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Global Fleets Drive to Decarbonization

FROST & SULLIVAN WHITEPAPER

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Introduction

The movement towards sustainability and decarbonization comes as fleets face mounting pressures from governments, customers, and value chain partners to improve their environmental footprint. Frost & Sullivan's research underscored these trends: in 2024, Frost & Sullivan interviewed hundreds of commercial fleet decision-makers across Europe, the US, Australia, and New Zealand about their journey toward electrification. Seventy percent of respondents noted that decarbonization was either an "important" or "cornerstone" component of their business strategy. Nearly two-thirds (63%) specifically noted they had a low-carbon goal they needed to achieve by or before 2030.

Adopting EVs and investing in EV infrastructure are key strategies for businesses working toward decarbonization goals. The participants in the research identified battery electric vehicles (BEVs) as a technology of choice. Very large fleets (over 500 vehicles) were also investing in plug-in hybrid electric vehicles (PHEVs) at a high rate, which, when combined with existing internal combustion engine (ICE) vehicles, illustrates the emergence of mixed-energy fleets in the marketplace.

The electrification of commercial vehicle fleets offers businesses significant benefits, from cost savings to environmental impact reduction, prompting many to switch their delivery vans, trucks, and other commercial vehicles to EVs.

The top drivers in the survey for adopting EVs were to reduce carbon emissions, meet decarbonization goals, and realize cost savings (Figure 1), though the segment of very large fleets ranked cost savings and total cost of operation (TCO) as more important than carbon-related drivers.

FIGURE 1: Top 10 Drivers for Fleet Adoption of EVs Ranked

Rank	Driver
1	Reducing carbon emissions
2	Meet decarbonization goals
3	Cost savings
4	Advancements in battery technology
5	Brand image/reputational risk
6	Lower EV buying/operating costs compared to ICE
7	EV charging costs are lower than ICE fuel
8	Expansion of charging network
9	Competitive advantage
10	Government policies

Source: Frost & Sullivan

The heavily intertwined goals of reducing carbon footprint overall and meeting decarbonization goals were the leading reasons that businesses and government entities were adopting EVs. Many organizations have set ambitious environmental targets to control their carbon footprints. For example, in the US, Amazon has already installed 17,000 EV chargers as it embarks on a multi-year program integrating 100,000 Rivian electric vans, and major carrier FedEx plans to convert its entire pick-up and delivery fleet to EVs by 2040[1]. In Europe, businesses as diverse as IKEA and Deutsche Post DHL are pledging to electrify large swaths of their fleets.[2] Fleet operators view these commitments as necessary to align with public sentiment towards sustainability and help ensure their businesses remain compliant with expanding government mandates.

[1] https://insideevs.com/news/716230/amazon-installed-over-17000-chargers-for-rivian-edvs/ and https://newsroom.fedex.com/newsroom/global/brightdropev600

[2] https://www.ikea.com/global/en/newsroom/sustainability/ikea-commits-to-zero-emission-on-heavy-duty-vehicles-220920/ and https://www.smartenergydecisions.com/energy-management/2021/03/25/dhl-expands-electric-fleet-and-sets-new-carbon-targets

EV Cost Dichotomy: Highly Ranked Driver, Challenge

Frost & Sullivan's research uncovered a dichotomy in the perceived financial implications of fleet electrification. On one side, the results highlighted the reduced operating costs of EVs as a major driver for adoption, and lower costs were the leading drivers for decarbonization overall. At the same time, respondents noted that the cost of purchasing EVs was problematic. While the research did not explicitly resolve this contrast, it may be that the up-front capital costs of purchasing EVs were concerning, while at the same time, respondents recognized EV's long-term operational savings over ICEs.

Over time, EVs can provide businesses with a significant financial advantage. Fewer moving parts can translate to lower maintenance expenses and longer lifespans that help offset higher EV purchase prices. Using electricity to power an EV is typically less expensive than powering an ICE vehicle with gas or diesel. Similar to fuel prices, electricity prices can also fluctuate. However, electricity rates typically adjust less frequently—and more predictably—than volatile fossil fuel prices, resulting in greater price stability and allowing for more accurate planning. These factors combine to deliver a compelling total cost of ownership (TCO) advantage for EVs over ICE vehicles.

However, the survey also revealed that the upfront financial impacts of purchasing EVs were the leading impediment to EV adoption. High upfront cost was the top challenge to adopting EVs as part of a fleet. A substantial upfront investment may pose an obstacle that can be counterbalanced in the long-term by savings in charging, operating, and maintaining EVs.

Navigating this dichotomy necessitates a sophisticated approach from fleet operators. "To fully benefit from the high-value potential of electrification, it is crucial to make informed decisions based on energy demand predictions," says Gideon van Dijk, founder and CEO of Chargetrip, a range prediction and EV routing platform company. Van Dijk continues: "By understanding the energy demand profile of your existing fleets, you can optimize your future mixed-fleet configuration." According to van Dijk, prioritizing routes for electrification, selecting appropriate vehicle types, determining battery capacity needs, scheduling overnight charging, and minimizing ad hoc charging costs are key considerations.

Utilizing EV fleet simulation tools can enable fleet operators to gain crucial business intelligence for scalable electrification that maximizes the returns on existing ICE assets while, over time, capitalizing on EV's TCO benefits. Chargetrip's EV fleet simulation tool has demonstrated that with operational adjustments, 72% of routes could be immediately electrified without en-route charging. Even without any adjustments, 55% of routes could be electrified. The transition to electric vehicles also led to a significant reduction in operational expenditure of up to 15%.[3]

[3] https://www2.deloitte.com/nl/nl/pages/consumer/articles/scaling-the-transition-towards-zero-emission-fleets.html

EV Fleet Integration

Along with balancing investment considerations, effectively deploying mixed-energy fleets presents fleet operators with operational hurdles (Figure 2). Route planning and optimization topped the list of fleet integration challenges due to differing fuel stations and charging locations.

Transitioning to alternative energy sources is fundamentally different from managing ICE fleets and introduces a higher level of operational complexity, "ranging from maintaining and retrofitting depots to managing logistics like planning and dispatching," according to van Dijk. "Running an electric fleet is fundamentally different from its diesel and petrol predecessors. You need charging infrastructure, accurate energy demand predictions, optimized routes, and en-route charging support. Companies like Chargetrip offer operational intelligence to electric fleets worldwide, providing an API with intelligent EV-based routing for all EV makes and models, a global database of charging stations, detailed emissions reporting, and other features."

"The planning complexity for fleet managers increases substantially when you add EVs to your fleet: it's not just optimizing vehicle utilization anymore, but also optimizing charger utilization," says Sarah Booth, director of strategic business operations at Sawatch Labs, a WEX company, which provides fleet electrification analysis. Battery state of charge, battery pre-conditioning schedules and charging rate data can all introduce new data streams to fleets that go beyond traditional ICE norms. As such, data consolidation and analysis across vehicle types were also deemed to be difficult and limited a business' holistic fleet oversight. Without unified analytics, EVs' distinct operational profiles can obscure data-driven decision-making and hinder the optimization of routes and en-route charging support.

Integrating new EV vendors and software alongside existing ICE systems creates administrative challenges for fleet operators. As electrification grows, solutions consolidating vendor management and unifying operations across all vehicle powertrains will be essential to overcoming these integration challenges.

FIGURE 2: Top 10 Drivers for Fleet Adoption of EVs Ranked

Rank	Challenge
1	Route planning and optimization due to different ICE fueling vs. EV charging locations
2	Collecting and analyzing data across the fleet
3	Managing different vendors for ICE and EV
4	Integrating fleet management software

EVs and the Path Forward

As electrification accelerates, overcoming operational complexities will be of primary concern for running a competitive business. Frost & Sullivan's research shows that many companies and government organizations with a fleet of vehicles believe they are at the point in which EV adoption is becoming very compelling. In the survey, 42% of respondents estimated that half or more of their fleet would be composed of EVs by 2030. At the high end, one in five fleets in France is expected to be 100% EV by 2030. In the US and Germany, which had the lowest current penetration of EVs in their fleets, 64% or more of businesses expected to have at least 25% EVs by 2030[4].

Despite upfront costs and infrastructure concerns, new and evolving financing solutions are facilitating the transition to mixed-energy fleets. Companies serving fleet operators are responding with options that address current challenges, empowering operators to continue to capitalize on EV opportunities. For example, purpose-built fleet card solutions that consolidate charging and utility payments can help alleviate administrative burdens. Combined with tailored software that unifies data and optimizes fleet deployment, these solutions help address EV integration challenges and pave a path toward a better financial and environmental picture.

For more in-depth insights and analysis, download the full white paper here.

About the survey

Frost & Sullivan interviewed 503 decision-makers at businesses with mixed EV and ICE fleets in 2024. The regional split for these interviews was as follows: France, 65 respondents; Germany, 60 respondents; Italy, 65 respondents; UK, 61 respondents; Benelux, 22 respondents; United States, 105 respondents; Australia, 60 respondents; New Zealand, 60. Fleet size definitions and corresponding respondents were: Very small fleets 2-4 vehicles, 101 respondents; small fleets 5-49 vehicles, 114 respondents; medium fleets 50-99 vehicles, 116 respondents; large fleets 100-499 vehicles, 115; very large fleets, 500 vehicles or more, 57 respondents.

Data referenced in this paper is based on the Frost & Sullivan survey unless otherwise stated and does not claim to represent the entire fleet user population. Percentages may not always total 100% due to rounding. The interpretations and conclusions drawn are those of the authors representing Frost & Sullivan and do not necessarily reflect the views of WEX, the respondents of the survey, or their organizations.

[4] Sixty-four percent of German fleets and 74% of US fleets stated they planned to have between 25% and 100% EV penetration by 2030.

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