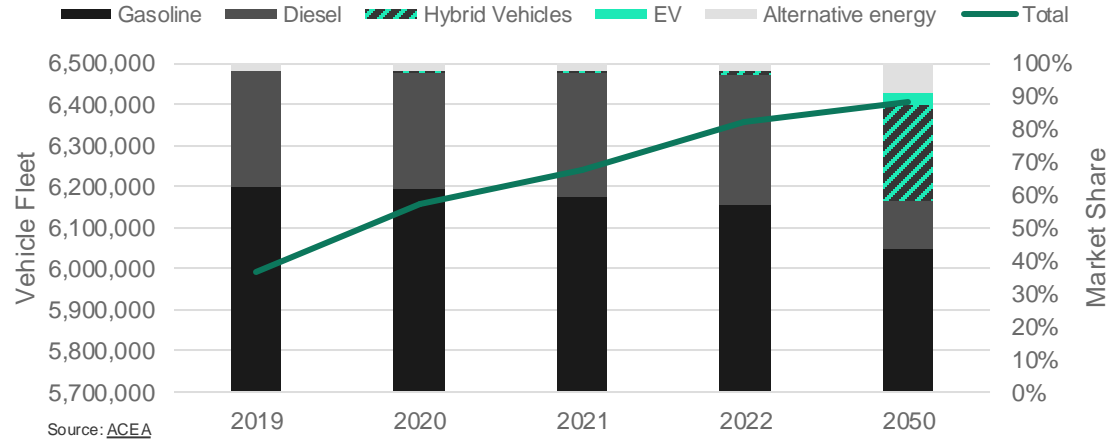
Aggregate fuel sales per engine type (in liters)
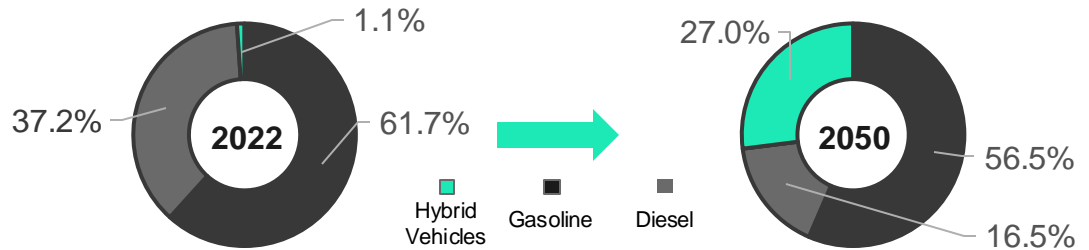
Estimated volume of fuel sales:
4.75 billion

Forecasted volume of fuel sales:
3.17 billion

Source: FuelsEurope

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Western Europe – Energy Station Evolution

Our research indicates that various fates await traditional gas stations in Western Europe: in the Netherlands, they are forecasted to contract significantly while it appears that their operations could be more sustained in Luxembourg
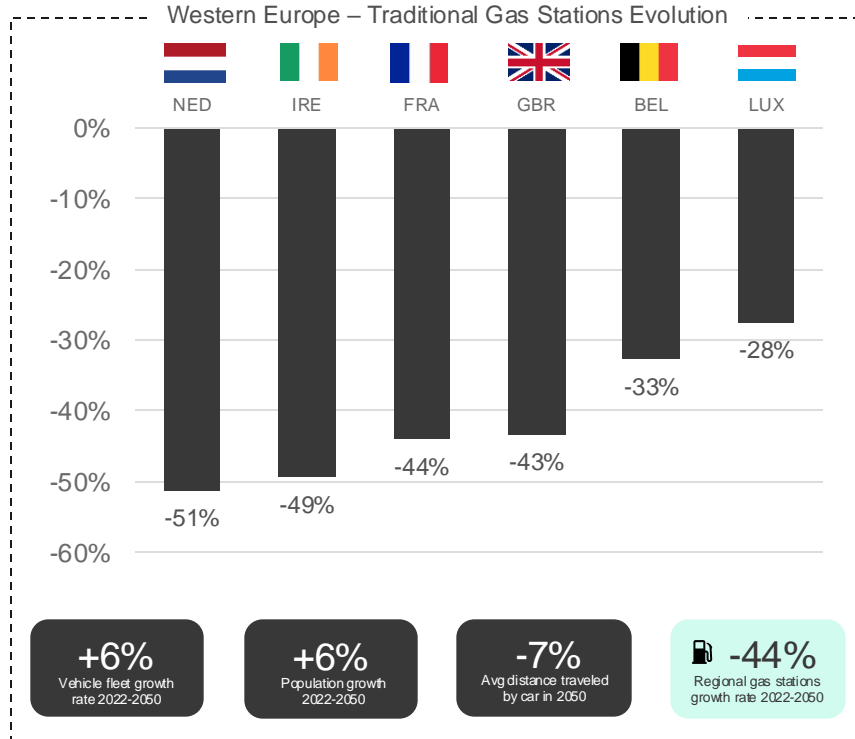
Western Europe – Traditional Gas Stations Evolution

	NED	IRE	FRA	GBR	BEL	LUX
Growth rate	-51%	-49%	-44%	-43%	-33%	-28%

+6%	+6%	-7%	🅿 -44%
Vehicle fleet growth rate 2022-2050	Population growth 2022-2050	Avg distance traveled by car in 2050	Regional gas stations growth rate 2022-2050

*Traditional gas stations provide diesel and gasoline fuel types as their main revenue streams.

Influencing factors

- Overall, all regions are gradually moving towards promoting EV adoption as part of their efforts to reduce emissions, via reductions for this type of cars in registration, ownership and company taxes

- Except in Belgium, purchase subsidies are proposed in every countries going from 2000€ in Netherlands to 8000€ in Luxembourg (among conditions)

- Except in Netherlands, all countries are trying to increase the use of personal charging stations by giving subsidies for people who want to install their own in their residence (from 1000€ to 2000€ depending on the countries)

	NED	IRE	GBR
Population (2022)	17,700,982	5,165,700	67,508,936
GDP per capita (in USD, 2022)	$ 57,025	$ 103,983	$ 46,125
Ratio Vehicles / Pop (2022)	0.50	0.45	0.48
Number of gas stations (2022 / 2050)	4,135 / 2,020	1,892 / 958	8,365 / 4,581

	FRA	BEL	LUX
Population (2022)	68,065,015	11,680,210	653,103
GDP per capita (in USD, 2022)	$ 40,886	$ 49,927	$ 125,006
Ratio Vehicles / Pop (2022)	0.57	0.51	0.68
Number of gas stations (2022 / 2050)	11,040 / 6,175	3,119 / 2,097	238 / 172

Netherlands

Major regulatory influence and policy targets:
A lot of major Dutch cities will introduce Zero Emission Zone (Amsterdam, Rotterdam,…) by 2025.[1]

Technologies:
*2024: **154,000** public EV charging points[2]*
*2030 target: More than **a million**[3]*

Population evolution:
*Dutch population will slightly increase from **17.7 million in 2022** to **18.7 million in 2050**[4], meanwhile its urbanization rate will go from **92.9%** to **96.6%**[5].*

Average distance per car in a year:
*In **2022**, a Dutch car travelled **11,015 km**[6], this distance should decrease to **10,576 km in 2050**.*

SIA PARTNERS

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 85.2%, 5.7%, 9.1%
2050: 13.9%, 4.1%, 82.1%

Legend: Hybrid Vehicles, Gasoline, Diesel

Estimated volume of fuel sales: 7.14 billion

Forecasted volume of fuel sales: 3.78 billion

Source: FuelsEurope

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Ireland

Major regulatory influence and policy targets:
Questioning in progress about the sell's ban of new cars for 2030 and Purchase subsidies are offered for types of EVs[1,2]

Technologies:
*2024: **3,000** public EV charging points[3]*
*2030 target: **100,000**[4]*

Population evolution:
*Irish population will slightly increase from **5.17 million in 2022** to **6.10 million in 2050**[5], meanwhile its urbanization rate will go from **64.2%** to **75.1%**[6]*

Average distance per car in a year:
*In **2022**, an Irish car travelled **10,266 km**[7], this distance should decrease to **8,523 km in 2050**.*

SIAPARTNERS

Sources: Irish Independent[1], European Commission (Incentives[2] and Summary[3]), Irish Examiner[4], Eurostat (present and projected demographics)[5], UN[6], Odyssee-mure[7]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 5.2%, 39.0%, 55.7%
2050: 56.1%, 13.3%, 30.6%

Legend: Hybrid Vehicles, Gasoline, Diesel

Estimated volume of fuel sales: *1.69 billion*

Forecasted volume of fuel sales: *913 million*

Source: FuelsEurope

50

UK

Major regulatory influence and policy targets:
An order voted in 2024 requires manufacturers to sell an increasing percentage of ZEV each year[1]

Technologies:
*2024: **75,000** public EV charging points[2]*
*2030 target: **300,000**[3]*

Population evolution:
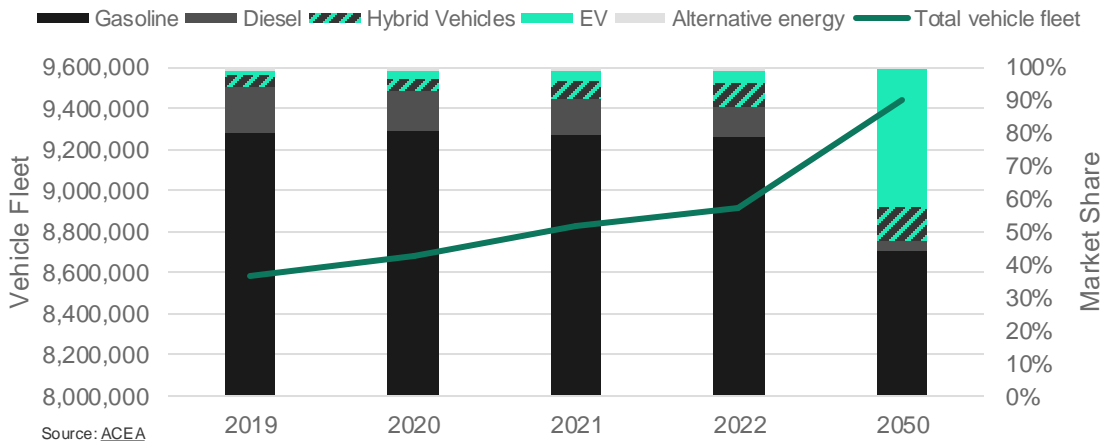*UK population will increase from **67.5 million in 2022** to **71.7 million in 2050**[4], meanwhile its urbanization rate will go from **84.4%** to **90.2%**[5].*
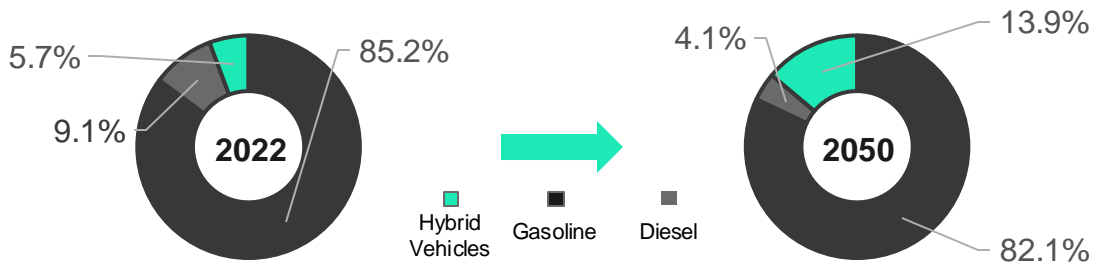
Average distance per car in a year:
*In **2022**, a British car travelled **10,622 km**[6], this distance should decrease to **9,892 km in 2050**.*

SIAPARTNERS

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 4.2%, 32.8%, 63.0%

Hybrid Vehicles, Gasoline, Diesel

2050: 49.1%, 34.0%, 16.9%

Estimated volume of fuel sales:
24.9 billion

Forecasted volume of fuel sales:
13.9 billion

Source: FuelsEurope

France

Major regulatory influence and policy targets:
Every year, Low Emission Zones are becoming more selective about vehicles in the biggest cities (Paris, Lyon, Lille,…)[1]

Technologies:
*2024: **127,500** public EV charging points[2]*
*2030 target: **400,000**[3]*

Population evolution:
*French population will increase from **68.1 million in 2022** to **70.6 million in 2050**[4], meanwhile its urbanization rate will go from **81.5% to 88.3%**[5].*

Average distance per car in a year:
*In **2022**, a French car travelled **10,621 km**[6], this distance should decrease to **9,735 km in 2050**.*

Sources: LEZ zones[1], European Commission[2], French Government[3], Eurostat (present and projected demographics)[4], UN[5], Odyssee-mure[6]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022:
- 44.8%
- 51.6%
- 3.6%

2050:
- 51.9%
- 23.8%
- 23.3%

Legend: Hybrid Vehicles, Gasoline, Diesel
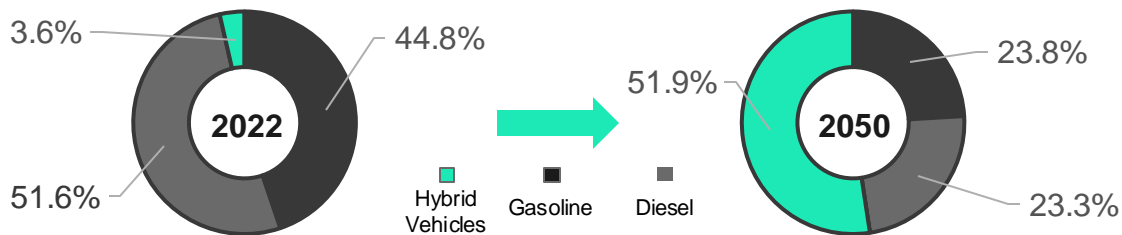
Estimated volume of fuel sales:
29.1 billion

Forecasted volume of fuel sales:
17.4 billion

Source: FuelsEurope

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Belgium

Major regulatory influence and policy targets:
Brussel will ban diesel cars by 2030
Reduction or exemption of the circulation taxes for EV[1,2]

Technologies:
*2024: **52,000** public EV charging points[3]*
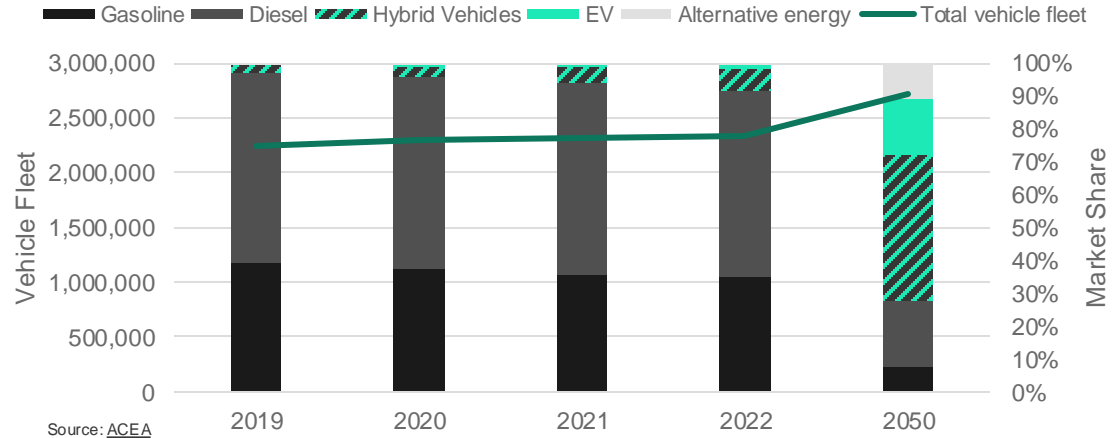*2030 target: **125,000**[4]*

Population evolution:
*Belgian population will slightly increase from **11.7 million in 2022** to **12.6 million in 2050**[4], meanwhile its urbanization rate will go from **98.2%** to **98.9%**[5].*
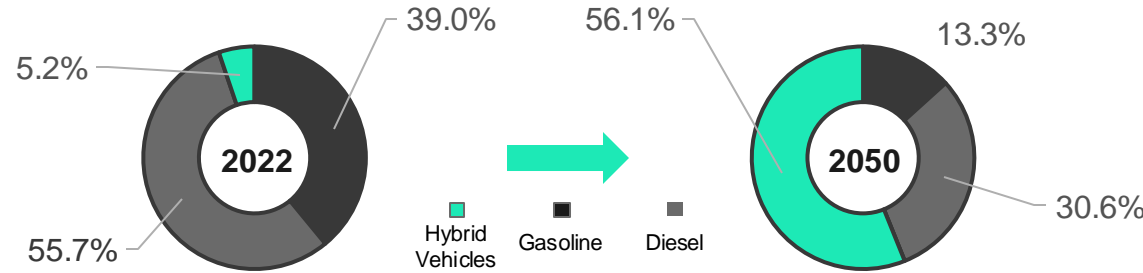
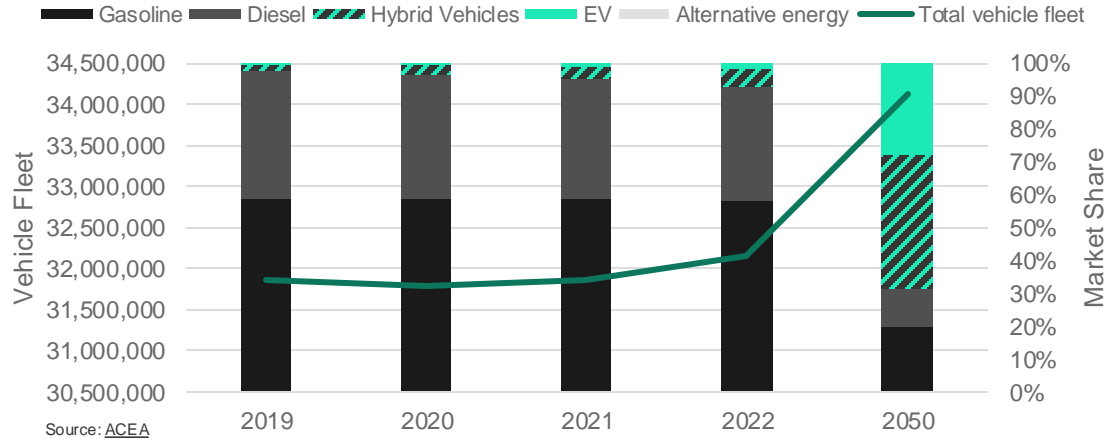**Average distance per car in a year:**
*In **2022**, a Belgian car travelled **10,266 km**[6], this distance should decrease to **10,193 km in 2050**.*

Sources: Reuters[1], European Commission (Incentives[2] and Summary[3]), US Trade Gov[4], Eurostat (present and projected demographics)[4], UN[5], Odyssee-mure[6]

SIAPARTNERS

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022:
- 55.8%
- 5.2%
- 39.0%

2050:
- 62.2%
- 26.3%
- 11.5%

Legend: Hybrid Vehicles, Gasoline, Diesel
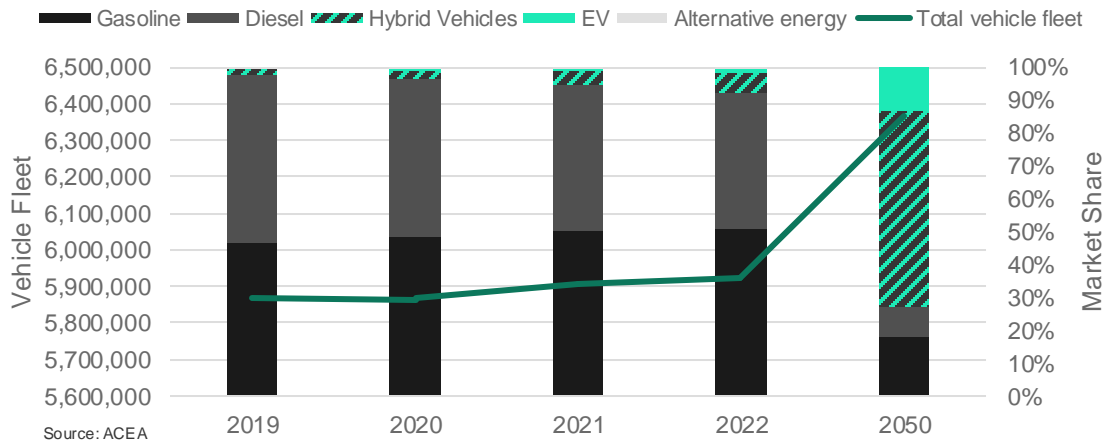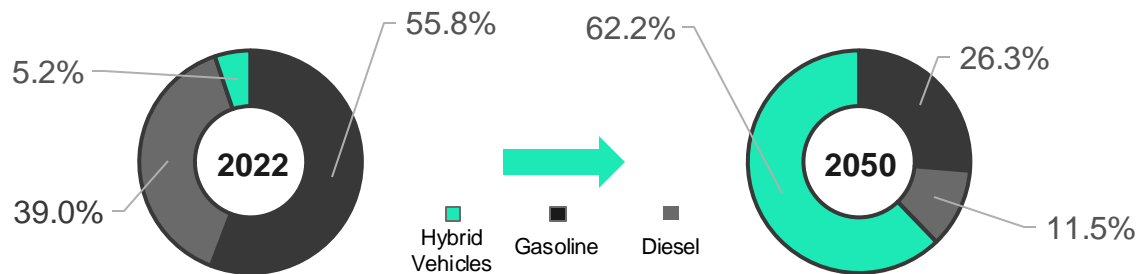
Estimated volume of fuel sales:
4.39 billion

Forecasted volume of fuel sales:
3.11 billion

Source: FuelsEurope

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Luxembourg

Major regulatory influence and policy targets:
Taxes exemptions and purchase subsidies for EV that are among the biggest in the EU[1].

Technologies:
*2024: **2,000** public EV charging points[2]*
2030 target: No announced target

Population evolution:
*Luxembourg population will slightly increase from **653k in 2022** to **897k in 2050**[3], meanwhile its urbanization rate will go from **91.9%** to **95.1%**[4].*

Average distance per car in a year:
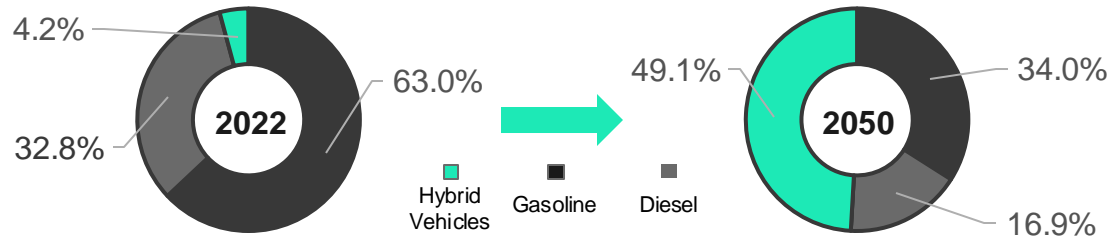*In **2022**, a Luxembourg car travelled **10,266 km**[5], this distance should decrease to **9,909 km in 2050**.*

Sources: European Commission (Incentives[1] and Summary[2]), Irish Examiner[4], Eurostat (present and projected demographics)[3], UN[4], Odyssee-mure[5]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 49.0%, 6.9%, 44.1%

2050: 70.0%, 18.7%, 11.3%

Legend: Hybrid Vehicles, Gasoline, Diesel
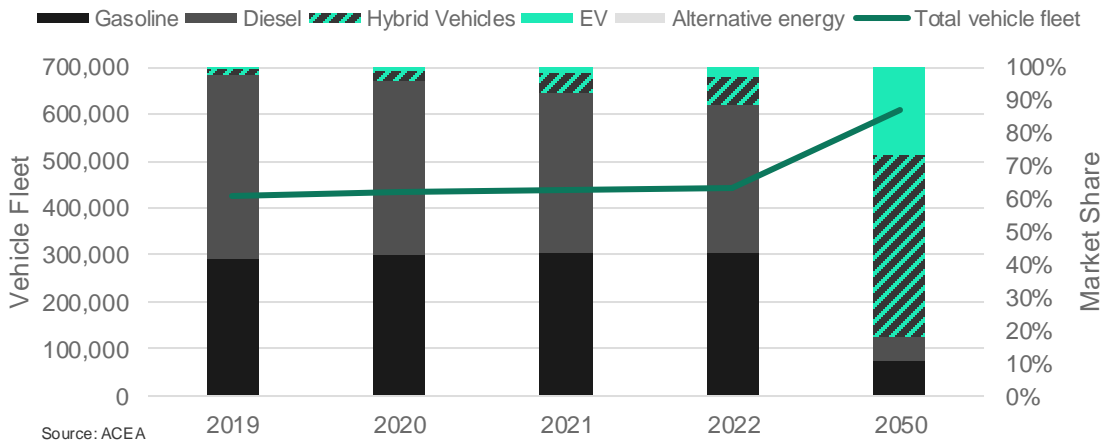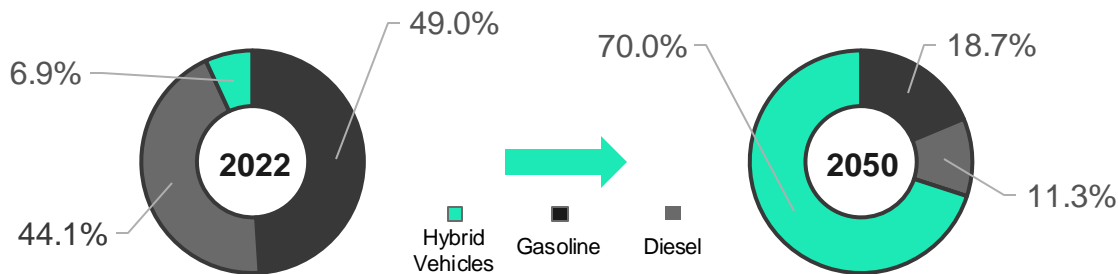
Estimated volume of fuel sales: *321 million*

Forecasted volume of fuel sales: *240 million*

Source: FuelsEurope

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Baltics – Energy Station Evolution

Our research indicates that the fait awaiting traditional gas stations in the Baltic region should be the same for the three countries where their number is expected to decrease.
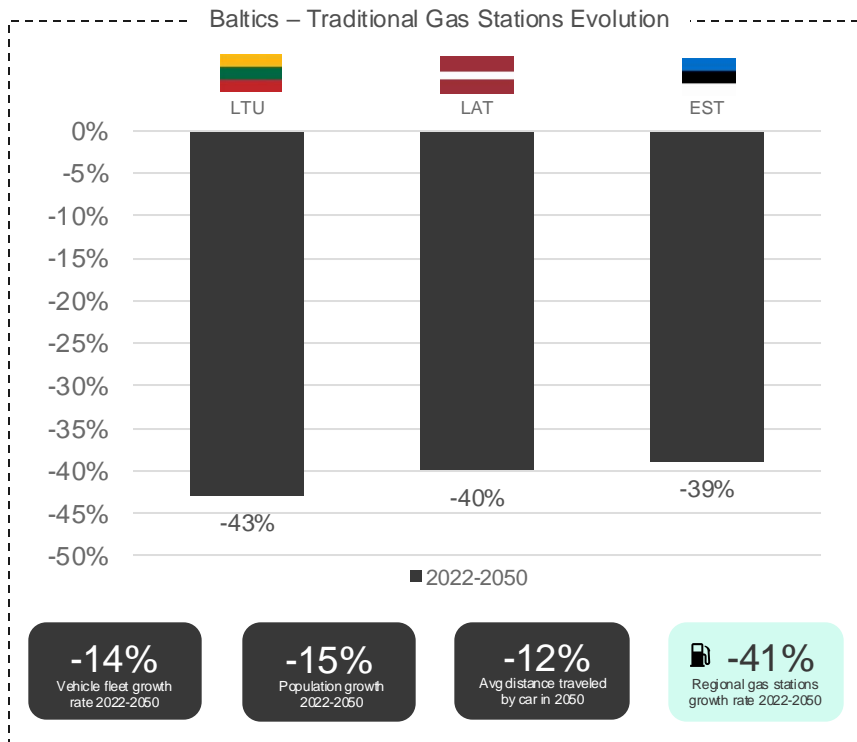
Baltics – Traditional Gas Stations Evolution

LTU   LAT   EST

Chart values:
- LTU: -43%
- LAT: -40%
- EST: -39%

Y-axis: 0% to -50%

■ 2022-2050

-14%	-15%	-12%	⛽ -41%
Vehicle fleet growth rate 2022-2050	Population growth 2022-2050	Avg distance traveled by car in 2050	Regional gas stations growth rate 2022-2050

*Traditional gas stations provide diesel and gasoline fuel types as their main revenue streams.

Influencing factors

- Growing recognition of the importance of EVs in reducing emissions, but general disparities among the 3 countries in their ambitions.

- The 3 governments have implemented measures such as tax incentives and reduced registration fees and exemptions from road tolls, while expanding charging infrastructure.

Country specific legislations and ambitions

- **Latvia**: Tax exemptions for vehicles with less than 50 gCO2/km and grants for buying new and used EVs.
- **Lithuania :** Grants to buy new and used electric vehicles and road tax reductions for EVs as well as phasing out diesel car sales by 2040.
- **Estonia:** Aim to have 100,000 EVs on its roads by 2030 and having the highest density of public charging per capita in the world

	LTU	LAT	EST
Population (2022)	2,831,639	1,879,383	1,348,840
GDP per capita (in USD, 2022)	$ 25,065	$ 21,780	$ 28,247
Ratio Vehicles / Pop (2022)	0.58	0.41	0.63
Number of gas stations (2022 / 2050)	765 / 440	600 / 326	515 / 314

Lithuania

Major regulatory influence and policy targets:
Public tenders for converting public fleet into EVs, as well as free parking for BEV/PHEVs in numerous cities[1].

Technologies:
*2024: **3,000** public EV charging points[2]*
*2030 target: **60,000**[3]*

Population evolution:
*Lithuanian population will decrease from **2.83 million in 2022 to 2.34 million in 2050**[4], meanwhile its urbanization rate will go from **68.5%** to **78.1%**[5].*
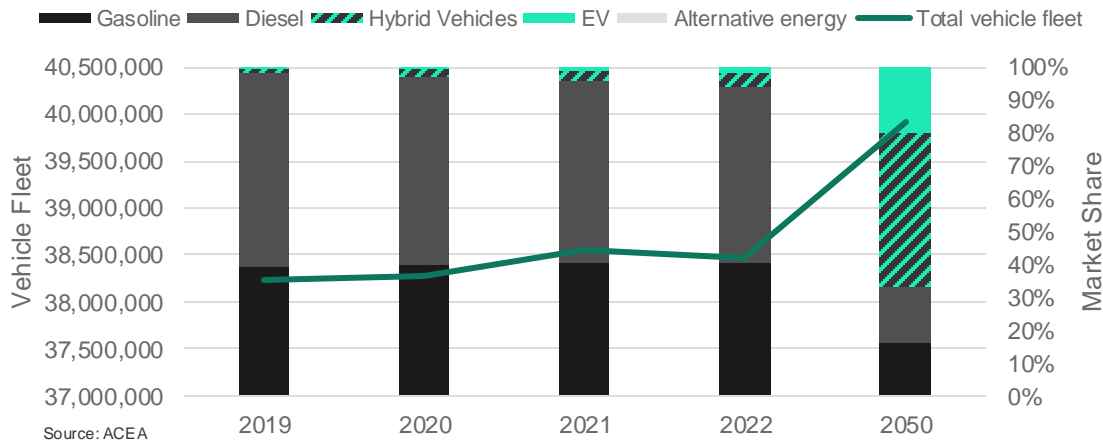
Average distance per car in a year:
*In **2022**, a Lithuanian car travelled **10,266 km**[6], this distance should decrease to **8,827 km in 2050.***

SIAPARTNERS

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 2.9%, 27.4%, 69.7%

2050: 34.4%, 18.0%, 47.6%

Legend: Hybrid Vehicles, Gasoline, Diesel
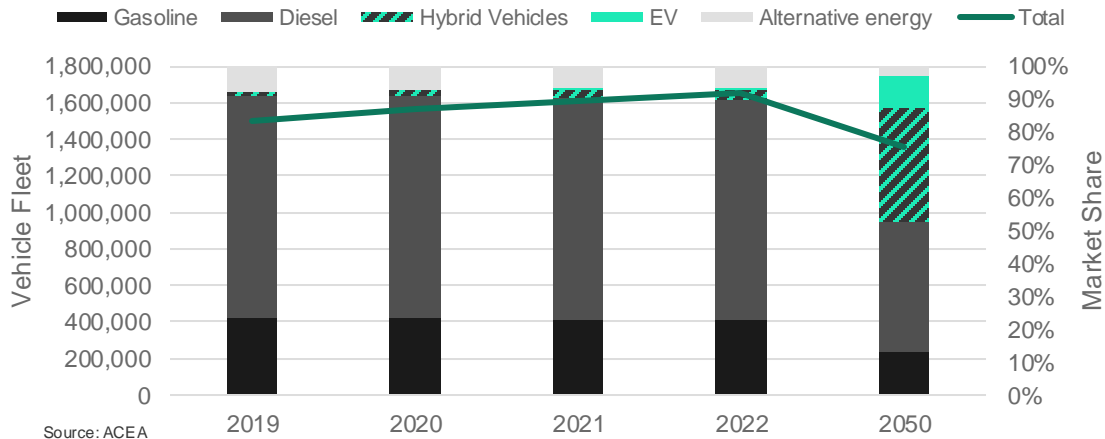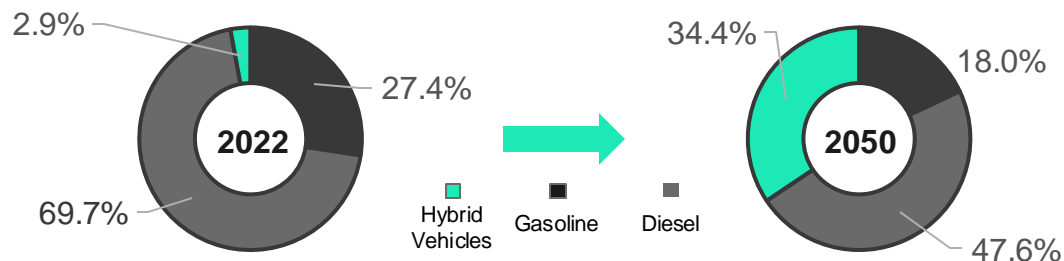
Estimated volume of fuel sales:
1.17 billion

Forecasted volume of fuel sales:
605 million

Source: FuelsEurope

Latvia

Major regulatory influence and policy targets:

EVs exempt from registration tax and free to circulate on public transport lanes and benefit from free parking in Riga[1].

Technologies:

*2024: **700** public EV charging points[2]*
2030 target: Not announced

Population evolution:

*Latvian population will decrease from **1.88 million in 2022** to **1.47 million in 2050**[3], meanwhile its urbanization rate will go from **68.5%** to **75.9%**[4].*

Average distance per car in a year:

*In **2022**, a Latvian car travelled **10,266 km**[5], this distance should decrease to **9,157 km** in 2050.*

Passenger car fleet by engine type

Source: ACEA
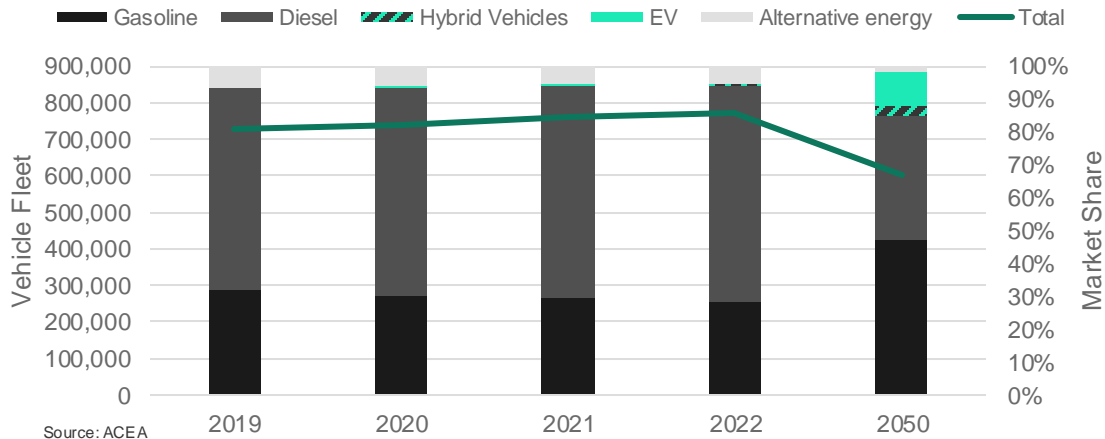
Aggregate fuel sales per engine type (in liters)
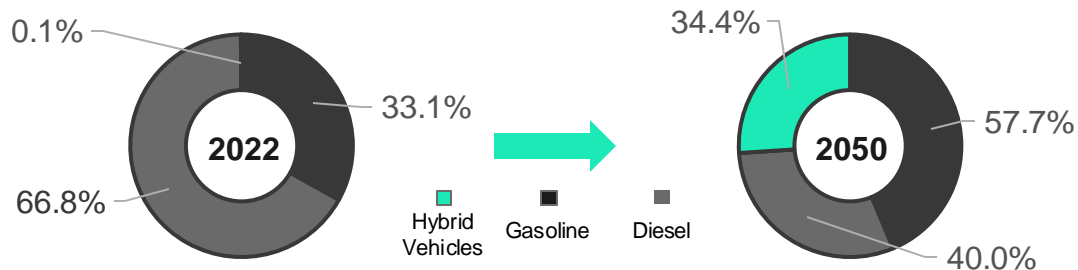
Estimated volume of fuel sales:
535 million

Forecasted volume of fuel sales:
314 million

Source: FuelsEurope

Estonia

Major regulatory influence and policy targets:
EVs benefit from low registration tax and no circulation tax and free parking in designated zones in some municipalities[1].

Technologies:
*2024: **500** public EV charging points[2]*
2030 target: Not announced

Population evolution:
*Estonian population will slightly decrease from **1.35 million in 2022** to **1.34 million in 2050**[3], meanwhile its urbanization rate will go from **69.6%** to **77.3%**[4].*

Average distance per car in a year:
*In **2022**, an Estonian car travelled **10,266 km**[5], this distance should decrease to **9,130 km in 2050**.*

Sources: European Commission (incentives[1] and summary[2]), Eurostat (present and projected demographics)[3], UN[4], Odyssee-mure[5]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 2.7%, 38.9%, 58.4%
2050: 50.3%, 34.8%, 14.9%

Legend: Hybrid Vehicles, Gasoline, Diesel

Estimated volume of fuel sales: 641 million

Forecasted volume of fuel sales: 391 million

Source: FuelsEurope
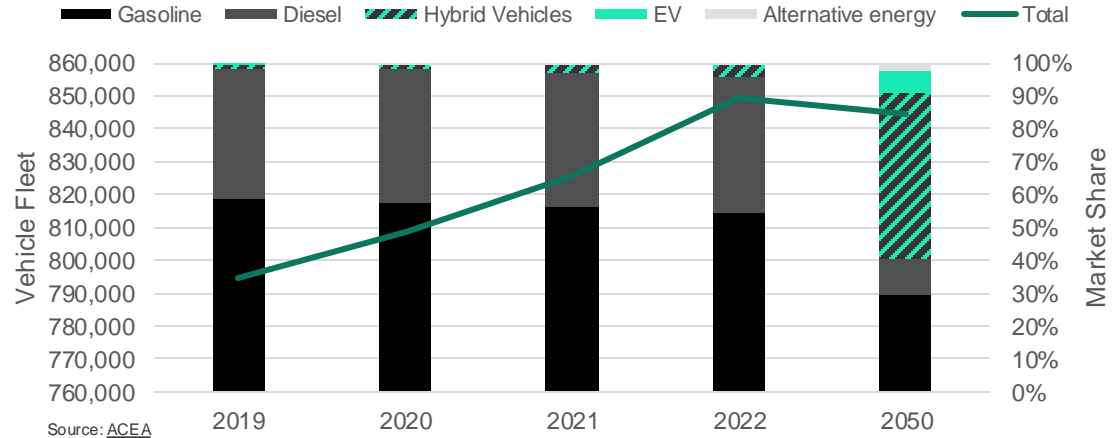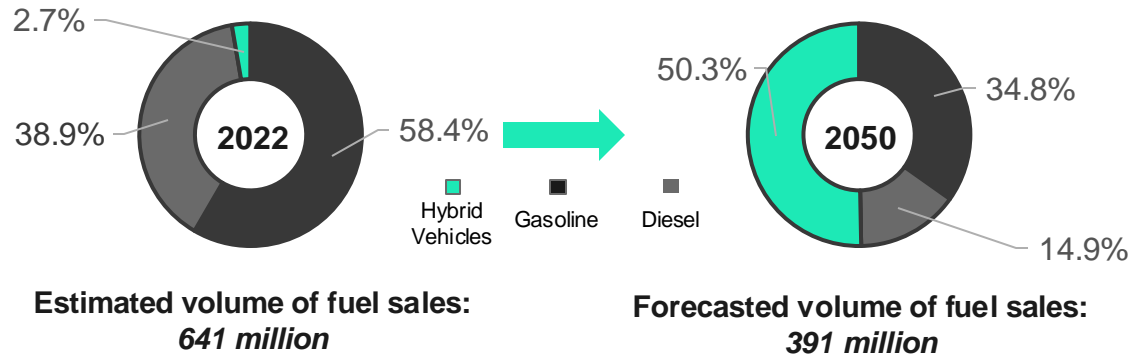
Southern Europe – Energy Station Evolution

Traditional service stations activities in Southern Europe will all experience significant decline, however they will do so at a different pace : the ones in Italy and Portugal will do so drastically, while the ones in Spain and Cyprus will do so moderately.
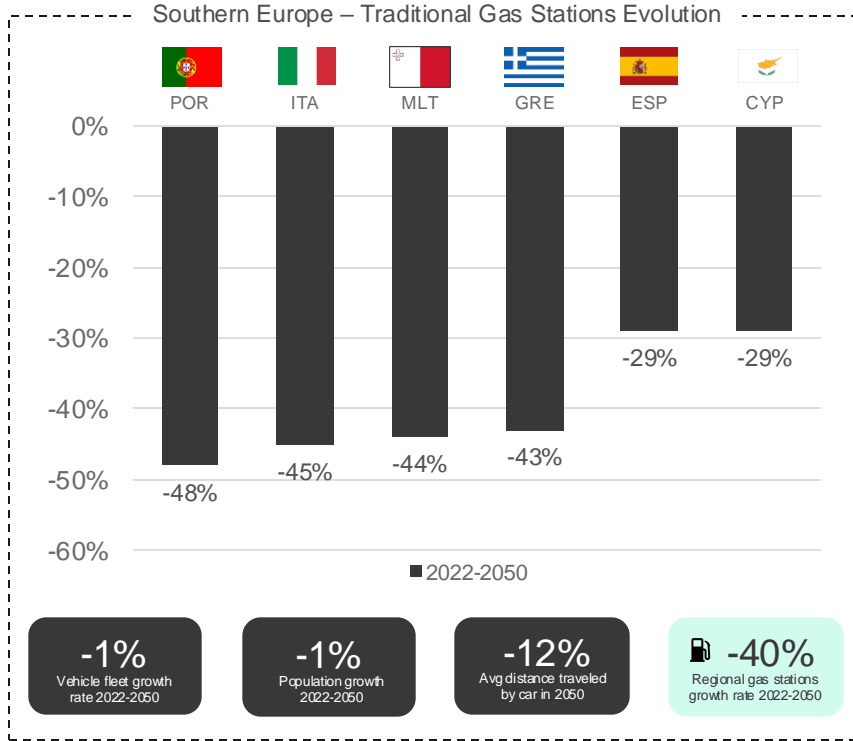
Southern Europe – Traditional Gas Stations Evolution

POR	ITA	MLT	GRE	ESP	CYP
-48%	-45%	-44%	-43%	-29%	-29%

■ 2022-2050

-1% Vehicle fleet growth rate 2022-2050	-1% Population growth 2022-2050	-12% Avg distance traveled by car in 2050	-40% Regional gas stations growth rate 2022-2050

*Traditional gas stations provide diesel and gasoline fuel types as their main revenue streams.

SIA PARTNERS

Source : IEA, European Commission, Eurostat, World Bank & FuelsEurope

Influencing factors

- Overall, all regions are gradually moving towards promoting EV adoption as part of their efforts to reduce emissions, via reductions for this type of cars in registration, ownership and company taxes

- Purchase subsidies are proposed in every countries with a bigger budget in Spain, Greece, Cyprus and Malta (especially for BEVs and FCEVs)

- Cyprus and Spain stand out as the most ambitious countries with the biggest Purchase subsidies, minimum rates/no taxes for Ownership and Registration taxes, important development of charging stations

- Each country have rules applied in their entire territory however Italy has several regions that are applying some differences from the national ones

	POR	ITA	MLT
Population (2022)	10,409,704	59,013,667	531,511
GDP per capita (in USD, 2022)	$ 24,515	$ 34,776	$ 34,128
Ratio Vehicles / Pop (2022)	0.56	0.68	0.59
Number of gas stations (2022 / 2050)	3,216 / 1, 685	21,100 / 12, 016	69 / 39

	GRE	ESP	CYP
Population (2022)	10,436,882	47,759,127	912,703
GDP per capita (in USD, 2022)	$ 20,867	$ 29,675	$ 32,048
Ratio Vehicles / Pop (2022)	0.51	0.56	0.66
Number of gas stations (2022 / 2050)	5,889/ 3,384	12,084 / 8,597	320 / 229

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*2019

Portugal

Major regulatory influence and policy targets:
Complete taxes exemption for EVs with free parking in major cities, LEZ are also present in these cities[1]

Technologies:
*2024: **9,000** public EV charging points[2]*
*2030: **36,000**[3]*

Population evolution:
*Portuguese population will decrease from **10.4 million in 2022** to **9.65 million in 2050**[4], meanwhile its urbanization rate will go from **67.4%** to **79.3%**[5].*

Average distance per car in a year:
*In **2022**, a Portuguese car travelled **9,201 km**[6], this distance should decrease to **7,576 km in 2050**.*

SIAPARTNERS

Passenger car fleet by engine type

Legend: Gasoline | Diesel | Hybrid Vehicles | EV | Alternative energy | Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022
- 2.5%
- 43.2%
- 54.3%

Hybrid Vehicles | Gasoline | Diesel

2050
- 34.4%
- 18.0%
- 47.6%
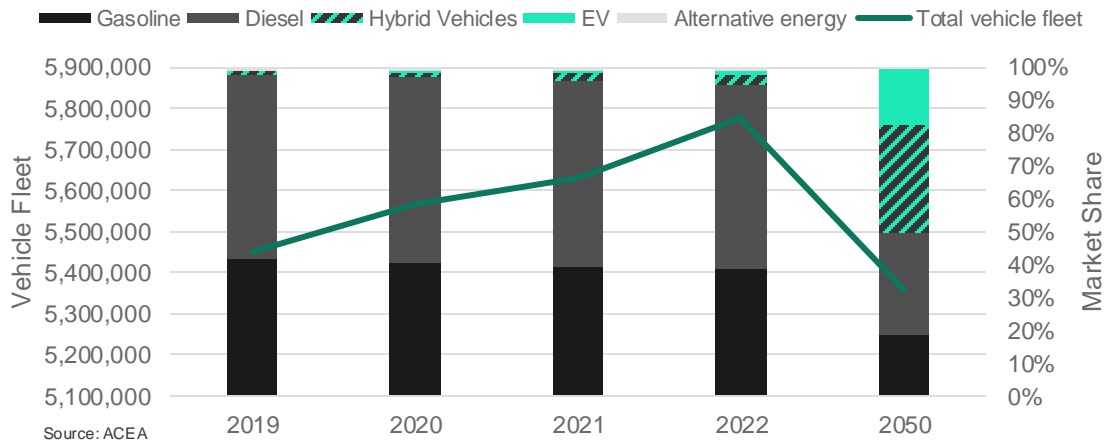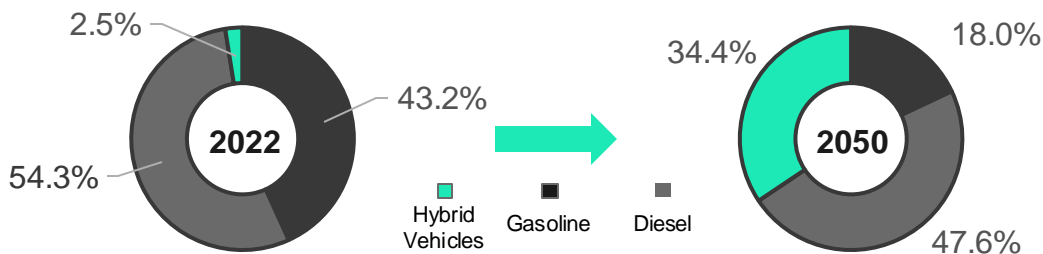
Estimated volume of fuel sales: 3.77 billion

Forecasted volume of fuel sales: 1.94 billion

Source: FuelsEurope

60

Italy

Major regulatory influence and policy targets:
A 250M€ budget allocated for BEVs for 3 years with subsidies and taxes exemptions depending on the regions[1]

Technologies:
*2024: **44,300** public EV charging points[2]*
*2030: **110,000**[3]*

Population evolution:
*Italian population will decrease from **59 million in 2022** to **57.5 million in 2050**[4], meanwhile its urbanization rate will go from **71.1%** to **81.1%**[5].*

Average distance per car in a year:
*An Italian car travelled **7,084 km in 2022**[6], this distance should decrease to **6,088 km in 2050**.*

SIA PARTNERS

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 52.6%, 43.9%, 3.5%

2050: 56.8%, 22.8%, 20.3%

Legend: Hybrid Vehicles, Gasoline, Diesel

Estimated volume of fuel sales: 18.8 billion

Forecasted volume of fuel sales: 11.8 billion

Source: FuelsEurope
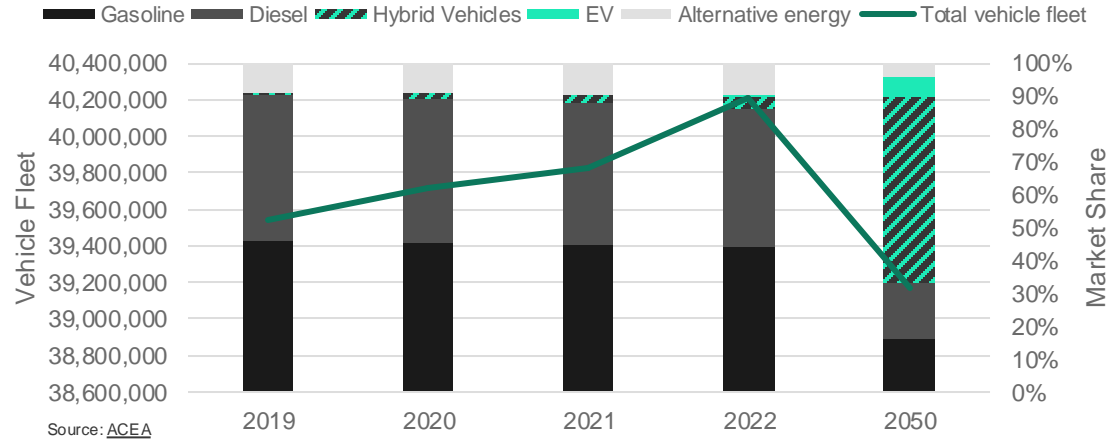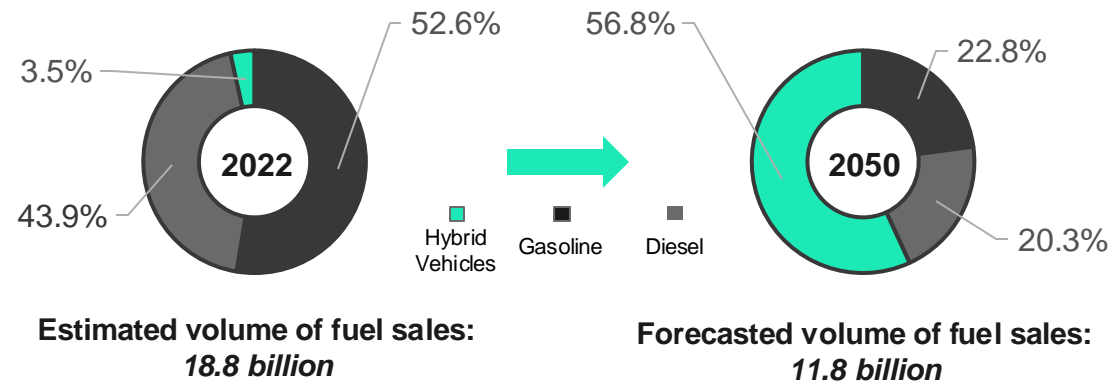
Malta

Major regulatory influence and policy targets:
Proposes the biggest purchase subsidies in EU for EVs (with Cyprus) with exemption from registration taxes in Valetta[1]

Technologies:
*2024: **100** public EV charging points[2]*
*2030: **6,500**[3]*

Population evolution:
*Maltese population will slightly increase from **532k in 2022** to **744k in 2050**[4], meanwhile its urbanization rate will go from **66,9 %** to **74.5 %**[5].*

Average distance per car in a year:
*In **2022**, a Maltese car travelled **10,266 km**[6], this distance should decrease to **9,100 km in 2050**.*

SIAPARTNERS

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 2.2%, 27.9%, 69.9%

2050: 38.6%, 44.0%, 17.3%

Hybrid Vehicles, Gasoline, Diesel
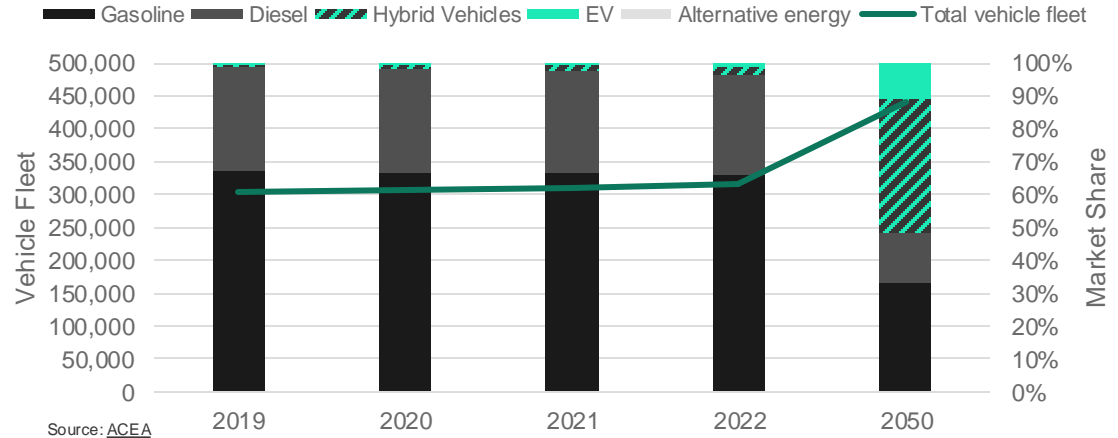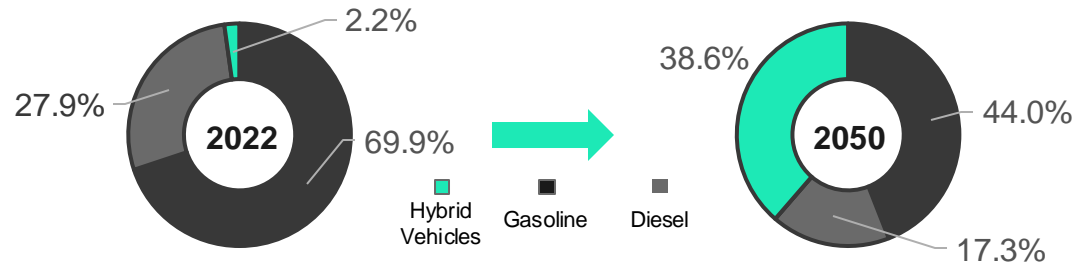
Estimated volume of fuel sales:
242 million

Forecasted volume of fuel sales:
212 million

Source: FuelsEurope

62

Greece

Major regulatory influence and policy targets:
Evs exempted from the registration tax and Hybrids get a reduction , Restriction imposed in cities like Athens for non EVs[1]

Technologies:
*2024: **4,200** public EV charging points[2]*
2030: No target announced

Population evolution:
*Greek population will decrease from **10.4 million in 2022** to **8.96 million in 2022 to 2050**[3], meanwhile its urbanization rate will go from **80.4 %** to **87.7 %**[4].*

Average distance per car in a year:
*In **2022**, a Greek car travelled **10,266 km**[5] this distance should decrease to **9,334 km in 2050**.*

Sources: European Commission (Incentives[1] and Summary[2]), Eurostat (present and projected demographics)[3], UN[4], Odyssee-mure[5]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 7.7%, 1.0%, 91.3%

Legend: Hybrid Vehicles, Gasoline, Diesel

2050: 7.7%, 20.8%, 71.5%

Estimated volume of fuel sales:
4.55 billion

Forecasted volume of fuel sales:
2.52 billion

Source: FuelsEurope
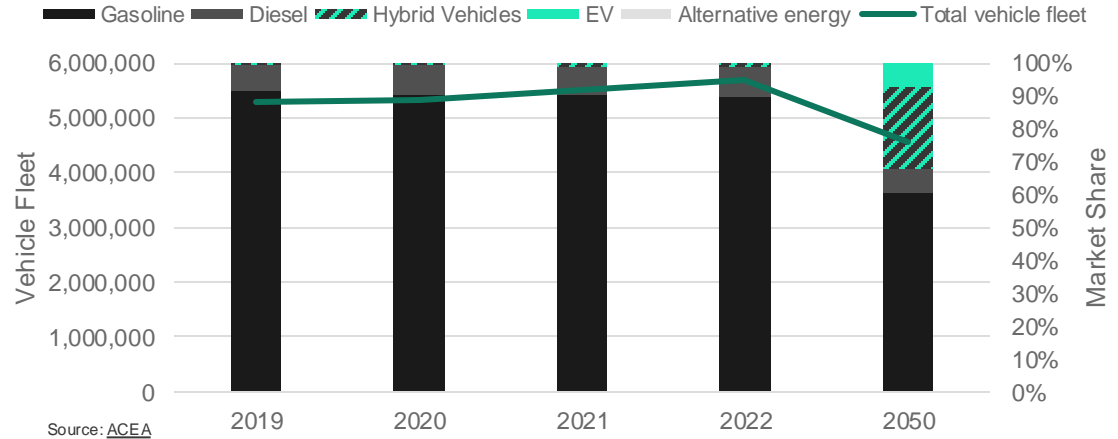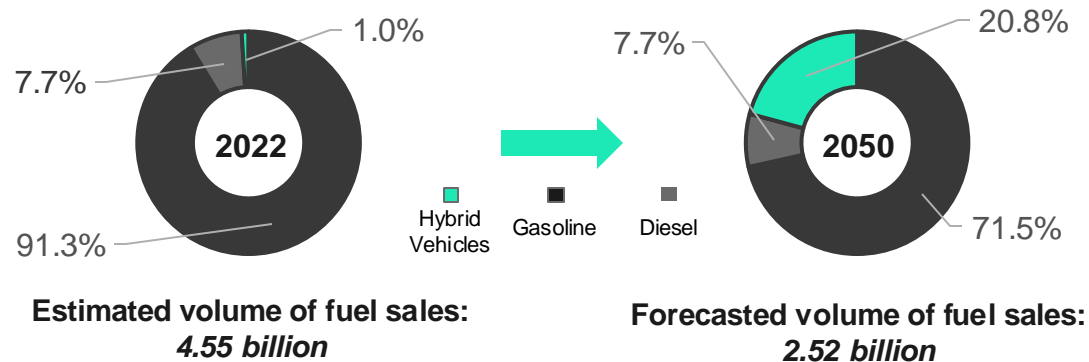
Spain

Major regulatory influence and policy targets:
A 400M€ budget allocated for BEVs for 3 years with subsidies and taxes exemptions depending on the regions[1]

Technologies:
*2024: **28,500** public EV charging points[2]*
*2030: **250,000-340,000**[3]*

Population evolution:
*Spanish population will increase from **47.8 million in 2022** to **50.5 million in 2050**[4], meanwhile its urbanization rate will go from **81.3%** to **88%**[5].*

Average distance per car in a year:
*In **2022**, a Spanish car travelled **9,860 km**[6], this distance should decrease to **9,047 km in 2050**.*

Sources: European Commission (Incentives[1] and Summary[2]), Empresaclima[3], Eurostat (present and projected demographics)[4], UN[5], Odyssee-mure[6]

Passenger car fleet by engine type

Legend: Gasoline, Diesel, Hybrid Vehicles, EV, Alternative energy, Total vehicle fleet

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022: 3.2%, 45.3%, 51.5%
2050: 45.4%, 26.3%, 28.3%

Legend: Hybrid Vehicles, Gasoline, Diesel
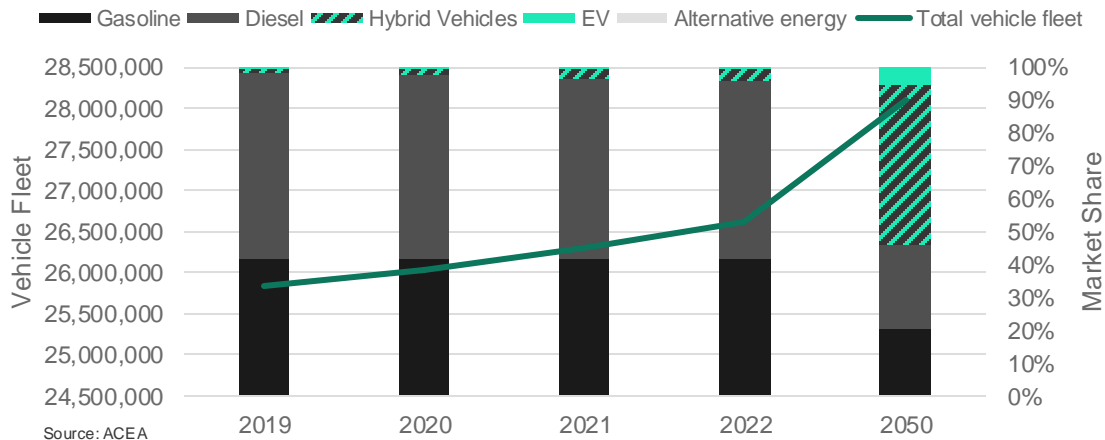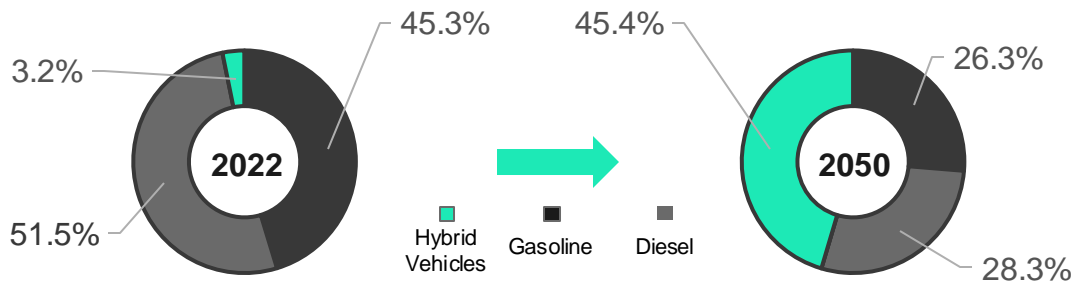
Estimated volume of fuel sales:
18.9 billion

Forecasted volume of fuel sales:
13.7 billion

Source: FuelsEurope

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Cyprus

Major regulatory influence and policy targets:
Proposes the biggest purchase subsidies in EU for EVs (with Malta) with exemption from registration taxes for these cars[1]

Technologies:
*2024: **350** public EV charging points[2]*
2030: No announced target

Population evolution:
*Cyprian population will slightly increase from **913k in 2022** to **982k in 2050**[3], meanwhile its urbanization rate will go from **66.9%** to **74.5 %**[4].*

Average distance per car in a year:
*In **2022**, a Cyprian car travelled **10,266 km**[5], this distance should decrease to **9,100 in 2050**.*

Passenger car fleet by engine type

Source: ACEA

Aggregate fuel sales per engine type (in liters)

2022
2.7%
19.5%
77.8%

2050
37.0%
47.0%
16.0%

Hybrid Vehicles | Gasoline | Diesel
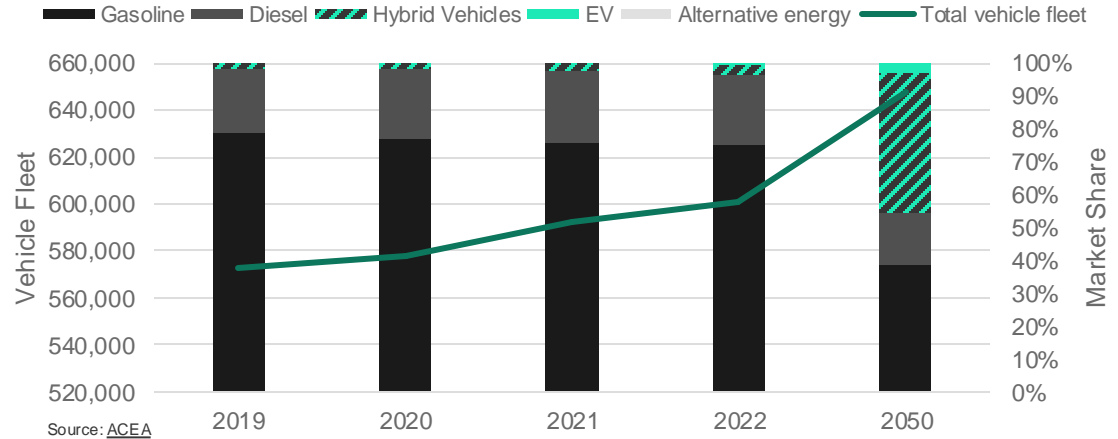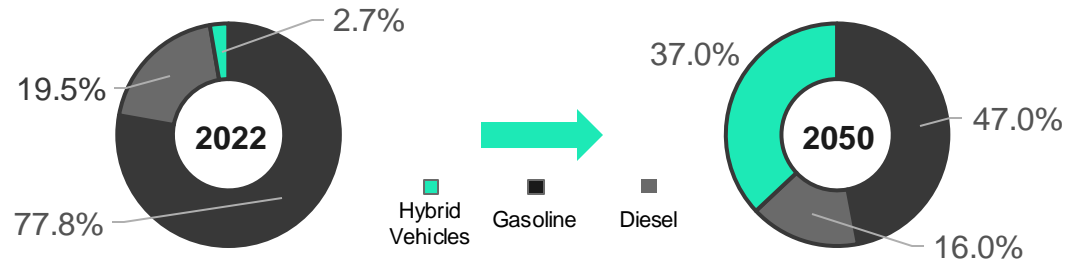
Estimated volume of fuel sales:
468 million

Forecasted volume of fuel sales:
340 million

Source: FuelsEurope

During the next decades, the European traditional gas station market will be deeply challenged and upended by vehicle fleets transformation.

By 2050, low carbon solutions will prevail, tightening fuel sales volume.

As a result, the volume of traditional gas stations is anticipated to fall by 45%.

Only those which reinvent themselves and become customer-centric will survive.

Middle East

The gas stations market in 2050

In the Middle East, gas stations number should increase by 17% between 2022 and 2050

Middle East: 9.9 → 11.7, +18%

Kuwait: 0.07 0.08, +25%

Bahrain: 0.06 0.06, +11%

Qatar: 0.13 0.11, -3%

UAE: 0.48 0.40, -14%

Saudi Arabia: 8.5 10.1, +20%

Oman: 0.7 0.8, +21%

Gas stations number in thousands
2022 | 2050
Country
-x%
Forecasted evolution
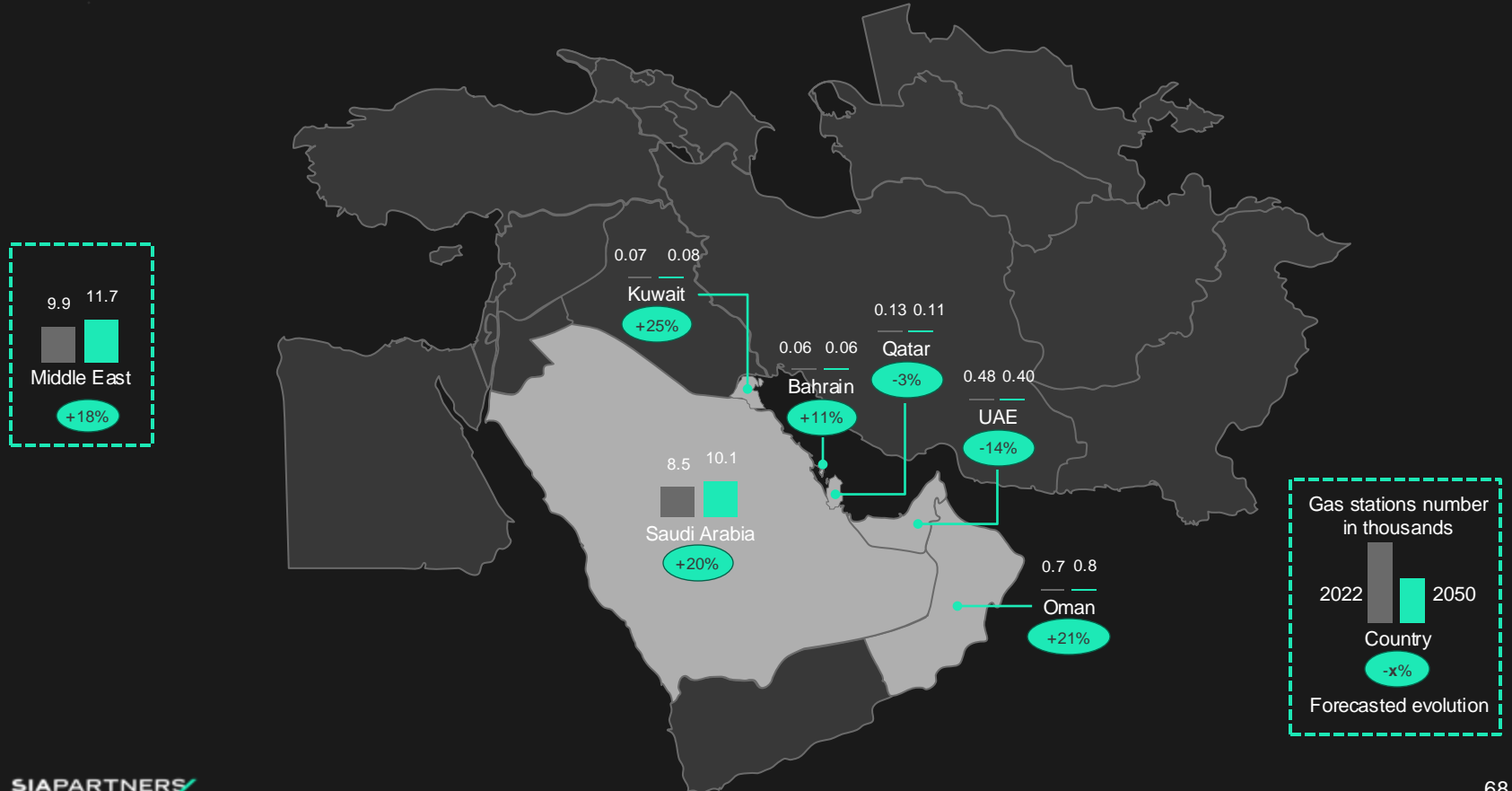
Middle East – Energy Station Evolution

Our research indicates that traditional gas stations[*] number in the Middle East GCC countries of the UAE and Qatar are forecasted to contract unless they undertake transformative operating models.
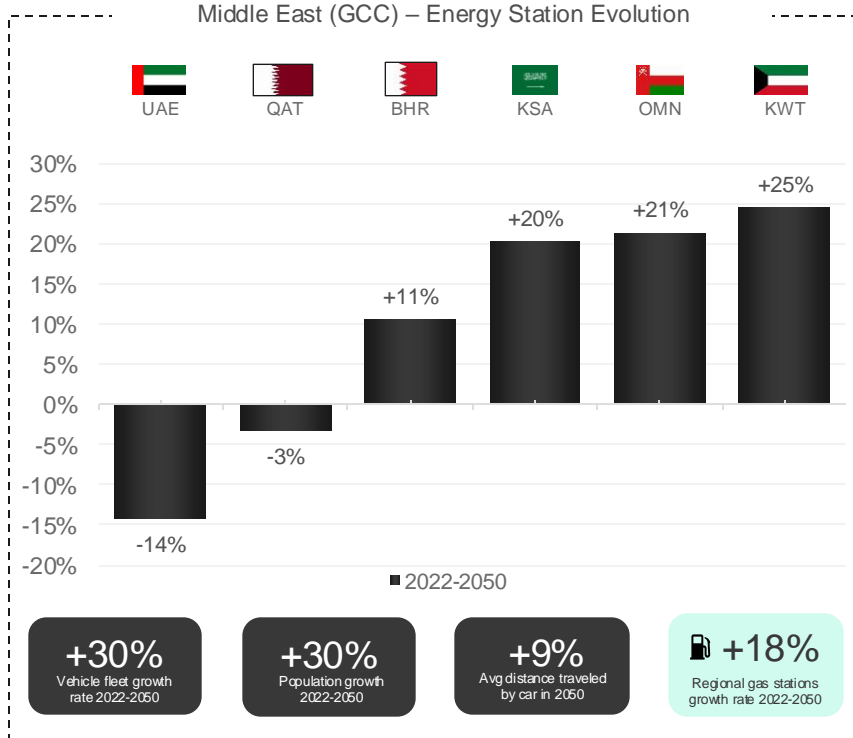
Middle East (GCC) – Energy Station Evolution

UAE	QAT	BHR	KSA	OMN	KWT

Chart values (2022-2050):
- UAE: -14%
- QAT: -3%
- BHR: +11%
- KSA: +20%
- OMN: +21%
- KWT: +25%

Legend: ■ 2022-2050

+30% Vehicle fleet growth rate 2022-2050	+30% Population growth 2022-2050	+9% Avg distance traveled by car in 2050	+18% Regional gas stations growth rate 2022-2050

*Traditional gas stations provide diesel and gasoline fuel types as their main revenue streams.

Influencing factors

- Apart from the Emirate of Dubai, no significant regulatory changes have been announced in the region, hence regulatory incentives are not expected to have a significant impact on the adoption of EV or hybrid vehicles.
- Consumer behavior will influence the transition from traditional gasoline and diesel vehicles to EV and hybrid vehicles as more options become available.
- Technology improvements around EVs are anticipated to improve battery lifetime and autonomy, making the product appealing to a wider consumer base.
- The anticipated growing population with a constant ratio of vehicles per person is increasing the vehicle fleet size, allowing ICE cars to remain dominant.

	KSA	UAE	OMN
Population (2022)	36,408,820	9,441,128	4,576,298
GDP per capita (in USD, 2022)	$ 30,448	$ 53,708	$ 25,057
Ratio Vehicles / Pop (2022)	0.21	0.32	0.27
Number of gas stations (2022 / 2050)	8,517 / 10,244	477 / 409	676 / 821

	KWT	BHR	QAT
Population (2022)	4,268,872	2,695,121	1,472,233
GDP per capita (in USD, 2022)	$ 41,080	$ 87,662	$ 30,147
Ratio Vehicles / Pop (2022)	0.46	0.36	0.38
Number of gas stations (2022 / 2050)	66 / 82	128 / 124	58 / 64

Source: IEA, Population Pyramid, & World Bank

Saudi Arabia

Consumer behavior:
Low EV and hybrid adoption rate while overall fleet share is increasing (+35% fleet increase from 2022 to 2050)

Externalities:
No externality is expected to have a significant influence by 2050.

Population evolution:
*Saudi population will increase from **36.4 million in 2022**[1] to **48.4 million in 2050**[2], meanwhile its urbanization rate will go from **84.3%** to **90.4%**[3].*

Regulation:
No significant regulatory changes are anticipated to 2050.

Passenger car fleet by engine type

Legend: Gasoline | Hybrid Vehicles | EV | Total

Aggregate fuel sales per engine type (in liters)

2022 — 100.0%

Hybrid Vehicles | Gasoline

2050 — 0.3% / 99.7%

Estimated volume of fuel sales:
9.1 billion

Forecasted volume of fuel sales:
10.7 billion

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UAE

Consumer behavior:
Low EV and hybrid adoption rate while overall fleet share is increasing (+20% fleet increase from 2022 to 2050)

Externalities:
No externality is expected to have a significant influence by 2050.

Population evolution:
*Emirati population will increase from **9.4 million in 2022**[1] to **11.4 million in 2050**[2], meanwhile its urbanization rate will go from **87%** to **92.4%**[3].*

Regulation:
No significant regulatory changes are anticipated to 2050.

Passenger car fleet by engine type

Aggregate fuel sales per engine type (in liters)
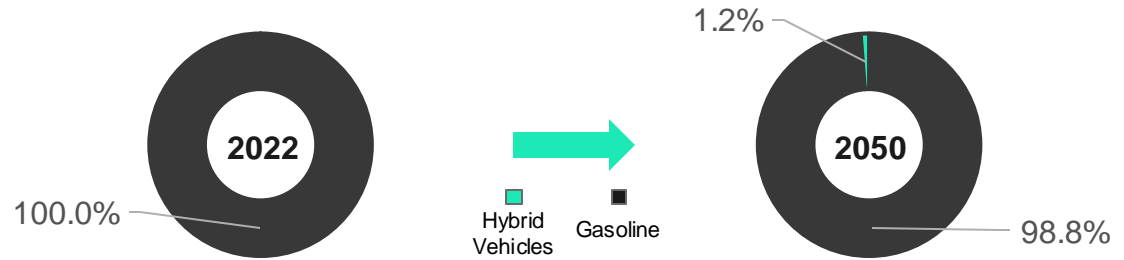
Estimated volume of fuel sales:
3.7 billion

Forecasted volume of fuel sales:
3.1 billion

Oman

Consumer behavior:
Low EV and hybrid adoption rate while overall fleet share is increasing (+38% fleet increase from 2022 to 2050)

Externalities:
No externality is expected to have a significant influence by 2050.

Population evolution:
*Omani population will increase from **4.6 million in 2022**[1] to **6.3 million in 2050**[2], meanwhile its urbanization rate will go from **86.3%** to **94.9%**[3].*

Regulation:
No significant regulatory changes are anticipated to 2050.

Passenger car fleet by engine type

Legend: Gasoline, Hybrid Vehicles, EV, Total

Aggregate fuel sales per engine type (in liters)

2022 → 2050

Legend: Hybrid Vehicles, Gasoline

Estimated volume of fuel sales:
1.5 billion

Forecasted volume of fuel sales:
1.7 billion
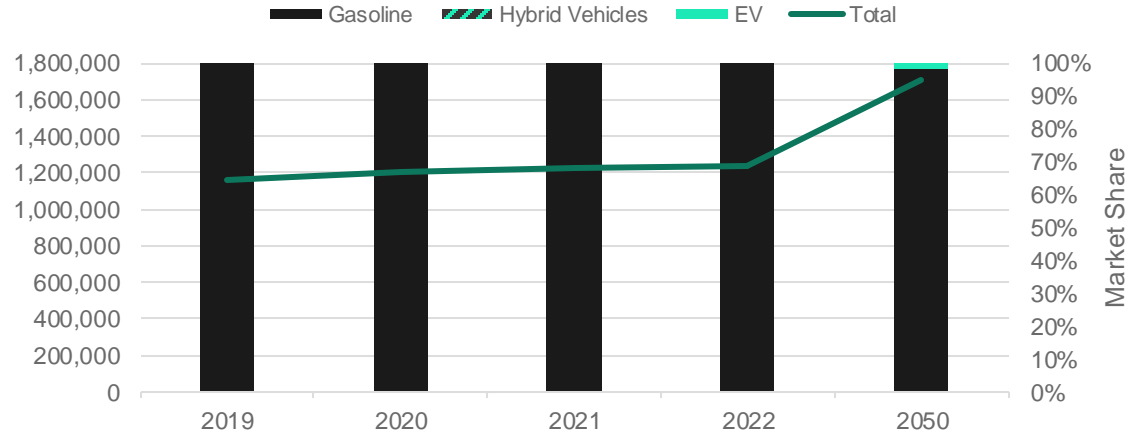
Kuwait

Consumer behavior:
Low EV and hybrid adoption rate while overall fleet share is increasing (+22% fleet increase from 2022 to 2050)

Externalities:
No externality is expected to have a significant influence by 2050.

Population evolution:
*Kuwaiti population will slightly increase from **4.3 million in 2022**[1] to **5.2 million in 2050**[2], meanwhile its urbanization will stay constant at **100%**[3].*

Regulation:
No significant regulatory changes are anticipated to 2050.

Passenger car fleet by engine type

Legend: Gasoline — Hybrid Vehicles — EV — Total

Aggregate fuel sales per engine type (in liters)

2022 → 2050

Hybrid Vehicles — Gasoline

100.0%   100.0%

Estimated volume of fuel sales:
2.4 billion

Forecasted volume of fuel sales:
2.7 million
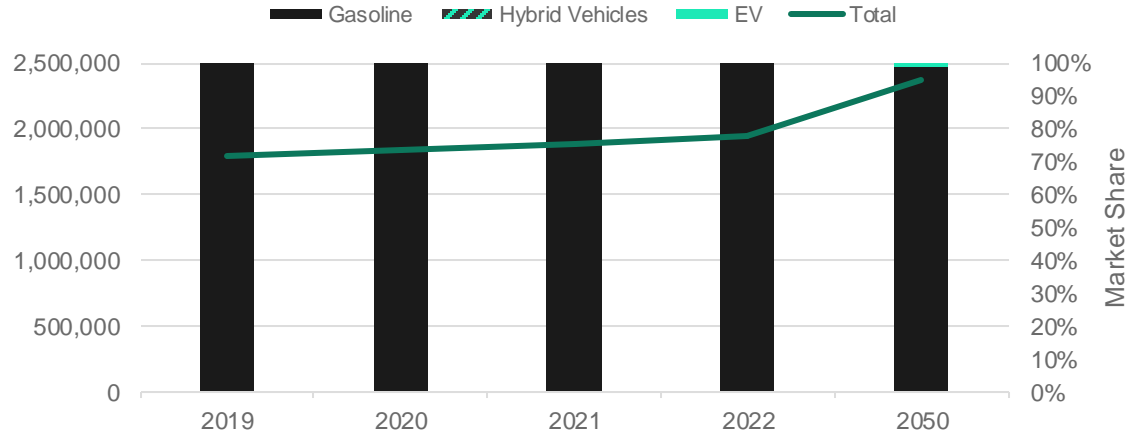
Qatar

Consumer behavior:
Low EV and hybrid adoption rate while overall fleet share is increasing (+24% fleet increase from 2022 to 2050)

Externalities:
No externality is expected to have a significant influence by 2050.

Population evolution:
*Qatari population will slightly decrease from **2.7 million in 2022**[1] to **3.4 million in 2050**[2], meanwhile its urbanization rate will go from **99.2%** to **99.7%**[3].*
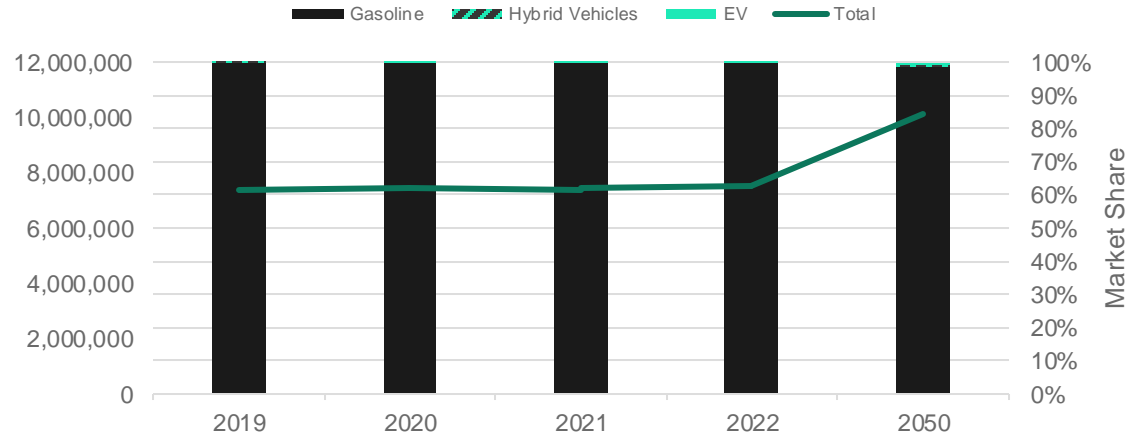
Regulation:
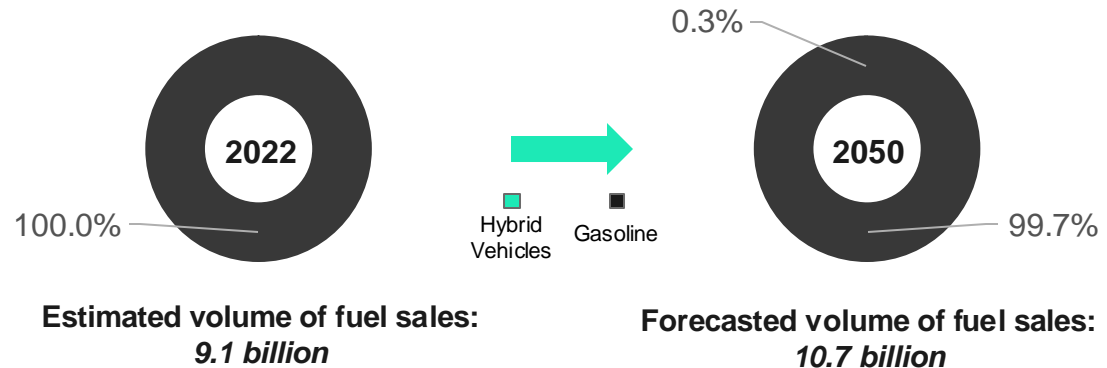*No significant regulatory changes are anticipated to 2050.*

SIAPARTNERS

Passenger car fleet by engine type

Legend: Gasoline, EV, Total

Aggregate fuel sales per engine type (in liters)

2022 — 100.0%

2050 — 100.0%

Legend: Hybrid Vehicles, Gasoline

Estimated volume of fuel sales:
819.1 million

Forecasted volume of fuel sales:
854.5 million

74
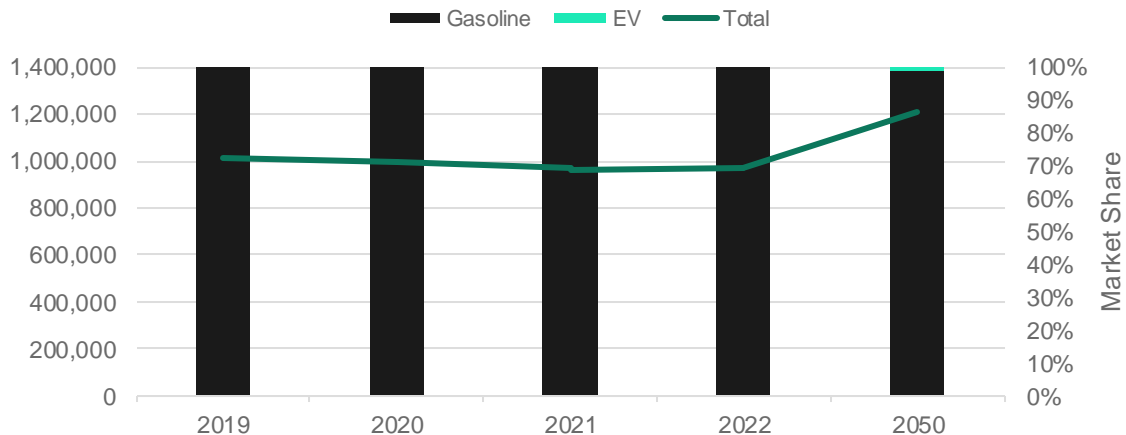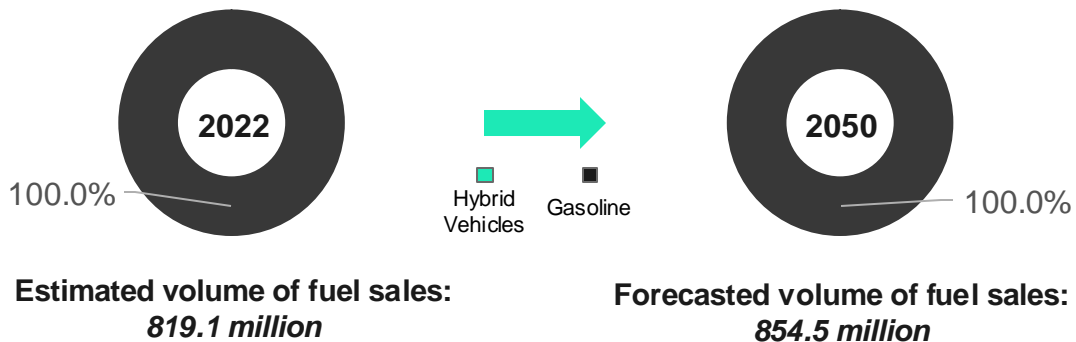
Bahrain

Consumer behavior:
Low EV and hybrid adoption rate while overall fleet share is increasing (+23% fleet increase from 2022 to 2050)

Externalities:
No externality is expected to have a significant influence by 2050.
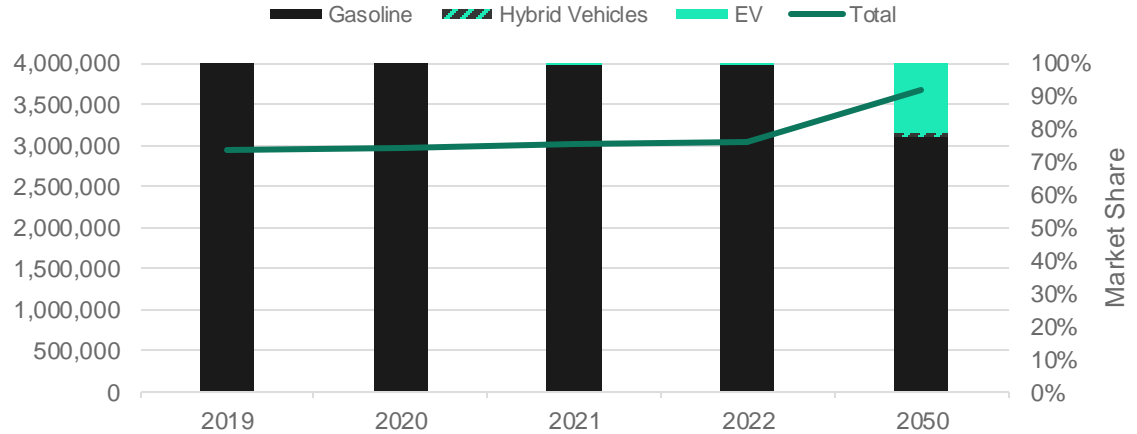
Population evolution:
*Bahraini population will slightly increase from **1.5 million in 2022**[1] to **1.8 million in 2050**[2], meanwhile its urbanization rate will go from **89.5%** to **93.2%**[3].*

Regulation:
No significant regulatory changes are anticipated to 2050.

Passenger car fleet by engine type

Legend: Gasoline — Hybrid Vehicles — EV — Total

Aggregate fuel sales per engine type (in liters)

2022 — 100.0%

2050 — 0.4% / 99.6%

Hybrid Vehicles — Gasoline

Estimated volume of fuel sales:
672.7 million

Forecasted volume of fuel sales:
743.1 million
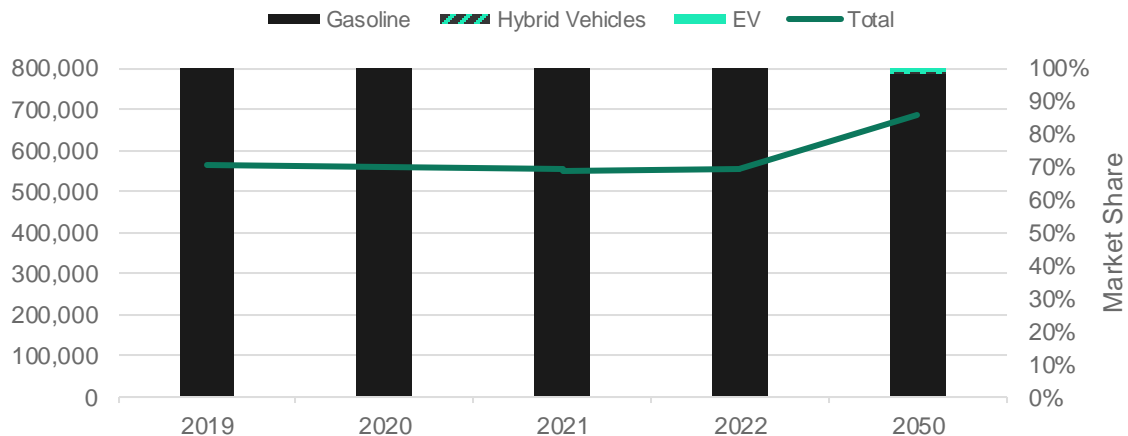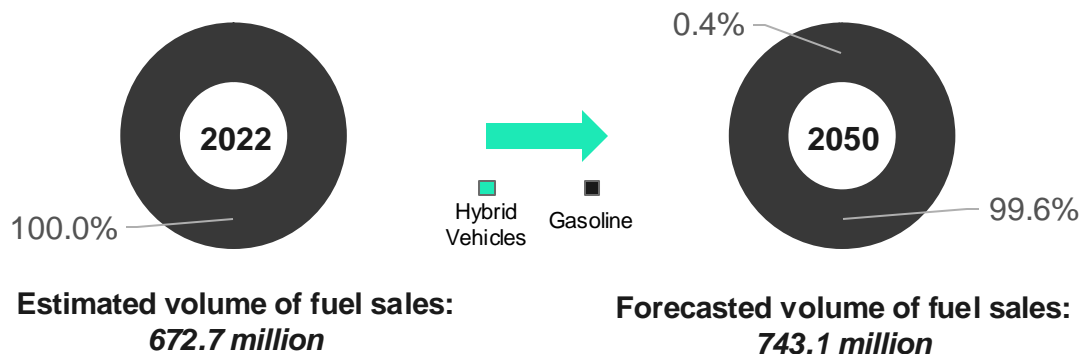
During the next decades, the GCC countries will be less challenged than other regions to transform traditional gas stations.

Indeed, the number of traditional gas stations is anticipated to increase by 18% in the region.

Nonetheless, by 2050, low carbon vehicle availability and technology will increase and the market will need to adapt to provide green fueling options to these consumers.

Only those which reinvent themselves to become customer-centric will survive.

II. Target Operating Model

Our framework to ensure a successful and fit-for-purpose Digital Transformation follows the below 4-steps path
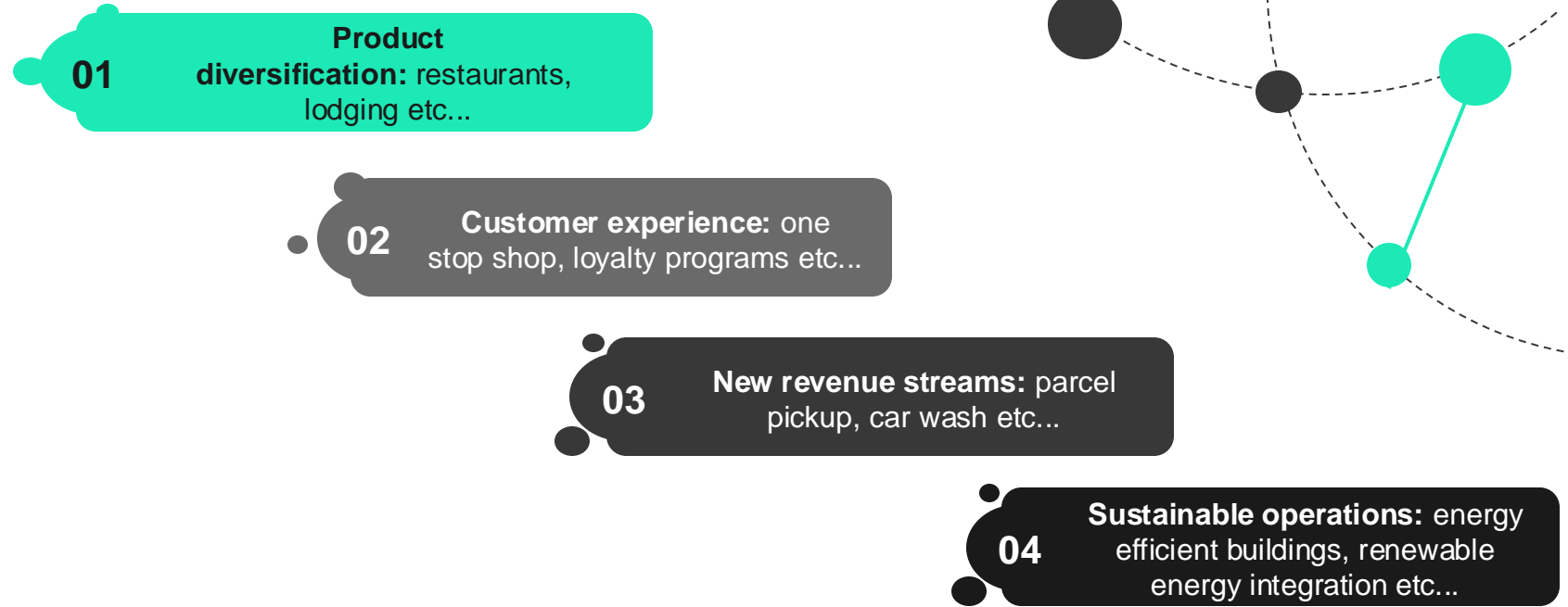
01   **Product diversification:** restaurants, lodging etc...

02   **Customer experience:** one stop shop, loyalty programs etc...

03   **New revenue streams:** parcel pickup, car wash etc...

04   **Sustainable operations:** energy efficient buildings, renewable energy integration etc...

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Energy Station Evolution in the Age of Hyper transformation

Fuel retail businesses have been undergoing significant evolution over the past years, with a major shift from fuel revenue to non-fuel revenue, underpinned by companies' ability to understand client preferences and monetize from there.

Fuel Distribution Evolution

Vintage	Minimalist	Standard	Integrated	Sustainable 4.0
Remote Gas Stations: • Fuel distribution only • Regulatory commitment	Urban Convenience Stores: • Fuel pumps • Parcel pickup • Low entry convenience store items	Self-Service Fuel Stations: • Silver Standard • Parcel pickup • Convenience store items • Car wash or tires or fluid checks • Balance focus between fuel supply and services	Full-Service Stations: • Gold Standard • Pleasant experience • Restaurants, lodging, others • Extra services (fluid, wash, tires, etc.) • ERP, CRM, Loyalty program, others • Focus on services is greater than fuel supply	Single integrated place for consumer: • Platinum Standard • Customer Obsession • One-stop-shop approach • Hyper automated with data monetization • Dinner and shopping experience • Focus shift from fuel supply to services

Energy Stations Target Operating Model Framework

For traditional gas stations to survive, companies should put innovation as a core of their Target Operation Model (TOM)

- Sustainable governance (ESG)
- Safety standards
- Security requirements
- Risk management
- Business processes

- Energy-efficient building
- Water and waste recycling
- Renewable energy integration

- Ownership model
- Cost of capital
- Partnerships (e.g. land, equipment)
- Investor preferences

Corporate Governance

Sustainable Operations

Capital Structure & Partnerships

Regulatory

Technology

Innovation

Externalities

Client Obsession

Data Analytics & Insights

Consumer behavior Changes

Customer Experience

- Data analysis
- Data monetization
- Informed decision-making

- Shared mobility
- Environmental awareness
- Additional services
- Ability to anticipate trends

- One stop-shop
- Speed of service
- Loyalty programs
- Payment facilities

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Calibrating your strategy and operating model with agility and innovation

Our approach to strategy will be matched with the diverse business environments according to the strategy spectrum.

Standards	Corporate Governance	Data Analytics & Insights	Consumer Behavior Adaptation	Customer Experience	Capital Structure	Sustainable Operations
Vintage ★	Lack of clarity Safety Governance	N/A	N/A	Inexistant or disaggregated initiatives	Local portfolio Local partnerships Family-Owned Business JODO	Reactive to regulation Minimum tracking on metrics
Minimalist ★★	There's recognition of the need for governance improvement	Inexistant or manual insights	Inexistant or manual insights	Convenience stores with a limited range of products And services. No loyalty programs	Local portfolio Local partnerships Family-Owned Business JODO / DODO	Basic awareness of sustainability Compliance with relevant regulations and industry standards
Standard ★★★	Clearly defined Safety Governance Security Governance	POC towards inventory management	POC towards inventory management	Conscious of non-fuel revenue and high margin products as critical metrics	Predominantly local portfolio DODO CODO Franchises	Defined sustainability goals and targets Regular monitoring and reporting Continuous improvement
Integrated ★★★★	Clearly defined ESG Framework Innovation and agility are integrated into governance	Inventory management, demand planning and first insights of customer preferences	EV charging points High quality and clean facilities Wide range of extra services Digital solutions implementation	Extra services & Customer Support Advanced loyalty programs Low entry Restaurants and recreational facilities	Regional portfolio Regional partnerships Joint venture models CODO & Franchises	ESG quality certification Recycling initiatives Water protection measures
Sustainable 4.0 ★★★★★	Clearly defined ESG Framework Innovation and agility are integrated into governance Robust Governing documents	Predictive analytics AI & machine learning Data monetization Data-Driven strategy	EV charging points Low carbon fuels Ride-sharing facilities Integrated extra services offer Digital solutions implementation	Partnerships as part of Operating model Dinner & Shopping Experience Advanced loyalty programs Engaging digital experience (e-payments.)	Global portfolio Global partnerships Joint venture models CODO & Franchises	ESG quality certification Green building Smart waste management Recycling strategy Water protection measures

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Corporate Governance & Risks Management

Shareholders

Board of Directors

Executive Committee

Investment Committee

Remuneration & Nomination Committee

ESG Committee

Risk & Audit Committee

General Management

| Develop Business Strategy | Manage Business Performance | Manage External Relationships | Allocate and Manage TotEx | Manage Health, Safety, Security and Environment | Manage Cyber Security | Manage Data and Analytics | Manage Sustainability | Manage Transformation / Change |

Manage Product Storage and Distribution Network
- Develop storage and distribution operating model
- Manage inbound materials flow
- Collect and release physical inventories
- Reconcile book to physical inventories
- Operate storage and distribution network

Manage outbound logistics
- Schedule loading/ routing
- Pick / pack products
- Load & Dispatch products
- Ship products
- Discharge products
- Settle Movement Transaction

Manage customer
- Plan and manage customer service contacts
- Manage customer service problems, requests, and inquiries
- Manage product audits

Manage sales and demand planning
- Formulate integrated sales channel strategy
- Create constrained demand plan
- Monitor segment / customer performance vs demand plan

Manage retail
- Formulate retail strategy
- Formulate non-fuel retail strategy
- Implement fuel and non-fuel retail strategy
- Operate fuel and non-fuel retail network
- Manage on-site partners, dealers, brands

Manage customer service
- Manage customer and partner query/service requests
- Manage field customer service staff
- Provide technical support & services
- Manage claims and complaints
- Seek and manage customer feedback
- Capture service and product demand
- Manage inbound & outbound communications

Manage customer invoices and credit memos
- Maintain and manage pricing and rate tables
- Perform billing and settlements
- Perform customer reporting

Support Functions

| Manage Supply Chain | Manage Finance and Tax | Manage IT | Manage Human Capital | Manage Property, Real Estate and Fleet | Manage Legal Affairs |

Key Drivers for Risk Management

Sustainable Governance
- Transition to Alternative Fuels
- Emissions Reduction Measures
- Hazardous Materials Handling

Safety Governance
- Infrastructure Upgrades
- Emergency Preparedness
- Spill containment systems and fire suppression systems

Security Governance
- Increased Surveillance and Monitoring
- Access Control and Authentication
- Cybersecurity Measures

Corporate Governance

Sustainable Governance

Transition to Alternative Fuels:
Environmental policies promoting the reduction of GHG emissions are pushing traditional gas stations to transition to alternative fuels such as ethanol blends, biodiesel or renewable diesel.

Emissions Reduction Measures:
Stricter emissions standards on gas stations require the implementation of measures to minimize air and water pollution. For example: upgrading equipment to reduce vapor emissions during fueling and installing pollution control devices.

Hazardous Materials Handling:
Environmental regulations govern the handling of hazardous materials such as fuel and lubricants. Therefore, implementing spill containment measures, upgrading storage tanks and installing leak detection systems might be required.

Safety Standards

Infrastructure Upgrades:
Improved fuel storage tanks, spill containment systems and fire suppression systems. These upgrades enhance safety for both employees and customers.

Emergency Preparedness:
Safety standards typically mandate emergency response plans and equipment at gas stations. This could involve training staff in emergency procedures, providing fire extinguishers and first aid kits, and having protocols in place for addressing fuel spills or other accidents. Improved emergency preparedness enhances overall safety and can mitigate potential risks.

Security Requirements

Increased Surveillance and Monitoring:
Gas stations may need to implement more advanced surveillance systems including CCTV cameras, motion sensors and possibly even drones for aerial monitoring. These systems would help deter criminal activity such as theft, vandalism and fraud.

Access Control and Authentication:
Gas stations may adopt stricter access control measures to ensure only authorized personnel are able to enter sensitive areas such as fuel storage facilities or cash handling areas. This could involve biometric authentication systems or keycard access.

Cybersecurity Measures:
With the increasing digitization of gas station operations, cybersecurity becomes paramount to protect against cyber threats such as hacking, data breaches or ransomware attacks. Gas stations will need to invest in robust cybersecurity solutions to safeguard customer data, financial transactions and critical infrastructure.

Customer behavior Drivers

Shifting consumer preferences and behaviors redefine the operational landscape of energy stations, driving the need for innovative adaptations and streamlines strategies

- Provide **charging infrastructure** (fast-charging stations, offering a variety of charging options (i.e. DC fast charging and Level 2 charging)
- Diversifying revenue streams by offering **vehicle maintenance or retail services to EV drivers** while they charge.

- Incorporate **environmentally friendly practices** such as offering biofuels.
- Installing **solar panels for energy generation.**
- Implementing **waste reduction measures** to appeal to eco-conscious consumers.

- The future of transportation is likely to involve a **mix of personal vehicles, shared mobility services, and autonomous vehicles**.
- Energy stations may need to adapt their operating models to cater to these changing mobility trends, such as **providing facilities for ride-sharing services, offering amenities** for waiting passengers, or **incorporating infrastructure for autonomous vehicle refueling** or maintenance.

Shift Towards EVs

Demand for Convenience & Digital Solutions

Focus on Environmental Responsibility

Demanding Evolution

Additional Services

New Mobility Trends

Chasing Differentiation
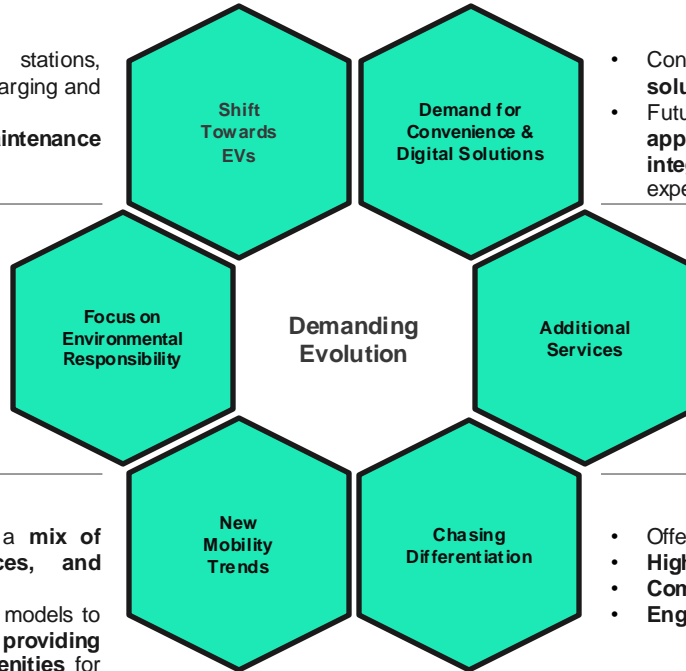
- Consumers increasingly **prioritize convenience and digital solutions** in their interactions with businesses.
- Future energy stations need to offer services such as **mobile app payments, pre-ordering of fuel or snacks, and integration with loyalty programs** to enhance the customer experience and meet evolving consumer expectations.

- Diversifying into **complementary businesses such as electric vehicle charging, car wash services, convenience stores, food and beverage offerings**
- Becoming hubs for **last-mile delivery services.**

- Offering amenities such as **clean facilities.**
- **High-quality food and beverages**
- **Comfortable rest areas**.
- **Engaging digital experiences** to attract and retain customers.

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Sustainable Operations Drivers

Sustainable operations revolutionize energy station operating models, integrating renewable energy sources, efficient resource management and eco-conscious practices to minimize environmental impact while maximizing profitability.

Energy Efficiency and Renewable Energy Integration

Future enery stations are likely to prioritize energy efficiency and integrate renewable energy sources into their operations. This may involve installing solar panels on the station's roof to generate clean electricity, using energy-efficient LED lighting, and implementing smart energy management systems to optimize energy usage. These initiatives reduce the station's carbon footprint, lower operating costs, and demonstrate a commitment to environmental sustainability.

Alternative Fuels and Electric Vehicle Charging Infrastructure

As the automotive industry shifts towards EVs and alternative fuels, future energy stations will need to adapt their offerings accordingly. They may install EV charging stations, hydrogen fueling stations or biofuel pumps to cater eco-conscious consumers. This requires investments in infrastructure, equipment and training to support the adoption of clean transportation technologies.

Waste Management and Recycling

Sustainable energy stations will implement comprehensive waste management and recycling programs to minimize waste generation and promote resource conservation. This may involve segregating and recycling waste materials such as plastics, paper, glass and oil, as well as implementing composting facilities for organic waste. Additionally, energy stations may expbre innovative solutions for repurposing or upcycling waste materials to create value-added products.

Green Building Design and Construction

Future energy stations will embrace green building principles and sustainable construction practices to minimize environmental impacts and enhance operational efficiency. This may include using eco-friendly building materials, designing energy-efficient building layouts, and incorporating natural ventilation and daylighting strategies. Green building certifications such as Leadership in Energy and Environmental Design (LEED) may be pursued to validate the station's commitment to sustainability.

Water Conservation and Management

Sustainable energy stations will implement measures to conserve water resources and minimize water wastage in their operations. This may involve installing water-efficient fixtures and appliances, implementing rainwater harvesting systems, and adopting water recycling and reuse technologies. By reducing water consumption and promoting responsible water management practices, energy stations can contribute to environmental conservation efforts.

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Customer Experience Enhancement Drivers

Optimizing customer experience will contribute to the transformation of energy station operational framework, the streamlining of service delivery and the fostering of loyalty-driven growth.

Customer Service & Support

Broad lines of services minimize customer wait times. Offering a customer feedback survey to gather customer opinions and to build on their feedback.

Employee Training & Engagement

Empowering employees to take ownership of the customer experience and providing incentives for delivering outstanding service can further enhance customer satisfaction

Service Design

Integrating convenience stores with a wider range of products, implementing efficient and user-friendly fueling systems, and providing amenities such as EV charging stations, car wash services, and clean restrooms.
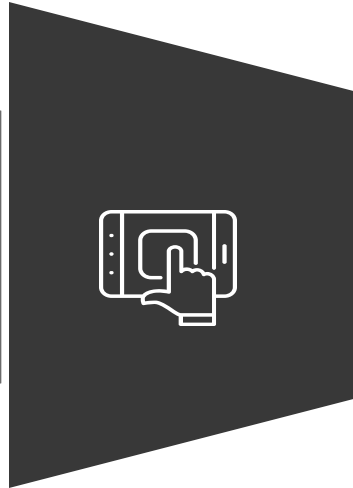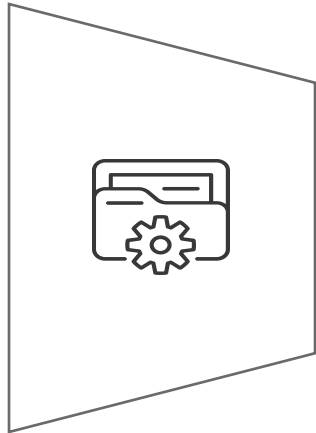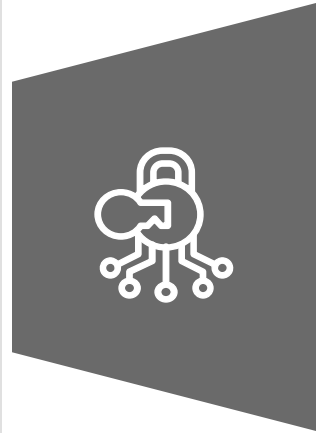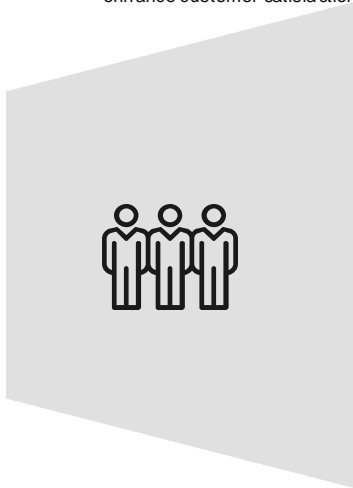
Technology & Innovation

Implementing mobile apps for payment and loyalty programs, self-service options for fueling and item purchase, and advanced analytics to personalize offerings based on customer preferences and behavior.

Loyalty Programs & Rewards

Customers collect points for purchases to exchange for cashback or free products. Offer increasing rewards as customers climb a "loyalty ladder".

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Capital Structure and Partnerships Drivers

Capital structure and partnerships sculpt the operational blueprint of energy stations, defining efficiency and growth trajectories.

Ownership model

Types of commercial arrangements vary from region to region, independent trading companies more active on fuel retail.

DODO: Dealer-Owned, Dealer-Operated: Dealers own the retail outlet and operate independently, purchasing fuel from wholesalers or directly from oil companies

CODO: Company-Owned, Dealer-Operated: Fuel retail outlet is owned by the oil company but operated by an independent dealer

JODO: Jobber-Owned, Dealer-Operated: Jobbers, who are wholesale distributors, own the fuel retail outlet but an independent dealer operate it.

FRANCHISES: Dealers operate under franchise agreements with major fuel companies allowing them to use company branding and access their supply chain in exchange for royalties or fees.

Partnerships

Premium location higher upside for additional revenue streams

Land
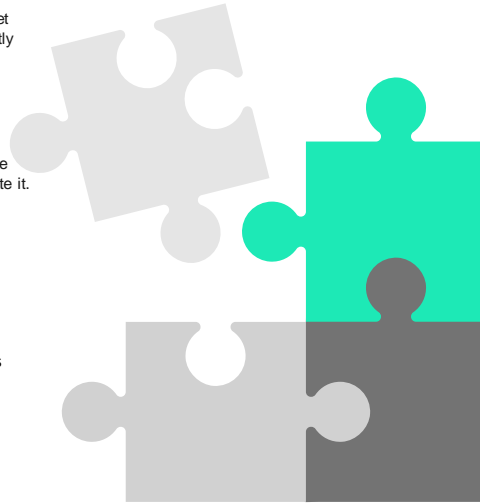One of the key cost drivers for pricing and profitability

Equipment
Fuel Dispensers |Underground Storage Tanks | Point of Sales (POS) | Canopy |Operations & Security System

Fuel, products and Inventory
Owned by the Oil Company |Owned by Dealer/Owner |Owned by Wholesale/Supplier

Convenience Stores
Non-fuel revenue stream
Partnerships

WACC*

Country risk, local regulation and foreign exchange (forex) exposure are a few drivers that will define the capital structure and commercial arrangements

Cost of equity   Regulatory risk

Cost of debt   Liquidity risk

Country risk   Forex exposure

Portfolio management

End-to-end value chain opportunities through greenfield and brownfield initiatives

Local
Market consolidation stage
Low risk appetite for expansion

Regional
Risk appetite for expansion
Active M&A portfolio management
Medium-mature operating model

Global
Top tier integrated energy companies
Full fledge operating model

*Weighted Average Cost of Capital

Data Analytics and Insights Drivers

Unlocking the power of data analytics redefines energy station operations by driving informed-based decisions, streamlined processes, and superior service.

Data Monetization

Energy stations can monetize their data by leveraging insights to develop new revenue streams beyond traditional fuel sales.

- **Partner with third-party** vendors to offer targeted advertising opportunities based on customer profiles and purchase history.

- Sell anonymized data **to market research firms, insurance companies, or urban planners seeking insights** into consumer behavior, traffic patterns, and transportation trends.

- Explore opportunities to diversify product offerings by integrating adjacent services such as electric vehicle charging stations, car wash facilities or convenience stores with **data-driven inventory management.**

Informed Decision-Making

Energy stations can leverage data analytics to optimize various aspects of operations including inventory management, fuel pricing and staffing.

- **Replenish fuel supplies by analyzing historical sales data**, customer trends and external factors.
- **Adjust pricing strategies** to remain competitive.
- **Schedule staff shifts based on peak demand** periods raised by data analysis.

This optimization can lead to improved efficiency, reduced costs, and increased profitability.

Data Analysis

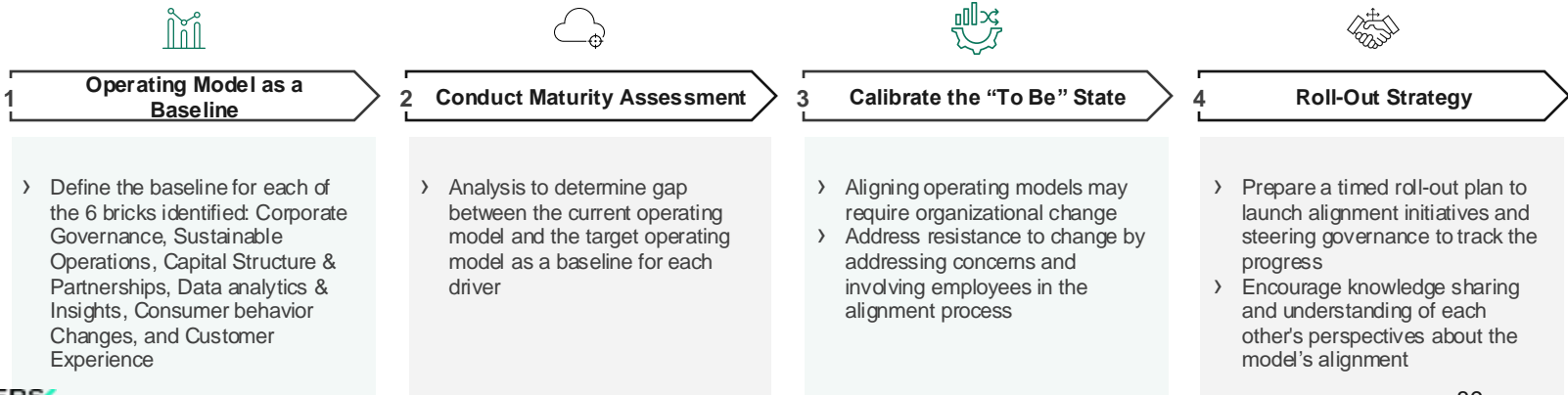Energy stations can analyze data to optimize marketing, sales and customer trend.

- Analyze transaction data and customer demographics **to personalize promotions and loyalty programs to incentivize repeat visits** and increase customer satisfaction.

- **Data-driven insights can inform decisions about store layout, product placement and amenities** to create a more pleasant and convenient shopping experience for customers.

Proposed Methodology to Reshape Energy Station Target Operating Models

Target Operating Model

Corporate Governance
Clearly define the formal organization structure, business units, functions and reporting lines

Sustainable Operations
Integrate renewable energy sources, efficient resource management and eco-conscious practices to minimize environmental impact while maximizing profitability.

Consumer behavior
Redefine the operational landscape of your energy stations to match the shifting consumer preferences and behaviors

Capital Structure & Partnerships
Sculpt the operational blueprint of energy stations, defining efficiency and growth trajectories.

Customer Experience Enhancement
Optimize customer experience while streamlining the service delivery and fostering the loyalty-driven growth.

Data Analytics & Insights
Unlock the power of data analytics for informed-based decisions, streamlined processes, and superior service.

Our methodology to reshape energy station target operating models

1 Operating Model as a Baseline
› Define the baseline for each of the 6 bricks identified: Corporate Governance, Sustainable Operations, Capital Structure & Partnerships, Data analytics & Insights, Consumer behavior Changes, and Customer Experience

2 Conduct Maturity Assessment
› Analysis to determine gap between the current operating model and the target operating model as a baseline for each driver

3 Calibrate the "To Be" State
› Aligning operating models may require organizational change
› Address resistance to change by addressing concerns and involving employees in the alignment process

4 Roll-Out Strategy
› Prepare a timed roll-out plan to launch alignment initiatives and steering governance to track the progress
› Encourage knowledge sharing and understanding of each other's perspectives about the model's alignment
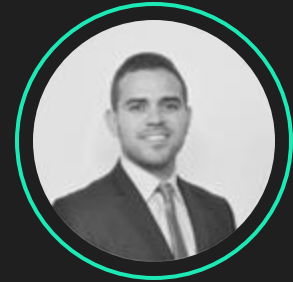
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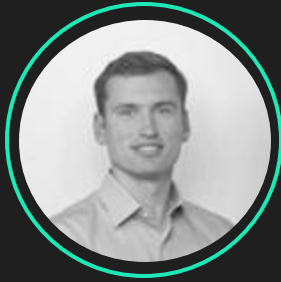
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Meeting the Team

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