WHEN ELECTRIFYING A FOOD-DELIVERY FLEET PAYS, AND WHEN IT DOES NOT

A five-year total-cost-of-ownership analysis for European operators, updates for the 2026 energy shock

Published 24 July 2026. All prices are stated as of 13 July 2026. The disruption affecting the Strait of Hormuz remained ongoing at the time of publication, and liquid-fuel prices have continued to rise since the 13 July snapshot, which means the thresholds presented here are conservative. Fuel-price assumptions should therefore be updated before the analysis is used to support an investment decision.

Electrification remains one of the most important pathways for reducing transport emissions, improving urban air quality, lowering noise, and reducing dependence on imported fossil fuels. Those benefits provide a strong case for continued investment in electric mobility.

This analysis focuses on a narrower question: when does electrification also make commercial sense for food-delivery operators? The answer depends less on whether electric vehicles are desirable in principle and more on how they are used, charged, and financed in practice. Identifying those conditions strengthens the case for electrification by helping operators avoid poor investments and direct capital toward the vehicle classes and charging models where the benefits are greatest.

WHAT THE MODEL SHOWS

- **The 2026 shock affected liquid fuels far more than electricity.** EU petrol prices rose by 13% and diesel prices by 14% between 23 February and 13 July 2026, while electricity prices remained broadly stable. This reduced every electrification threshold in the model by 11–15%. As Section 4.1 explains, this result holds regardless of the assumed vehicle purchase price.
- **Charging strategy determines whether the commercial case exists.** Depot and public rapid-charging tariffs differ by a factor of 3.5, a wider spread than the full 2026 increase in fuel prices. Depot, workplace, or other controlled charging arrangements can preserve the operating-cost advantage of electric vans. Reliance on public rapid charging can remove that advantage entirely, making electrification commercially unattractive under the assumptions used in this model.
- **Utilisation determines which vehicle classes are commercially viable.** Electric two-wheelers clear the threshold easily, depot-charged vans do so comfortably, and passenger cars remain close to the margin. Under an electricity-price shock, cars lose their cost advantage entirely. The ranking is robust, although the precise mileage thresholds are illustrative.
- **Electrification is best understood as a hedge rather than a guaranteed saving.** Its value lies in shifting expenditure away from volatile, geopolitically exposed liquid fuels toward a potentially more stable and locally contracted energy source. That hedge only works where utilisation is sufficiently high and charging costs remain under the operator's control.

1. The question worth asking

Electric vehicles do not improve energy resilience simply because they are electric. They do so when three conditions align: the vehicle is used intensively, routes are urban and predictable, and charging is controlled rather than improvised. Where these conditions do not hold, electrification may shift energy risk rather than reduce it.

This matters because the conventional question is too broad. Asking whether electric vehicles are cheaper than petrol or diesel vehicles invites a yes-or-no answer that is misleading in both directions. The more useful question is narrower and operational: under what conditions does electrification reduce total cost and exposure to energy-price shocks? The answer can be quantified, and it differs materially across scooters, cars, and vans.

This analysis addresses that question through a five-year total-cost-of-ownership model designed around food-delivery duty cycles in the European Union. All results derive from the assumptions set out in Annex A. The model is deliberately conservative. It excludes purchase subsidies, tax exemptions, congestion-charge differentials, and low-emission-zone benefits, each of which would strengthen the commercial case for electric vehicles in many major European cities.

What these numbers are, and are not

The vehicle purchase prices, residual values, insurance rates, and financing terms used in this analysis are indicative market midpoints and author assumptions rather than supplier quotations. Annex A documents them in full. These assumptions materially affect the absolute results. For example, varying the electric vehicle purchase premium by 25% in either direction changes the annual break-even mileage for a passenger car from approximately 3,200 kilometres to 38,800 kilometres.

The absolute mileage thresholds and euro values should therefore be treated as illustrative. They show how the model works and how the economics change under different operating conditions. They do not replace an operator-specific assessment based on actual vehicle, financing, insurance, and charging costs. The accompanying spreadsheet is designed for that purpose.

The comparative findings are more robust. The direction and scale of the change caused by the 2026 energy shock, the relative ranking of vehicle classes, and the effect of charging strategy do not depend on the assumed purchase prices. Section 4.1 explains and tests this result.

2. Why the answer changed in 2026

The disruption affecting the Strait of Hormuz from 28 February 2026 provided a clear real-world test of how different energy systems respond to the same shock. Oil prices rose sharply, while European electricity prices remained broadly stable.

Between 23 February and 13 July 2026, the EU weighted-average pump price for Euro-super 95 increased from €1.637 to €1.851 per litre, while automotive diesel rose from €1.594 to €1.823. Diesel prices briefly exceeded €2.07 per litre across the EU in late March. Over the same period, electricity prices changed little. Eurostat recorded average household electricity prices of €0.2896 per kWh in the second half of 2025 and non-household prices of €0.1837 per kWh, with the latter continuing the gradual downward trend observed since early 2023.

This difference in price movements is central to the analysis. An oil-driven shock widens the operating-cost advantage of electric fleets without changing the upfront purchase-cost gap between electric and combustion vehicles. As a result, every utilisation threshold in the model shifts in favour of electrification.

Scenario	Petrol €/l	Diesel €/l	Electricity
Pre-crisis – 23 Feb 2026	1.637	1.594	unchanged
Current – 13 Jul 2026 (baseline)	1.851	1.823	unchanged
Crisis peak – Mar–May 2026	1.900	2.076	unchanged
Electricity stress case	1.851	1.823	+50%

Table 1. Energy price scenarios used in the model

Sources: European Commission Weekly Oil Bulletin, EU weighted average, weeks ending 23 February and 13 July 2026. Eurostat nrg_pc_204 and nrg_pc_205, second half of 2025. Charging tariffs by archetype are set out in Annex A.

FINDING ONE

HIGHER UTILISATION STRENGTHENS THE ELECTRIC CASE

3. Finding one: Higher utilisation strengthens the electric case

The strongest predictor of whether electrification pays is not the vehicle, the city, or even the tariff in isolation. It is how intensively the asset is used. The electric vehicle premium is paid upfront, while the operating-cost advantage is earned kilometre by kilometre. The commercial case therefore depends on whether annual mileage is high enough to recover the additional purchase cost within the investment period.

Figure 1. Higher utilisation strengthens the electric case

Five-year TCO difference (EV minus ICE) at July 2026 fuel prices. Shaded orange = EV cheaper

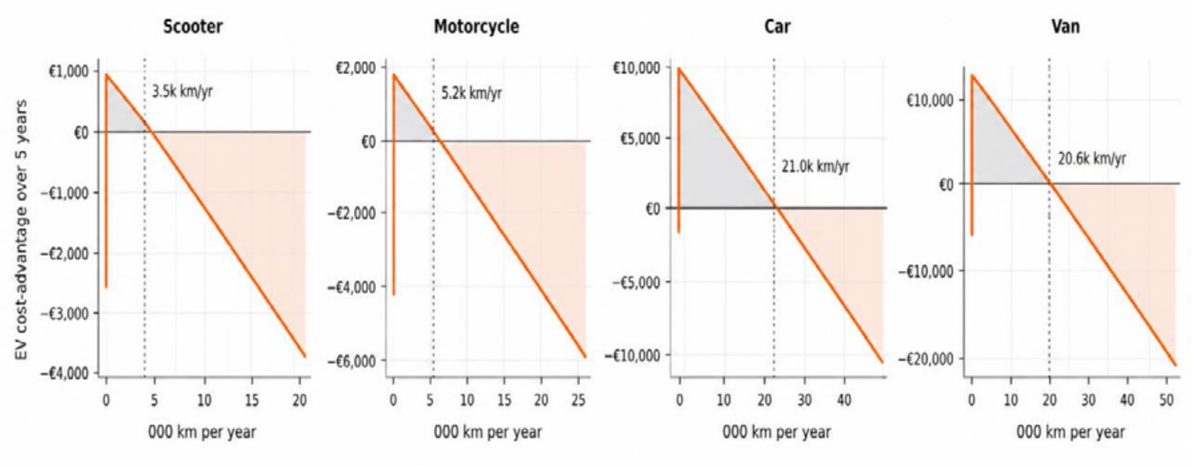

Figure 1. Five-year total cost of ownership, electric minus combustion, at July 2026 fuel prices. Where the line sits below zero the electric vehicle is cheaper over the ownership period. Source: author's model, Annex A.

At typical delivery mileage, electric two-wheelers and vans make financial sense, while cars are borderline. The van comparison is at vehicle level and excludes depot charger capital expenditure.

Vehicle class	Annual km	Combustion pre-crisis	Combustion current	Combustion peak	Electric	Electric +50% power
Scooter	15,000	€7,700	€8,200	€8,300	€4,900	€5,300
Motorcycle	20,000	€12,400	€13,100	€13,300	€7,900	€8,700
Car	25,000	€44,300	€46,000	€46,400	€44,100	€47,000
Van	30,000	€74,500	€77,700	€81,300	€70,900	€75,800

Table 2. Five-year total cost of ownership at baseline utilisation

ILLUSTRATIVE. Nominal 2026 euros over a five-year ownership horizon, including purchase, financing, insurance, energy and maintenance, net of residual value. Built on indicative market purchase prices, not quotations – see section 1 and Annex A. Excludes purchase subsidies, congestion charges and low-emission-zone differentials, which generally favour the electric case. Source: author's model, Annex A.

Under the model assumptions, electric scooters and motorcycles are roughly 40% cheaper over five years at delivery utilisation. Depot-charged vans also perform well at the vehicle level, subject to a separate assessment of charger installation, grid connection, infrastructure financing, and charger utilisation. Cars sit close to the line: €1,900 ahead at baseline, but €1,000 behind once electricity prices rise by half. Passenger cars are therefore the vehicle class most sensitive to operating conditions and assumptions.

FINDING TWO

THE FUEL SHOCK LOWERED EVERY THRESHOLD

4. Finding two: the fuel shock lowered every threshold

Because the 2026 shock raised liquid-fuel prices while electricity remained stable, electrification became easier to justify across all vehicle classes, without any change in vehicle prices, battery costs, or policy.

Figure 2. The 2026 fuel shock lowered every electrication threshold

Annual mileage above which a battery-electric vehicle is cheaper over five years. Lower is better for EVs.

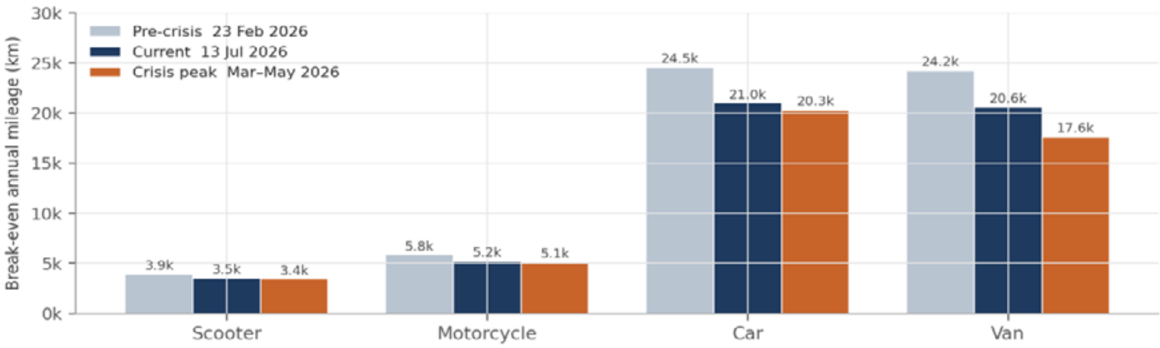

Figure 2. Annual mileage above which a battery-electric vehicle is cheaper over five years, under three observed fuel price scenarios. Lower thresholds mean the electric case is easier to meet. Source: author's model, Annex A.

Vehicle class	Pre-crisis	Current	Crisis peak	Electricity +50%	Public charging
Scooter	4,000	3,500	3,500	4,000	4,500
Motorcycle	6,000	5,000	5,000	6,000	7,000
Car	24,500	21,000	20,500	27,500	52,500
Van	24,000	20,500	17,500	26,500	no parity

Table 3. Break-even annual mileage by scenario (km per year)

ILLUSTRATIVE LEVELS, ROBUST MOVEMENT. The mileage at which five-year electric and combustion costs are equal; below the threshold, combustion is cheaper. The levels scale directly with the assumed purchase premium and should be re-run with your own prices. The percentage movement between columns does not — see Table 4. Source: author's model, Annex A.

Between February and July 2026, break-even thresholds fell by 10.6% for scooters, 10.7% for motorcycles, 14.5% for cars, and 15.1% for vans. This is consistent with the International Council on Clean Transportation's European last-mile analysis, which found parity timing to be more sensitive to diesel prices than to electricity prices because electric drivetrains use substantially less energy per kilometre. The practical implication is that an operator that assessed electrification in January 2026 and concluded 'not yet' may now need to revisit that decision, even if nothing within the business has changed.

4.1 Why this result holds up

The percentage change shown above is unusually reliable because the assumptions most open to debate cancel out of the calculation.

Break-even mileage equals the additional purchase cost of the electric vehicle divided by its running-cost advantage per kilometre. When one fuel-price scenario is compared with another, the same purchase premium appears in both calculations and cancels out. The percentage movement therefore depends only on energy use, maintenance costs, and fuel and electricity prices. These inputs are either externally sourced or directly measurable.

Table 4 tests this directly. Capital-cost assumptions can be varied substantially without changing the percentage movement by even a tenth of a percentage point, although the absolute break-even mileage changes by more than a factor of twelve. The passenger-car result is especially sensitive because its operating-cost advantage is modest relative to the assumed purchase premium, so changes in that premium produce large movements in break-even mileage.

Assumption varied	Scooter	Motorcycle	Car	Van	Car break-even (km/yr)
As published	-10.6%	-10.7%	-14.5%	-15.1%	21,000
Electric purchase prices 25% lower	-10.6%	-10.7%	-14.5%	-15.1%	3,200
Electric purchase prices 25% higher	-10.6%	-10.7%	-14.5%	-15.1%	38,800
Electric residual values halved	-10.6%	-10.7%	-14.5%	-15.1%	31,000
Financing at 4% rather than 8%	-10.6%	-10.7%	-14.5%	-15.1%	19,400

Table 4. Sensitivity of the results to capital assumptions

Columns two to five show the change in break-even mileage between the pre-crisis and current fuel scenarios. They are identical in every case. The final column shows the corresponding absolute break-even for a passenger car, which is not. Source: author's model, Annex A.

4.2 What holds up, and what does not

It is important to distinguish between findings that remain valid when the assumptions change and those that do not.

Result	Status	Why
Running cost per kilometre, per delivery and per operating hour	Reliable	Depends on energy consumption, charging or fuel prices, and maintenance costs. Capital cost assumptions do not enter the calculation.
Electric running-cost saving of 51–69%	Reliable	Depends on the same operating cost inputs and is unaffected by vehicle purchase price, residual value or financing assumptions.
Movement in thresholds of 11–15% since February	Reliable	The electric purchase premium cancels when the break-even thresholds under the two fuel price scenarios are compared.
No break-even for vans relying on public rapid charging	Reliable under the model assumptions	Public rapid charging makes the electric van's running cost per kilometre higher than that of the diesel alternative. Higher mileage therefore increases the disadvantage rather than recovering the assumed purchase premium.
Absolute break-even mileages	Illustrative	Directly affected by the electric purchase premium, which is based on an indicative market midpoint rather than a supplier quotation.
Absolute five-year cost of ownership totals	Illustrative	Sensitive to vehicle purchase price, residual value, financing terms, insurance, and other capital-cost assumptions.

Table 5. What is reliable and what is illustrative

Source: author's analysis. The assumptions required to reproduce and test the illustrative results are set out in Annex A.

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FINDING THREE

CHARGING STRATEGY DETERMINES WHETHER ELECTRIFICATION PAYS

5. Finding three: Charging strategy determines whether electrification pays

The most important cost variable in the model is not the price of diesel, but the tariff paid for charging. Depot electricity at €0.184 per kWh and public rapid charging at approximately €0.65 per kWh differ by a factor of 3.5, a larger variation than the entire 2026 increase in fuel prices.

Figure 3. Charging strategy decides the case, not the drivetrain

Break-even mileage by charging archetype at July 2026 prices. Reliance on public rapid charging destroys the four-wheel case

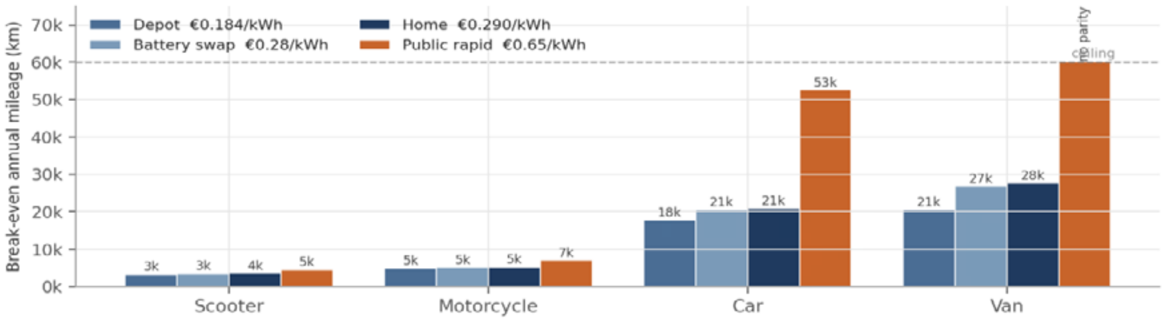

Figure 3. Break-even mileage by charging arrangement at July 2026 prices. Public rapid charging is modelled at an effective rate of €0.65 per kWh, including roaming and access charges. This is consistent with the Zapmap Price Index, which reported average prices of 54p per kWh for standard charging and 76p per kWh for rapid charging in February 2026, and with the public-charging premium commonly observed across Western Europe. Source: author's model; assumptions detailed in Annex A.

The result is clear. Under the model assumptions, a depot-charged van reaches break-even at around 20,500 kilometres a year, comfortably within typical urban delivery use. The same van, when reliant on public rapid charging, does not reach break-even at any level of utilisation because its running cost per kilometre is already higher than that of the diesel alternative. Unlike the illustrative mileage thresholds, this conclusion does not depend on the assumed vehicle purchase price. For cars, reliance on public charging raises the illustrative break-even threshold from around 21,000 to 52,500 kilometres a year, beyond the mileage most food-delivery operators are likely to achieve.

The practical implication is that charging infrastructure is not a secondary consideration in vehicle procurement. It is central to the investment case. Operators that electrify without first securing depot, home, workplace, or battery-swap charging risk replacing a diesel bill with a higher electricity bill while also taking on additional capital cost. For depot fleets, the vehicle case should therefore be assessed alongside charger installation, grid connection, utilisation, and infrastructure financing. Where infrastructure serves several vehicles over multiple replacement cycles, these costs can be spread across a wider asset base.

Vehicle class	Per kilometre		Per drop		Per operating hour		Electric saving
	Combustion €/km	Electric €/km	Combustion €/drop	Electric €/drop	Combustion €/hour	Electric €/hour	
Scooter	0.082	0.025	€0.25	€0.08	€1.31	€0.40	69%
Motorcycle	0.103	0.032	€0.31	€0.10	€1.85	€0.58	68%
Car	0.175	0.079	€0.70	€0.32	€2.45	€1.11	55%
Van	0.283	0.139	€1.42	€0.70	€3.40	€1.67	51%

Table 6. Running cost at July 2026 prices

Energy plus maintenance only; excludes capital, financing and insurance. Cost per drop assumes 3 km per two-wheeler order, 4 km per car order and 5 km per van drop. Cost per hour assumes effective urban speeds of 12–18 km/h by class. These are comparison benchmarks under identical route assumptions, not universal constants. Source: author's model, Annex A.

6. What this means, by operator type

The implications differ by operator type. The mileage thresholds below are illustrative outputs from the model, while the overall ordering of the recommendations remains broadly consistent when the capital assumptions change.

Operator	First move	Why
Independent restaurant	Avoid electrifying a delivery car. Shift self-operated deliveries to e-scooters or e-bikes charged overnight on site.	Car economics remain marginal at typical restaurant mileage. Two-wheelers reach break-even much sooner and require far less capital.
Platform rider	Secure charging access before choosing the vehicle, and clarify who carries battery-replacement risk.	With home charging or battery swapping, an electric scooter can be the lowest-cost option. Without either, the rider may face both high public-charging costs and financing pressure.
Fleet operator	Prioritise vans on depot-based urban routes above roughly 20,000 kilometres a year.	Dense routes, predictable dwell times, and controlled depot charging create the conditions in which battery-electric vans can outperform diesel.
Supermarket / grocery	Treat depot charging as the primary investment; vehicle procurement follows.	Hub-and-spoke delivery, fixed time slots, and predictable dwell periods support managed charging and improve asset utilisation.
Cold-chain operator	Electrify selectively and test the case route by route.	Refrigeration demand, payload effects, and charging time can erode the saving. Light urban chilled routes may work, while heavier or peri-urban routes require separate assessment.

Table 7. First moves by operator type

Table 7. Source: author's analysis based on the modelled thresholds in Table 3, which are illustrative levels.

7. When electrification does not provide an outsized advantage

A credible analysis must also identify the conditions under which electrification does not pay. Under the assumptions used here, four factors weaken or overturn the commercial case.

- **Low utilisation.** Below the thresholds shown in Table 3, the operator does not recover the additional purchase cost. A restaurant delivery car traveling only 8,000 kilometres a year is unlikely to justify switching on cost grounds.
- **Dependence on public rapid charging.** At €0.65 per kWh, the commercial case for four-wheel vehicles weakens sharply and, for vans, disappears altogether under the model assumptions. Charging strategy can therefore determine whether electrification saves money or increases costs.
- **A sharp increase in electricity prices.** A 50% rise in electricity prices removes the cost advantage for cars and reduces the advantage for vans by roughly half. Electrification reduces exposure to oil-price volatility, but it does not remove energy-price risk.
- **Duty cycles that do not fit available charging windows.** Refrigerated routes, peri-urban distances, and multi-shift operations without reliable mid-shift charging may force operators to depend on rapid charging. That can undermine the economics even where the vehicle itself is otherwise suitable.

These are not arguments against electrification. They define the operating conditions required for it to deliver both environmental and commercial value. Without those conditions, a sound strategic objective can still become a poor investment. In this analysis, resilience refers primarily to reduced exposure to liquid-fuel-price shocks; it does not capture every operational risk, including grid reliability, charger availability, or electricity-contract risk.

8. Beyond Europe: Why Emerging Markets Require a Different Model

The analysis above is explicitly European. It is denominated in euros and built on EU fuel and electricity prices, financing conditions, vehicle costs, and residual-value assumptions. It should not be applied to South Asia, Southeast Asia or Africa through a simple adjustment factor. The structural differences between these markets and the European baseline are too significant to be bridged arithmetically.

Capital costs and financing reshape the business case

Vehicle prices may be lower in absolute terms, but they are often much higher relative to operator income, while local borrowing costs can be several times European levels. The upfront electric-vehicle premium can therefore remain a major barrier even where operating-cost savings are larger.

Residual values are also less predictable where second-hand EV markets, battery diagnostics, servicing networks, and recycling systems remain underdeveloped. A local model must therefore use market-specific assumptions rather than importing European depreciation profiles.

Battery ownership can change what the model measures

In many emerging markets, battery ownership is separated from vehicle ownership. Battery-swapping and Battery-as-a-Service models can remove the battery from the initial purchase price, reduce upfront capital requirements, and transfer some performance and replacement risk to the service provider.

This is not a minor adjustment to the European model. It changes the unit of analysis from vehicle ownership alone to a combination of vehicle cost, battery subscription, swap availability, and service reliability.

High utilisation strengthens the case, but power availability can constrain it

Commercial two- and three-wheelers are often used intensively throughout the day, allowing operators to clear utilisation thresholds more quickly than in many European settings. In these markets, the binding constraint may be downtime rather than mileage.

Grid reliability, charging access, tariff structures, and battery availability therefore become central. Where grid supply is unreliable, commercial electrification may require parallel investment in depot charging, solar generation, battery storage, or swapping infrastructure. The relevant investment case is the combined vehicle, charging, and power system.

A dedicated financial and policy framework is required

These conditions require a different operating and financing architecture. Battery-as-a-Service, blended finance, guarantees, and concessional capital can reduce upfront costs and improve access to commercial debt. Policy measures such as import-duty relief, charging standards, and support for local servicing and battery ecosystems may also be needed where market conditions alone do not close the total-cost-of-ownership gap.

World Bank analysis across twenty developing countries reaches a broadly consistent conclusion: two- and three-wheelers are among the strongest early opportunities for electrification in low- and middle-income markets. Battery-swapping models in parts of Asia and East Africa are also being used specifically to reduce upfront ownership costs.

Part Two of this analysis will present a dedicated total-cost-of-ownership and financing framework for commercial electric fleets in emerging markets, covering vehicle economics, charging and power infrastructure, battery ownership models, financing structures, and the policy conditions required for scale.

9. The bottom line

Electrification can strengthen energy resilience in food delivery, and the 2026 energy shock has materially improved the commercial case. But the outcome depends on the operating model, not the drivetrain alone. The strongest cases are vehicles used intensively on short, predictable urban routes and charged through controlled, contracted arrangements. Electric two-wheelers clear the threshold easily. Depot-charged vans do so comfortably. Passenger cars remain marginal and can lose their advantage when electricity prices rise, or operators rely on public rapid charging.

> The key question is therefore not simply, ‘Should we go electric?’ It is, ‘Which routes support electrification, and do we control the charging?’

Controlled charging means predictable access at an agreed tariff, with charging planned around vehicle dwell time. Operators that answer both questions with evidence can electrify profitably. Those that do not risk selecting the right technology but deploying it under the wrong commercial conditions.

ANNEXES

ASSUMPTIONS, METHOD AND LIMITATIONS

Annex A. Model assumptions and method

This annex sets out the principal assumptions and methodology underpinning the analysis. It is included so that readers can understand how the results were derived, assess the reasonableness of the inputs, and interpret the findings appropriately.

Every figure presented in the analysis is generated from the same five-year total-cost-of-ownership model. The results are most sensitive to two inputs: the energy-price scenario and the charging tariff applied to each vehicle type.

A1. Method

Five-year total cost of ownership is calculated as:

TCO = purchase price + financing + insurance − residual value + (energy cost + maintenance cost) × total kilometres

The financing assumption is 70% debt at a nominal interest rate of 8% over five years, calculated using the average outstanding balance. The same financing structure and interest rate are applied to electric and combustion vehicles so that the comparison isolates differences in purchase price and operating cost. Insurance is applied as a fixed annual percentage of the vehicle purchase price, meaning that higher-value electric vehicles carry proportionately higher premiums. Residual value is calculated as a share of the purchase price at the end of year five and is set conservatively for electric vehicles.

Capital cost, financing, insurance, and residual value do not vary with mileage. Energy and maintenance costs do. Break-even mileage can therefore be calculated directly as:

Break-even total kilometres = (fixed cost of EV − fixed cost of ICE) ÷ (running cost per kilometre of ICE − running cost per kilometre of EV)

This closed-form calculation allows the thresholds presented in Table 3 to be stated precisely rather than estimated from the charts.

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A2. Vehicle parameters

Parameter	Scooter	Motorcycle	Car	Van	Basis
Purchase – combustion	€1,800	€2,500	€23,000	€33,000	Indicative market midpoint
Purchase – electric	€2,600	€4,000	€32,000	€46,000	Indicative market midpoint
Fuel use, l/100 km	2.8	3.5	6.5	9.5	Van: ICCT. Others: author estimate
Electricity use, kWh/100 km	3.5	5.0	16.0	35.0	Van: ICCT. Others: author estimate
Maintenance – combustion, €/km	0.030	0.038	0.055	0.110	Author estimate
Maintenance – electric, €/km	0.015	0.018	0.033	0.075	Author estimate
Residual at year 5 – combustion	25%	25%	32%	30%	Author assumption
Residual at year 5 – electric	22%	22%	30%	28%	Author assumption
Insurance, % of price per year	4.5%	4.5%	4.0%	4.0%	Author assumption
Baseline annual mileage	15,000	20,000	25,000	30,000	Representative delivery duty
Baseline charging archetype	Home	Home	Home	Depot	Model setting

Table A1. Vehicle parameters

The Basis column distinguishes externally sourced inputs from the author's estimates and assumptions. It should therefore be read carefully. Only the van energy-consumption figures are drawn directly from a published benchmark: the ICCT last-mile comparison of approximately 9.5 litres per 100 kilometres for diesel vans and 0.35 kWh per kilometre for battery-electric vans. Vehicle purchase prices are indicative market midpoints rather than supplier quotations. The maintenance assumptions follow the direction and approximate scale reported in published comparisons by the ICCT and the US Department of Energy, but the euro-per-kilometre values used in this model are the author's estimates. Residual values, insurance rates, and financing terms are also assumptions rather than observed market data. Section 4.2 explains which findings depend on these assumptions and which remain reliable when they are changed.

A3. Charging tariffs

Archetype	€/kWh	Basis
Depot	0.184	Eurostat EU non-household average, 500–2,000 MWh band, H2 2025
Home	0.290	Eurostat EU household average including taxes and levies, H2 2025
Battery swap	0.280	Modelled service-equivalent tariff; swapping lowers downtime but carries a service margin
Public rapid	0.650	Effective ad-hoc price including roaming and access conditions; consistent with a 2.5–3x premium over residential rates

Table A2. Charging tariffs by archetype

A4. What is excluded

The model excludes the following costs and benefits:

- **Purchase subsidies, grants, and tax exemptions,** which strengthen the electric case in many European markets.
- **Congestion charges, low-emission-zone differentials, and urban access restrictions,** which increasingly raise the cost of operating combustion vehicles in major cities.

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- **Charger capital expenditure,** which is a material cost for depot operators but is treated here as a separate infrastructure investment.
- **Driver labour,** which represents a major share of delivery costs but is broadly unaffected by drivetrain choice.
- **Carbon pricing and emissions-reporting obligations.**

The first two exclusions are particularly important. Including them would improve the commercial case for electric vehicles in many European cities. The mileage thresholds presented in this analysis should therefore be read as conservative estimates of the utilisation required for electrification to pay. Charger capital expenditure works in the opposite direction and should be assessed separately for depot-based fleets.

Annex B. Limitations

- **Vehicle purchase prices are indicative.** The model uses European market midpoints for 2026 rather than supplier quotations. Prices vary significantly by model, specification, procurement volume, and fleet discount. Purchase price is the most influential assumption in the model. As Table 4 shows, a plausible change in the electric vehicle purchase premium moves the annual break-even mileage for a passenger car from approximately 3,200 to 38,800 kilometres. Absolute results should therefore be reassessed using quoted prices before informing an investment decision.
- **EU averages conceal substantial national variation.** Fuel and electricity prices differ widely across countries. Household electricity prices, for example, range from approximately €0.11 per kWh in Hungary to €0.40 per kWh in Ireland. Country-level results will therefore differ from the EU-wide estimates presented here.
- **Two-wheeler inputs are partly estimated.** Energy-efficiency and maintenance assumptions for two-wheelers are calibrated estimates rather than published commercial-duty-cycle benchmarks, because directly comparable official data are not available.
- **Electric vehicle residual values remain uncertain.** The model uses conservative assumptions for electric vehicle residual values. If second-hand markets strengthen, the model will understate the commercial case for electrification.
- **Battery degradation is not modelled separately.** Its effect is captured indirectly through the conservative residual-value assumptions.
- **Several financial inputs are author assumptions.** Insurance rates, financing terms, and residual values affect absolute total-cost and break-even results. They do not affect the comparative findings identified as reliable in Table 5.
- **Public charging prices vary significantly.** The model uses €0.65 per kWh as a central estimate of the effective ad hoc public rapid-charging rate. Actual prices vary by country, operator, charging speed, subscription arrangement, and roaming conditions. The supporting Zapmap figures are drawn from the United Kingdom and applied as a reference point within a European model.
- **Fuel prices reflect a specific point in time.** The model uses fuel prices observed during an active geopolitical disruption. These inputs should be updated before the analysis is used to support an investment decision.

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