

ELECTRIFYING PROGRESS

Scaling zero-emissions delivery of food, groceries and parcels



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In an era marked by growing concerns over carbon emissions, climate change, air pollution, urbanisation and the pressing need for sustainable solutions, our global society is grappling with a dilemma: how to reconcile convenience with environmental responsibility. The food, grocery and retail delivery sectors, fuelled by rapid expansion and growing popularity, find themselves at the nexus of this challenge.

ELECTRIFICATION OF DELIVERY IS A PROFOUND ANSWER TO ADDRESSING THIS CHALLENGE.



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ENDORSEMENTS

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This report shows the pioneering work our companies in Food Delivery and Etail are undertaking to scale electric vehicles in their deliveries, decarbonise their operations and contribute to building a clean and resilient mobility sector in the countries they work in. I believe this report captures valuable learnings and insights of so many of our portfolio companies. The report marks our commitment to scale zero-emissions deliveries for which we need all players in the transport sector to join in. We call in particular on financiers and policy-makers to enable a transformation of the way we transport food, groceries and parcels.”

Roger Rabalais, CEO Food Delivery/B2C Naspers/Prosus

“

At iFood we strongly believe that the best companies need to excel in innovation, growth and profitability, but also in generating a positive impact on the environment and society through education and inclusion. We recognise the pressing need to advance electric vehicles and zero-emissions deliveries. This report illuminates the transformative power of technology in food, grocery, and ecommerce, presenting a roadmap for change and exceptional cases. At iFood, our commitment extends beyond efficiency – it’s a pledge for climate justice, ensuring our journey towards sustainability is equitable, leaving no one behind, and fostering a world where environmental benefits are shared by all.”

Fabricio Bloisi, CEO iFood

“

In Oda we have now started the EV rollout of our delivery fleet, with the ambition to achieve a 100% electrical fleet. Recognising that a significant part of our operational emissions stems from last-mile deliveries, a switch to zero-emission vehicles plays a crucial role in our decarbonisation plan.”

Vegard Vik, CFO and founder Oda

“

Decarbonising last-mile delivery is a vital step for our industry to mitigate its impact on the planet and actively work towards the climate pledges of the countries in which we operate. This report is a welcome addition to the ‘EV journey’ of food-delivery companies. By outlining collective challenges and bringing together a community of dedicated practitioners, we can accelerate our progress towards serving our customers in the most environmentally responsible way.”

Ana Mitrasevic, chief people and sustainability officer Delivery Hero

“

As the largest parcel and on-demand delivery business in South Africa, takealot.com group is committed to reducing our environmental impact and promoting sustainable business practices. Ecommerce and food-delivery businesses have an important role in driving sustainability by optimising and consolidating deliveries to customers. takealot.com group supply chain is scaling zero-emissions delivery solutions by implementing solar power generation at five distribution centres, implementing fully electric trucks supplying logistics hubs and transitioning last-mile delivery vehicles to clean energy solutions. takealot.com group is now the largest electric truck fleet operator in Africa.”

Francois Retief, head of supply chain and logistics takealot.com group

“

As a business, our commitment to sustainability drives us to embrace change and integrate more electric vehicles into our operations. In the dynamic intersection of food delivery and technology, adopting solutions like Electric Vehicles in our fleet is not just a choice but a strategic imperative. This report serves as a guide on our journey as an industry, providing insights and fostering responsible business practices that align with a more sustainable future. We aspire to take the lead in piloting, scaling, and researching EVs in the region.”

Tomaso Rodriguez, Chief Executive Officer Talabat MENA

“

Amidst the urgent call to address the climate crisis, Sameday endorses this ground-breaking report, recognising the imperative to scale electric vehicles and zero-emission deliveries. As active promoters of environmentally friendly business solutions in last mile delivery, we operate the Easybox APM network and deliver using our own EV fleet, and believe that consistent and concerted effort is required, in mitigating pollution and safeguarding our planet’s future.

At Sameday, we are fully committed to scaling zero-emission delivery solutions. This report aligns seamlessly with our mission and we are proud to endorse its vision for a carbon-neutral future. Let this be a clarion call for collaboration and commitment as we collectively navigate the path towards a cleaner, healthier planet.”

Lucian Baltaru, CEO Sameday

“

City planners are developing new urbanistic concepts, with less space for cars and ambitious goals to reduce the emissions. By scaling grocery delivery on electric bikes, we are supporting these plans offering a low emissions’ solution for the daily shopping.”

Christoph Cordes, Co-Founder Flink

“

At Glovo, we have realised that the only way to generate real impact is by integrating sustainability into the core business operations of the company, aligning business owners with the understanding that it is not only the correct thing to do but also good business. We believe that fleet electrification is not just a measure to address environmental challenges but also a strategic business decision. It’s not merely about meeting our customers’ expectations, but it also offers clear benefits for the business, including lower costs and support for the courier experience.”

Sacha Michaud, co-founder Glovo

“

Electrification of last mile urban freight deliveries is a viable business proposition. Business innovation and collaborations in this space can further lead to significant and fruitful action for emission mitigation in urban settings. This report provides an excellent summary of learnings from industry initiatives in the area from around the globe leaving enough food for thought for others to follow the suit.”

Ashwath Ram, Co-chair, CII National Committee on Future Mobility and Battery Storage; Managing Director, Cummins India



FOREWORD

We are excited to share this report with you, an unmistakable milestone on the group's journey towards increased sustainability performance of our Food Delivery and Etail companies.



Naspers/Prosus is both an investor and operator, and we invest in digital tech globally. Over the years, we have built a portfolio of Food Delivery and Etail companies that work with more than 2 million drivers to deliver over 275 million food and grocery deliveries per month from India to Brazil and South Africa to Europe. Our companies are at the forefront of shaping how we eat and live and rethink transportation in urban areas.

Our research shows that global demand for last-mile delivery is set to increase 78% by 2030, with a 36% rise in the number of delivery vehicles in the world's top 100 cities. This increase would see a potential rise in GHG emissions by 32% if there is no intervention. This gives a clear imperative to decarbonise deliveries, and this report shows that electrification and other zero-emissions deliveries offer the potential to accomplish an array of crucial sustainability objectives, including mitigating localised air quality issues and improving the livelihood of delivery drivers.

This report shows our portfolio companies have implemented many initiatives, deployed investments and are collaborating on innovative programmes to increase the share of electric vehicles in their delivery fleets. Our investees share our entrepreneurial instincts, and our companies are motivated by a commitment to delivery and profitability.

At Naspers/Prosus, our investment thesis has helped us curate a portfolio of asset-light, low-carbon-intense digital companies that can further catalyse a broader systemic transition for their users. We strive to enhance the environmental, social and governance (ESG) performance of all companies in our investment portfolio. We apply ESG factors in selecting and assessing new prospects and use these criteria in managing the performance of businesses and investments across our portfolio.

Let us take a quick step back to explain our three-pillar strategy that underpins our engagement philosophy with our group companies on sustainability. Firstly, we start with an exclusions approach, clearly defining sectors and activities we want to avoid exposure to. While steering away from opportunities in these sectors, our investment team also conducts due diligence on material areas like data privacy and cybersecurity during the early stages of engagement.

Once a company joins the Naspers/Prosus family, our second pillar directs us to engage deeply and onboard companies to drive their sustainability. Our third pillar is to uncover and invest in new sectors and businesses that are solving environmental and social challenges while we invest in data analysis to quantify the net positive impact of our business segments, such as the emissions avoided through our classifieds platforms.

We hope you find the report useful and welcome your feedback and further insights from your journey!

**Prajna Khanna, global head sustainability,
Naspers/Prosus**



At Naspers/Prosus, our investment thesis has helped us curate a portfolio of asset-light, low-carbon-intense digital companies that can further catalyse a broader systemic transition for their users. We strive to enhance the ESG performance of all companies in our investment portfolio."

Electrification of delivery offers the potential to accomplish an array of crucial societal objectives, that encompass environmental, social and economic benefits.

It promotes environmentally friendly urban practices, mitigates localised air quality issues, generates employment opportunities, improves livelihoods of delivery drivers and fosters greater public acceptance of delivery services.

Nevertheless, despite the substantial benefits, adoption has been slow and scale limited. In this report we identify three key challenges: **Price, practice and public acceptance.** Price, or affordability of electric vehicles (EVs), are impacted by elements like higher upfront costs compared to conventional diesel or gas alternatives, development costs of supporting infrastructure and technical challenges. Practice relates to the critical need for operational excellence, with delivery being the crucial last step in delivering a high-quality customer experience. The electric transportation system has to function properly to ensure it matches the needs of the delivery industry, in particular for freelance drivers whose income depends on it. Public acceptance refers to the sum of all parts of the electric mobility ecosystem coming together, connecting the dots between the different stakeholders, from consumers to drivers and from electricity providers to regulators, ensuring that electric mobility becomes the new normal. Achieving electrification at scale demands a collaborative effort within the ecosystem, and the implementation of interconnected strategies.

Delivery platforms and their transportation partners are exploring solutions while actively piloting models, seeking insights from best practices, defining and refining their business models, and developing their strategies, with the aim of creating scalable and sustainable delivery solutions for the future.

This paper delves into the rationale and examples of electrifying delivery operations by the food, grocery and retail platforms (see box 01 on page 8), with a specific focus on emerging markets (or so-called least developed countries). We identify barriers to scaling EV adoption, and we portray initiatives and best practices of successful businesses as they show leadership and uptake electrification within their delivery operations, allowing us to shed light on lessons learned.

Our goal is to contribute to a broader effort to disseminate existing insights into the implementation of electric delivery systems and empower industry stakeholders with the knowledge to make informed decisions. In doing so, we hope to pave the way for a more sustainable and responsible future for food, grocery and retail delivery operations worldwide.

Public support as a driver of innovation

In the pursuit of societal transformation, the pivotal role of public investment and support emerges as a catalyst for change, fostering progress and innovation. The work of the economist and academic Mariana Mazzucato has extensively discussed the role of government-led innovation and the importance of public financing in technological advancements. Mazzucato argues that policies that have achieved success in driving radical innovations have primarily focused on shaping and creating markets through direct and extensive public financing, rather than merely attempting to fix existing markets [1]. She identifies three key areas where this is evident:

- The presence of public funding at every stage of the innovation chain.
- The implementation of ‘mission-oriented’ policies that have created new technological and industrial landscapes.
- The entrepreneurial and lead investor role of public actors, capable and willing to take substantial risks, regardless of the business cycle [2].

Mazzucato contends that governments can shape economic growth by articulating well-defined missions dedicated to addressing critical societal issues, such as climate change and mobility concerns. Through strategic investments across the innovation chain and fostering cross-sector spillovers, they can simultaneously tackle a range of challenges while steering the markets toward environmental sustainability and economic prosperity [3].



Our goal is to contribute to a broader effort to disseminate existing insights into the implementation of electric delivery systems and empower industry stakeholders with the knowledge to make informed decisions.”



1 Delivery platforms: Role and business model

Delivery platforms serve as the bridge between user demand, primarily from consumers but sometimes businesses, for a diverse range of products – from electronics, groceries and beauty products to vegan burgers from the newest restaurant in town. These platforms connect users with manufacturers and sellers, shops and restaurants and often handle all aspects of product delivery. The products can be proprietary to the delivery platform or sourced from other brands. The key measure of platform quality of service is their ability to provide, secure, and reliable delivery, often along with payment processing and post-purchase support. Typically, when a consumer places an order, the product is retrieved from a warehouse, store, or restaurant kitchen, the order is fulfilled (eg, packaged and made ready for shipment) and then passed to a delivery driver responsible for logistics and for ensuring the order is received. These delivery drivers can be directly employed by the platform or employees of a third-party delivery provider, or can be independent drivers (often classified as gig workers). Some variations exist, such as models where retailers interact with consumers, and a separate fulfilment company handles order processing, including picking, packaging, and shipping.

“Assuming a steep and global shift to 90% battery electric motorcycles sales by 2030 could result in CO₂ emissions reductions of about 11 billion tons between now and 2050.”

– UN environment eMob calculator

The on-demand delivery industry has experienced a significant surge in recent times, driven by the increasing convenience of online shopping – in terms of easy access to a diverse selection of products, simple ordering and efficient delivery, and the rise in urban living. The Covid-19 pandemic prompted a high demand for contactless delivery services, making home delivery an integral part of our daily lives. The ease of online shopping has changed our behaviour toward ordering food, groceries and parcels to be delivered to our homes. The proliferation of urban living has further fuelled requests for on-demand delivery, as we seek quick and convenient solutions to meet our needs.

The expansion of this market has pushed a notable increase in the total number of delivery vehicles¹ on our roads and the frequency of their trips, leading to valid concerns about air pollution, emissions, and congestion.

Commercial fleet electrification is in its early stages, but gaining momentum. As the decarbonisation of passenger vehicles is gaining traction globally, the sale of electric commercial vehicles is following suit. The pace of electrification varies significantly per country, as is shown in the visual below.

Up to **50%** of the entire carbon emissions associated with delivery can be traced back to the last-mile phase, and research estimates annual emissions of almost **8 million tons** of GHG across India, Europe, and the United States [4]. With no intervention, we can expect worldwide last-mile delivery demand to increase by **78%** by 2030, resulting in a **36%** rise in the number of delivery vehicles in the world’s top 100 cities, with a consequent increase in emissions by **32%** [5].

In this context, electric vehicles have emerged as one of the prioritised tools to mitigate the adverse effects of delivery, particularly GHG emissions [5], while unlocking significant environmental, economic and social benefits.

Delivery vehicles and phases of delivery



State of electrification across selected regions

China	India	South Africa	Brazil	World
Share of total emissions from road transport 7%	Share of total emissions from road transport 5%	Share of total emissions from road transport 8%	Share of total emissions from road transport 41%	Share of total emissions from road transport 15%
Electrification of fleet* 24%	Electrification of fleet* 3%	Electrification of fleet* 0.04%	Electrification of fleet* 0.2%	Electrification of fleet* 10%
Electrification of 2/3W fleet* 16%	Electrification of 2/3W fleet* 8%	Electrification of 2/3W fleet* 0.3%	Electrification of 2/3W fleet* 1%	Electrification of 2/3W fleet* 27%
Electrification of 4W fleet* 32%	Electrification of 4W fleet* 1%	Electrification of 4W fleet* 0.02%	Electrification of 4W fleet* 0.1%	Electrification of 4W fleet* 2%
Share of EVs of new vehicle sales 8%	Share of EVs of new vehicle sales 6%	Share of EVs of new vehicle sales 0.1%	Share of EVs of new vehicle sales 3%	Share of EVs of new vehicle sales 14%

¹ In the context of this report, we are focusing on electric delivery vehicles, including 2Ws (e-bicycles, e-motorcycles, e-scooters), 3Ws (rikshaws), and 4Ws (electric cars, light commercial vehicles or LCVs). Non-electric bicycles are also considered zero-emissions delivery vehicles and can be part of delivery platforms’ strategies to achieve emission reduction.

* Privately owned vehicles only.

China is by far the world leader in implementing and manufacturing EVs. There are several factors that play a role in the electrification of a national fleet, such as GDP and national net-zero commitments, but government support through legislation, ambitions and targets are critical in developing an electric ecosystem and scaling EVs.


Economic prosperity, or GDP, indicates the ability for citizens to invest in new vehicles, and net-zero commitments of a country paint a backdrop of the urgency by politicians and policy-makers to transition to EVs. But particularly influential is the availability of financial incentives. For instance, of the seven Chinese EV legislations, four arrange financial support such as tax exemptions, subsidies, and license plate privileges. In India this is three out of seven [6], as captured in the IEA Global EV Policy Explorer.

China	India	South Africa
GDP per capita (US\$) 12 670	GDP per capita (US\$) 2 390	GDP per capita (US\$) 6 776
Net-zero commitment timeline 2050	Net-zero commitment timeline 2070	Net-zero commitment timeline 2050
Policies	Policies	Policies
Legislation: 7 Proposals: 1	Legislation: 7 Proposals: 0	Legislation: 5 Proposals: 0
Targets: 30 Ambitions: 10	Targets: 20 Ambitions: 8	Targets: 2 Ambitions: 0

Brazil	World
GDP per capita (US\$) 8 831	GDP per capita (US\$) 12 900
Net-zero commitment timeline 2050	Net-zero commitment timeline 2050
Policies	Policies
Legislation: 1 Proposals: 2	Legislation: 182 Proposals: 36
Targets: 0 Ambitions: 0	Targets: 136 Ambitions: 174

“Economic prosperity, or GDP, indicates the ability for citizens to invest in new vehicles, and net zero commitments of a country paint a backdrop of the urgency by politicians and policy makers to transition to electric vehicles.”

Projections for India



Projections for India indicate that, by 2025, 25% of EV sales will come from the electrification of last-mile delivery, across fleet composition. Not only is their market share expected to grow, but vehicle numbers will increase by up to 140% for 2Ws and 25% for 3Ws [7].

2025

EV sales last-mile delivery electrification 25%	Market share growth 140% for 2Ws 25% for 3Ws
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Stages of delivery process: Focusing on the last-mile

In the context of deliveries, the first-mile pertains to the initial stage of the process. It involves the transportation of products from their respective sources, often the manufacturer or the import company.

The middle-mile operates between the point of collection and the delivery destination, facilitating the efficient flow of products. In this phase, items are typically consolidated, sorted, and transported to designated hubs, where they are prepared for the last-mile delivery.


The last-mile is often the most crucial segment of the delivery process when goods, ranging from warm food, groceries, fresh fruit or retail products, are transported to the end consumers. The last-mile is pivotal for ensuring timely, secure, and satisfactory deliveries, making it a focal point for service quality and customer satisfaction.

This report acknowledges last-mile as the stage when electrification introduces distinctive and complex challenges. Strategies and best practices will focus on this phase of delivery. Many of the lessons learned and recommendations provided are also applicable to middle-mile, and to a certain extent, can be extended to first-mile operations.

Prominent delivery companies are trying to electrify their fleets in the near future, driven by their commitment to reducing greenhouse gas (GHG) emissions, in response to investor expectations and in anticipation of upcoming legislation. For instance:

- Brazil’s food-delivery platform iFood have announced a goal of 50% of deliveries to be non-polluting by 2025.
- Indian food-delivery platform Swiggy committed to achieve daily EV deliveries covering 800 000 kilometres by 2025.
- As part of the Delivery Hero group, food and grocery-delivery platform Glovo committed to achieve a delivery vehicle mix with more than 67% being non-combustion vehicles.

Lessons from the past



The transition from horse-drawn carriages to automobiles in the early 20th century was a significant disruption that transformed transportation. Hay and water were replaced by gasoline and oil. This shift, which took about 50 years, brought about new challenges and opportunities, including safety concerns, environmental impacts, and economic implications. But understanding this historic transition, will help us to understand how we can be successful in making electric transportation a success. For example, the first automobiles were initially introduced in small numbers at a price of about \$850 each, a significant price jump from the \$50 cost of a high-quality horse buggy. At the same time, while horse-feeding contributed to the rural economy, it posed challenges for waste management in urban areas. The transition from horses to cars not only transformed the economy but also generated need [8].

Today, we are witnessing a similar disruption with the transition from internal combustion engines (ICE) to EVs. Much like the shift from horses to cars, this transition presents its own set of challenges and opportunities. It has significant implications for consumers, the environment, traffic safety, infrastructure, and the global economy – and the landscape is evolving rapidly, with the industry moving toward not only EVs, but also shared, connected and self-driving vehicles.

Just as society adapted to automobiles a century ago, we are now adapting to EVs. As we embark on the journey, the lessons of the past underscore the importance of seizing new opportunities, anticipating change, and managing it.



THE SOCIETAL VALUE OF ELECTRIFICATION

In today's ever-evolving business landscape, the global push for more electric transport is driven by environmental, economic and social benefits.

 <p>ENVIRONMENTAL AND SOCIAL: Reduction of GHG emissions, improved air quality, reduced noise pollution, establishment of a cleaner and more sustainable transportation system, lower dependence on fossil fuels (which some countries need to import).</p>	 <p>ECONOMIC: At individual level - reduced fuel consumption, lower operational costs. At industry level: protection against fuel price and supply volatility, higher fleet efficiency and improved reputation, economic growth and job creation.</p>
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Cleaner

The primary advantage of fleet electrification lies in the considerable reduction of GHG emissions attributed to EVs as opposed to conventional vehicles. Transportation accounts for more than 15% of global GHG emissions, and is predicted to continue to grow [9]. The uptake of EVs not only improves air quality, a crucial concern especially in densely populated regions, but also brings several other benefits. It helps alleviate traffic congestion, thus enhancing clean urban mobility, and contributes to the reduction in noise pollution within urban areas, ultimately improving the overall quality of life for residents. Lastly, reduced reliance on supply of fossil fuels, in favour of locally produced solar, wind or other renewable energy can also boost resilience of the local transportation system.

Cheaper

Electrifying transport can also yield substantial savings. EVs feature fewer moving parts and higher energy efficiency compared to traditional combustion engine vehicles, leading to reduced per-kilometre consumption and, consequently, substantially lower operational costs² (see box 02 on page 13). They offer protection against volatile fuel prices, generating resilience for businesses and users by

maintaining cost predictability and stability. For instance, food and grocery-delivery platform Glovo has seen in some of its markets that the business case for electric delivery was positive, even without government support.




Commercial delivery stands at the forefront of the electrification movement, presenting an efficient avenue for further decarbonisation of an economy. This is primarily because transitioning to zero-emission delivery vehicles might offer the fastest and most efficient means to decarbonise [10]. Owners of commercial vehicles tend to operate their fleets intensively, driven by the need to maximise profitability. This optimisation is particularly advantageous in delivery operations marked by frequent braking and stop-and-go scenarios, areas where ICE notably lag in terms of efficiency.

Consumer sentiment

Furthermore, the electrification of delivery fleets can catalyse the development of an expansive electrification infrastructure. Investments made in a business context by investors in the public sphere, the private sector or a combination of both, rather than relying on individual citizens to invest, can enable a robust system that benefits the entire community.

² Based on the Total Cost of Ownership (TCO), it is anticipated that battery EVs will outperform their ICE counterparts in all vehicle categories as early as 2025 [16].

2 Scaling electrification presents an interesting economic case, offering the potential for substantial cost savings:

-  **More than 20% fewer breakdowns and 30% lower service costs** experienced in their first three years of use compared to ICE vehicles. This is due to simpler design and higher energy efficiency [11].
-  Savings from EV adoption are estimated to reach up to **+80% in operational costs in electric 2Ws** in a five-year period [12]. However, the upfront costs of electric 2W models are significantly higher than those for corresponding ICE models, with the battery being a significant factor influencing electric 2W's total costs of ownership over time.
-  By 2025, EVs are expected to have a **5% to 10% lower cost per mile** compared to ICE vehicles, mainly due to savings in fuel and maintenance, which may decrease by about 60% and 70% respectively [13].

Consumer sentiment

Electrification in delivery also has the advantage of appealing to environmentally conscious consumers who increasingly prioritise sustainable and eco-friendly options, thereby driving preferences toward companies that adopt cleaner and greener transportation methods. McKinsey and the World Economic Forum survey data revealed a notable rise in consumer interest in EVs, a shift that holds important implications for commercial transportation. Over 70% of participants acknowledged the significance of employing EVs in both long-haul and intra-city transport, while 40% were willing to pay for the transition.

³ For instance, in certain regions or cities, such as Amsterdam, dark stores have been prohibited in residential areas or mixed residential-working zones [40] due to concerns related to noise and air pollution. Transitioning to EVs can be a step in the right direction to address these concerns and potentially obtain such social licences to operate.

These sentiments do not seem to be entirely reflected in consumer behaviour, however, as evidenced by the low percentage of individuals willing to pay to offset the carbon footprint of their deliveries [14]. Targeting conscious consumers or fulfilling the sustainability demands of partners and vendors looking for climate-friendly delivery are among the main drivers of electrification in more mature markets. Additionally, embracing electrification is a commitment to sustainable practices that resonates positively with local communities. This 'social licence to operate' is crucial for businesses and industries, as it builds goodwill and long-term viability³. Actively involving the public in the transition to electric transportation builds strong relationships essential for the success of EV initiatives.

Jobs

Finally, the electrification of delivery fleets can stimulate economic growth and job creation in the clean-energy sector. It is estimated that transitioning to clean energy will lead to 14 million new jobs by 2030, with 5 million jobs lost as fossil fuel declines [15], and transportation could have a significant role in this shift.



A steep and global shift to 90% battery electric motorcycles sales by 2030 could amount to savings of about USD 350 billion by 2050, basis both lower fuel and maintenance costs as well as higher purchase price of electric motorcycles."

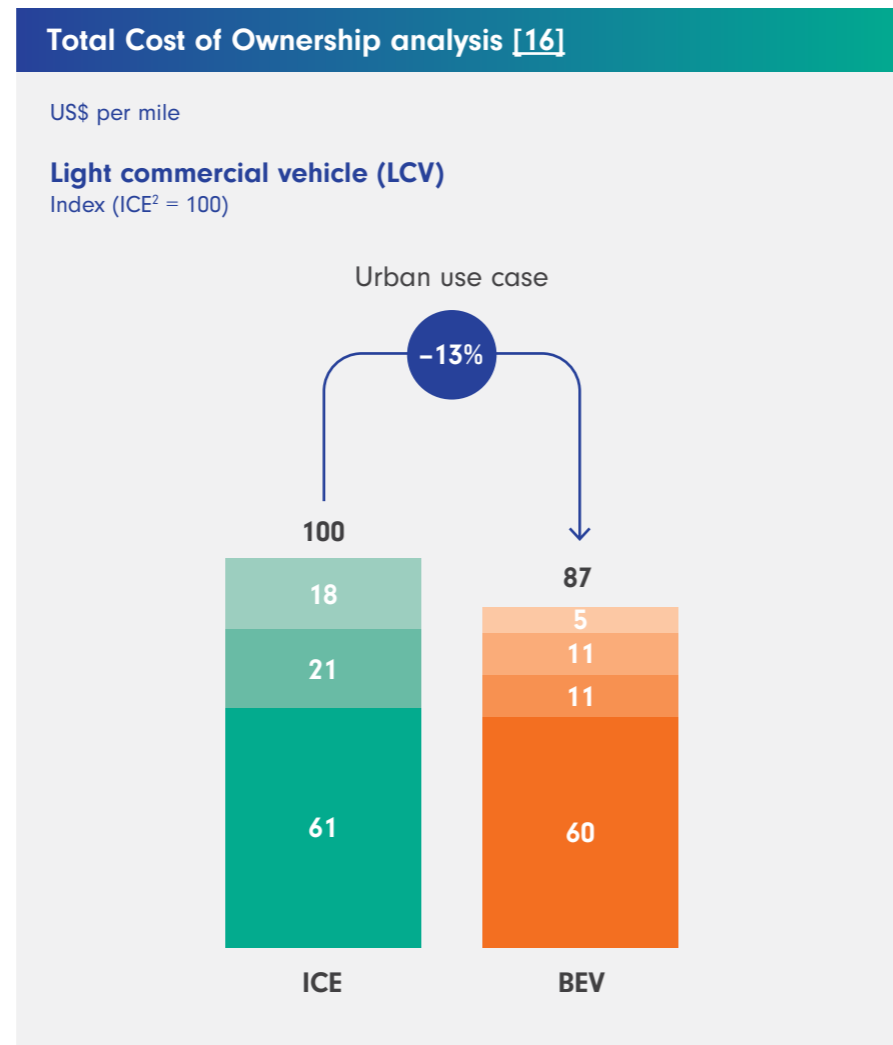
- UN environment eMob calculator

WHAT IS LIMITING SCALE?

As the interest in electrification grows and more programmes explore the advantages of fleet decarbonisation, it is important to recognise that stakeholders in the food, grocery, and retail delivery sectors, regardless of their business model or location, encounter operational and strategic challenges related to three challenges: price, practice and public acceptance.

The first two problems revolve around cost-effectiveness and operational viability of electric fleets, while the last one relates to building an extensive uptake at sector and national scale, to ensure ecosystem-wide alignment and coordinated development.

While EV and battery costs have decreased, they still come with a higher price tag compared to their ICE counterparts, presenting a notable barrier for individuals and organisations looking to purchase a new vehicle. Especially in emerging economies, EV purchase is challenging in the absence of public support due to the lack of access to affordable financing options, and infrastructure development is slowed down by lack of funding.



Problem of price

Investing in electric fleets can be a significant financial commitment for both delivery platforms and independent contractors. Delivery platforms that are still building toward profitability might find it difficult to invest in electric fleets. Gig workers commonly lack the initial capital required for such purchases. Investing in electric fleets can be a significant financial commitment, especially for delivery platforms that are still building toward profitability. Gig workers, in turn, typically have a low income and face economic challenges, even in developed economies [17]. This economic instability highlights an ongoing issue: in the absence of appropriate financial and policy support, EVs tend to remain within the reach of affluent entities and individuals. Consequently, people with fewer assets tend to be excluded from the economic, environmental, and social benefits of electrification, further fostering inequality [18].

Problem of practice

In many regions of the world, the current prevailing user perception of independent drivers centres around an inherent trade-off between battery range and affordability. Vehicles with extended ranges, catering to the higher mileage requirements typical in commercial applications versus private use, tend to come with significantly higher price tags. Conversely, more affordable EVs do not offer comparable quality and performance as ICE vehicles – for example in terms of acceleration with increased pickup demands, or stability required for delivery purposes, particularly among 2Ws. This drives the concept of range anxiety, one of the most concerning challenges in commercial adoption. Charging infrastructure is often not adequately developed or strategically positioned to accommodate the unique demands of commercial fleet operations and, in emerging economies, power cuts and loadshedding can disrupt the reliability of charging operations. Notably, the speed of charging infrastructure plays a crucial role in fleet electrification, as slower charging stations can lead to longer downtimes, affecting operational efficiency and possibly limiting efficiency for delivery models that cannot rely on night-charging only. Especially in the

Governments are often driving innovation and shaping the markets in revolutionary ways.

A prime example of the case about the role of governments in funding innovation made by economists such as Mariana Mazzucato [19] is Tesla. Despite Elon Musk's recent opposition to government subsidies, his companies, including Tesla, have received billions in government subsidies over the last two decades [20]. On a national scale, countries such as China stand out as prominent examples of efforts and strategies devised to decarbonise road transport. Over the past decade, China has consistently enacted a series of regulations and policies aimed at curbing fuel consumption from vehicles and to transitioning to EVs and, as a result, it has experienced a remarkable surge in the EV market [21]. China's nationally determined contributions (NDCs)⁴ toward decarbonisation further underscore this ambitious target, including the goal of achieving net-zero GHG emissions by 2060⁵. To align with these priorities the country has implemented a range of interventions, including an ambitious plan for GHG emissions from transportation. China's surge as the world's largest market for EVs has also been enabled by the implementation of such policies to encourage the adoption of EVs and scale their production [22]. Purchase subsidies active for a decade were ended in 2020 [23], but other initiatives keep stimulating the industry. For example, EV buyers are entitled to a 10% purchase tax exemption until the end of 2023, the government sets a credit system for Original Equipment Manufacturer (OEM) based on EV proportion production targets and has supported the industry through procurement contracts [22]. Additionally, the government provides support for the construction of charging infrastructure and has established the Chinese Electric Vehicle Charging Infrastructure Promotion Alliance (EVCIPA) [24] to promote technological innovation and business collaboration, and make policy recommendations to help the government manage and advance charging infrastructures more effectively [25].

⁴ Nationally determined contributions (NDCs) are at the heart of the Paris Agreement and represent each country's efforts to reduce national emissions and adapt to the impacts of climate change. They embody efforts by each country to outline and communicate their post-2020 climate actions [39].

⁵ However, despite these ambitious targets, China's emissions under current policies remain high, with no sign of substantial emission reductions before the 2030 peaking timeline. Energy and electricity demand forecasts continue to grow, prolonging China's dependence on fossil fuels [38].

context of gig workers, the unique nature of the industry creates an interplay of technological and infrastructural challenges, as it favours delivery drivers who complete more deliveries. Payment structures are based on the amount of deliveries done. The demand for charging services is, in turn, concentrated during off-peak delivery hours, such as intervals between meal rushes. When this misalignment is not addressed, it can lead to inefficiencies, longer downtimes, and potential income disparities.

Problem of public acceptance

Challenges related to **investment and financing** are also key factors contributing to the obstacles faced in achieving widespread electrification. When analysing and projecting the future of global energy systems, the International Energy Agency (IEA) describes how in a Stated Policy Scenario (STEPS)⁶, “average annual end-use investment in road transport needs to reach USD 110 billion in the second half of the 2020s with an additional 40% needed annually through 2050. [To achieve net-zero emissions by 2050] according to the APS⁷ of some major emerging economies, annual investments will need to reach USD 150 billion between 2026 and 2030, rising to over USD 230 billion in the period to 2050” [26]. Investments are also needed to develop an extensive charging infrastructure and energy

grid. Electrification advancement is impeded by limitations in the public sector finances, scarcity of individual funds, underdeveloped banking systems, restricted loan access, and high capital costs [26]. Incentive programmes targeted at commercial fleets can have a broader transformative impact within the transportation sector. As commercial fleets gradually transition to EVs, the benefits inevitably extend to the private market. Commercial EVs that have fulfilled their first use cycle, can eventually become available for sale to the end consumer and help establish a second-hand market that will not only expedite EV adoption but also ensure that the advantages of sustainable transportation options are accessible to a wider audience.



To achieve net zero emissions by 2050, according to the APS of some major emerging economies, annual investments will need to reach USD 150 billion between 2026 and 2030.”



⁶ The Stated Policies Scenario (STEPS) is a projection by the International Energy Agency (IEA) that provides a sense of the direction of energy system progression, based on a detailed review of the current policy landscape and measures under development.

⁷ Announced Pledges Scenario (APS), IEA’s projection that illustrates the extent to which announced ambitions and targets can deliver the emissions reductions needed to achieve net-zero emissions by 2050.

POWERING ZERO-CARBON DELIVERIES

Realising significant progress in this transformation demands the establishment and maintenance of a robust and integrated ecosystem encompassing diverse, interconnected solutions and strategies.

These solutions vary in feasibility and effectiveness, with different stakeholders in charge of leading their implementation.

Efforts to scale must be solving for three core objectives:

Price, practice, public acceptance



Price

Ensuring **cost-effectiveness** is essential for the widespread adoption of EVs in delivery. This encompasses considerations such as upfront purchase costs, rental fees, and ongoing running costs that influence the Total Cost of Ownership (TCO). Especially for gig workers, the costs and risks of electrification are critical. Excessively high costs and risks can compromise their income and jeopardise their ability to sustain their livelihoods, ultimately discouraging their participation in the transition.



Practice

EVs must be well-suited for commercial use and need to meet stringent safety, speed, and longevity requirements essential for logistics operations. This needs to take into account factors such as vehicle characteristics (eg, cooling systems) and battery range. Additionally, it's imperative to guarantee adequate coverage and speed of **charging infrastructure**, along with the **reliability of the power grid**.



Public acceptance









































Particularly in the context of 2Ws, electrification brings about various societal benefits. This includes **job creation, improved accessibility** for individuals without a driver's licence, **enhanced mobility** for people with various physical abilities, and **quieter, more comfortable transportation**. For the delivery company, it **expands the available driver pool** by tapping into a more diverse and inclusive labour force, ultimately increasing its operational flexibility and capacity: electrifying delivery, especially by adopting 2Ws and e-bicycles, and opens opportunities for a wider range of individuals to participate in the workforce as delivery drivers. This inclusivity extends to people who may not possess a traditional driver's license or those who may have physical limitations that would have otherwise restricted their participation in the workforce.



Ensuring cost-effectiveness is essential for the widespread adoption of EVs in delivery.

Creating a zero-carbon delivery ecosystem

This chapter outlines a comprehensive list of strategies (see next page) aimed at fostering the uptake of electrification tailored for commercial food, grocery and parcel deliveries. The strategies delineated are scored based on their required capital and time investments, and on the magnitude of their impact in catalysing widespread electrification in the sector.

Strategy	Business model applicability	Contribution to challenges	Capital intensity	Time intensity	Size of impact	Best practices
1. Adoption of new business models	 + 	 + 				'Quantifying the benefits of electric motorcycles' – Vammo, 'Smart timesharing of e-bikes' – iFood, 'Testing electric cars in Romania' – Glovo
2. Development of charging infrastructure	 + 					
3. Battery swapping	 + 	 + 				'Battery swapping service' – Gogoro, 'Building battery swapping station network' – Swiggy
4. EV fuel cards	 + 	 + 				
5. Developing EVs fit for commercial purposes	 + 					'Custom-built refrigerated trucks' – Oda, 'Pioneering electric trucks in South Africa' – takealot.com, 'Collaborative approach to electrification' – Talabat
6. Private financing for delivery partners						'E-motorcycles in Brazil' – iFood, 'Sustainable transport and financial inclusion in East Africa' – Glovo
7. Gradual fuel duty reduction						
8. Preferential treatment of electric deliveries		 + 				'Development of green zones' – iFood
9. Expand pool of low-barrier vehicles	 + 					
10. Training and awareness programmes						'Empowering South African youth' – takealot.com, 'Social impact initiatives' – Talabat
11. Carbon credits for drivers						
12. Public finance						'Accessing public subsidies for EV purchase' – eMAG, 'Financing vehicles and structural investments' – Glovo
13. Policy measures	 + 					
14. Investments in new technologies, alternative power sources and digital systems	 + 	 + 				'Drone and robot deliveries' – Talabat 'Green Easybox' – Sameday

 Own fleet
  Freelancers
  Price
  Practice
  Public acceptance

List of strategies aimed at increasing the adoption of electrification in commercial deliveries. The capital and time intensity of each strategy is rated on a scale from low intensity (1) to high intensity (3). Additionally, the size of impact denotes the magnitude of the effect of each strategy on the broad scaling of electrification.

In this report, we analyse three fleet sourcing models: in-house fleet (1PL), contracted fleet (3PL), and freelancers model. This table categorises each strategy's applicability based on the entity investing in vehicle electrification. Consequently, the column 'Business model applicability' differentiates between OWN FLEET and FREELANCERS models, independent of whether the fleet is owned by the platform or the 3PL and irrespective of whether freelancers are contracted by the platform or the 3PL.

1. Adoption of new business models

In the realm of delivery platforms, the structuring of operations revolves around three distinct fleet sourcing models. The diverse nature of these models offers the flexibility to employ a spectrum of strategies tailored to the unique characteristics and requirements inherent in the company adopting them



In-house fleet (also referred to as 1PL):

This model involves the direct purchase or leasing of vehicles by the delivery platform for its own usage. Typically, companies utilising this model rely more extensively on four-wheeled vehicles, although some are also integrating 2/3Ws into their fleets.



Contracted fleet (sometimes referred to as 3PL):

The delivery platform enters rental contracts with third-party logistics services, which utilise contracted drivers or gig workers. The proportion of delivery vehicles engaged under this model can vary significantly, encompassing 2/3/4Ws.



Freelancers

The delivery platform engages independent contractors, such as gig workers, to perform delivery services. They primarily operate 2/3Wvehicles.

In both CONTRACTED FLEET and FREELANCER models, the fact that vehicles are owned by the partners, rather than by the delivery company, allows for flexibility to adapt to the unique market dynamics and vehicle preferences, while maintaining an efficient and diverse fleet. Broadly, the sector is showing a **tendency to move away from asset ownership**, with the gig economy playing an increasingly prominent role [27]. This shift is driven by various factors, including the flexibility and scalability offered by employing freelancers, and the cost efficiencies of not

having to maintain a fleet of vehicles or a full-time workforce. However, this trend also raises new challenges and considerations, such as the need for fair compensation and working conditions for gig workers.

When transitioning to EVs, especially when shifting from one vehicle type to another (eg, from cars to motorcycles), the impact on the organisation can vary significantly. For instance, while electric cars may excel in handling range and distance compared to EVs, 2Ws can substantially enhance operational efficiency in particular urban settings. This vehicle transition can yield cost savings due to the lower purchase price of 2Ws relative to cars, while also enabling faster order deliveries, ultimately benefiting businesses and customers. On the other hand, certain delivery areas may be unsuitable for specific vehicles, often due to challenging road conditions, safety concerns, or logistical constraints.

Delivery platforms should conduct a meticulous evaluation of their specific context and objectives when selecting a business model and the appropriate type of EV. While aiming for alignment with the existing ICE operational approach can yield substantial advantages by leveraging established infrastructure, operational processes, and expertise, it may also be advantageous to explore a combination of models or to customise existing strategies as potential testing grounds for discovering new opportunities.

In-house fleet electrification (1PL)

This model provides complete control over the delivery process, vehicle branding, and route optimisation. At the same time, it requires considerable upfront financial commitments for vehicle acquisition, and operational costs for maintenance, training, and depreciation of the fleet need to be taken into consideration.

Delivery companies can opt for in-house fleet electrification via **leasing or other asset-based financing** instead of outright vehicle purchases. Leasing provides various advantages such as reduced initial expenses, potential tax benefits, flexibility to upgrade, and access to certain maintenance and support services. As not all leasing solutions and vehicles provided are identical, fleet owners must select a provider capable of delivering solutions customised to the company's specific needs and requirements.

Electrification via freelancers/ independent contractor model

Delivery platforms operating under a freelance model engage independent contractors for their delivery services. Within this context, delivery partners can either have their own delivery vehicles or utilise rental or shared options provided by EV operators, eliminating the need for an upfront financial commitment. Delivery platforms relying on gig workers can introduce a range of incentives to encourage their drivers to transition to EVs. These incentives may include financial bonuses, reduced service fees, and the provision of privileged access to specific delivery opportunities (as will be explored further in this report).

Contracted fleet (3PL)

This model entails delivery platforms outsourcing their logistic services to third-party providers. Typically, the decision to adopt this model extends beyond EV considerations, as it is influenced by legal, regulatory, and commercial factors within the business environment. However, some companies have begun exploring collaboration with 3PL to support them in the transition.

Quantifying the benefits of electric motorcycles



Brazil

Vammo is a Brazilian electric mobility company offering electric motorcycle rental and battery swapping services to delivery operators. On its website, the company informs drivers about the estimated financial benefits of switching from an ICE motorbike to an electric one, based on the kilometres driven per day and the available rental plans.



Smart timesharing of e-bikes



 **Brazil** | **Model: Freelance**

iFood Pedal is the company's e-bike initiative, powered by a strategic collaboration with Tembici, the largest micro-mobility company in Latin America. This programme seamlessly integrates shared e-bikes into the delivery ecosystem by leveraging off-peak demand differences between private and commercial users. Delivery partners can utilise the e-bikes during extended hours (four, in contrast to the limited one-hour private-use period) and at significantly more affordable rates. Integration in the company's digital systems allows Tembici to distinguish private users from iFood drivers, granting them exclusive benefits. As each e-bicycle serves multiple drivers dynamically, cost-efficiency is achieved through shared maintenance and lower upfront costs.

Tembici's strategic positioning of e-bike stations near delivery hubs in urban areas has significantly eased the burden on drivers commuting for their deliveries, also facilitating rides in hilly and challenging city areas.

Starting with about 500 e-bikes, iFood Pedal has expanded to over 3 000+ e-bikes across seven Brazilian cities, servicing around 5 000 drivers each month and fulfilling over 800 000 orders.

The programme is also integrated into educational programmes like "Pedal Responsa" that aims to reinforce the importance of traffic and "Meu Diploma do Ensino Médio" which offers full scholarships to drivers who want to continue studying and finish high school - connecting environmental and social impact into one solution.

Recognised with the SDG Innovation: Disrupting Business as Usual award at the United Nations Global Compact Leaders Summit 2023, iFood Pedal stands as a pioneering solution that promotes sustainability, empowers delivery partners, and reimagines urban mobility through more sustainable deliveries.

Testing electric cars in Romania



 **Romania** | **Model: 3PL**

In Romania, delivery company Glovo is partnering with the company E-Mobility to conduct trials on the use of small electric cars for delivery purposes. Currently, a fleet of 49 vehicles is in operation, following a leasing model subsidised by Glovo, coupled with a battery swapping subscription model. The subsidy starts at 70% in 2023, gradually decreasing to 30% in 2024. The primary goal of this pilot programme is to assess the viability of electric cars for delivery in Romania, based on a comparison of efficiency levels and operational costs when compared to ICE.

2. Development of charging infrastructure

Infrastructure development plays a pivotal role in fostering a seamless and sustainable ecosystem for the electrification of delivery services. At the heart of this transformation is the need to establish a **robust charging infrastructure** to support growing fleets.

While limited battery range can potentially impact the performance of employed drivers, range anxiety has a more pronounced effect on freelancers, as extended downtimes can directly affect their earnings and livelihoods.

Depending on whether installation and maintenance are publicly or privately led, and whether the network serves the public or private fleets, charging stations can be tailored to accommodate a wide array of EV users, such as private vehicle owners, commercial fleets, and other categories across different types of vehicles. While expanding public charging infrastructure and grids is increasingly needed to foster EV uptake at scale, delivery platforms with an owned and operated fleet often need to consider direct investments in on-site charging stations within their facilities, while some organisations choose to partner with their vendors to install stations on their premises, to support the expansion of the charging network.

Alternatively, proactive measures by other stakeholders are required to facilitate infrastructure providers to accelerate their work:

- **Government support** can extend to facilitating infrastructure advancements. Initiatives include subsidising real estate owners who provide land for grid infrastructure, shared mobility facilities, or battery swapping installations.
- **Platforms** can contribute to shaping a favourable policy environment and improving infrastructure by forging long-term commitments with governments and electric network operators (ENOs), to assure steady and secured demand and instil confidence in the profitability of their investment. The approach seeks to assure providers that their investments in charging infrastructure will not go underutilised, as a dependable number of riders will rely on it, thus enhancing the security and viability of their capital outlay.
- **Retail partners** can offer space on their premises for the charging of batteries for delivery drivers to make use of, while waiting for new orders.

3. Battery swapping

Battery swapping, or battery exchange, is gaining momentum as a promising solution to the limitations of electric delivery and address range anxiety. Offered by an increasing number of operators, often in concomitance with EV rental services, the system is characterised by the establishment of a strategically placed network of battery exchange stations, distributed across the operational expanse of the delivery service. The stations are equipped with fully charged batteries, tailored to be compatible with the vehicles in use.

This approach eliminates the need for protracted charging periods and empowers drivers to sustain uninterrupted delivery operations. It brings notable enhancements to operational efficiency, reducing charging times, and extending on-road operational hours. Moreover, battery swapping has the potential to prolong the life of EV batteries by replacing them before they are fully depleted, reducing wear and tear and extending their useful life [28]. In addition, battery recycling can benefit from swapping models as the returned batteries are conveniently managed at the swapping station, facilitating more effective recycling practices at the end of their lives [29].

Tackling the object of affordability, the separation of the power pack from the vehicle can significantly lower the initial purchase costs of EVs. By selling or renting the vehicle without the battery, manufacturers and EV operators can offer a more budget-friendly option to drivers.

Battery cell sourcing is the largest cost item for electric 2Ws and forms 30% to 40% of the vehicles' bill of materials [30].

The success of battery swapping hinges on operational efficiency and digital technologies. Vehicles remain connected to the internet, enabling continuous location tracking, thereby mitigating risks associated with rental. On the other hand, battery inventory and infrastructure development demand substantial capital investment. The lack of standardised battery models further compounds costs and operational complexities. Ongoing maintenance and oversight of charging equipment are imperative to ensure secure operations, consequently increasing maintenance costs for swap facilities.

Battery swapping is gaining significant traction, especially for 2Ws and 3Ws, as these vehicles are ideally suited for this technology: the batteries used weigh less than 10kg, making them easily replaceable without the need for automation support, which helps to keep capital expenditure limited to batteries and charging stations [31]. Typically, as the daily travel distance extends, 2Ws using battery swapping tend to become increasingly cost-effective compared to conventional point charging or gasoline-powered vehicles [32]. China is at the forefront of the battery swapping industry, having already deployed approximately 1 400 swapping stations and planning to install 26 000 stations by 2025 [33]. Those efforts are driven by automotive standardisation efforts and targeted subsidies [26].

Until a more standardised market for swappable batteries emerges, manual assistance is required at the stations to ensure the correct battery type is assigned to each swapper. As the industry progresses toward greater uniformity, automated stations will become more prevalent, especially for 4Ws. This will represent a higher initial investment but offer simplified operations and reduced running costs, especially when deployed at scale.

Mobile and portable charging

Mobile and portable charging are alternative solutions to traditional static charging infrastructure. To charging operators, mobile charging offers the possibility to quickly build up infrastructure or test optimal locations, with the flexibility to relocate without incurring extra expenses. They also help fleet owners avoid the installation of static charging stations as well as give fixed rates that integrate operational and capital expenditures, and energy costs.

The evolution of mobile charging technology has paved the way for the introduction of **mobile-charging-as-a-service (M-CaaS)**. M-CaaS providers offer on-demand charging for EV fleet vehicles, eliminating the need for upfront costs related to on-site charging infrastructure, construction, energy expenses and charging equipment maintenance.

Charging units can be easily deployed at diverse locations, providing flexibility and convenience in areas with limited infrastructure or grid connectivity. M-CaaS providers can offer various charging models, typically recurring charging schedules, on-demand charging, or state-of-charge (SOC)⁸-linked options. The latter requires systems integration to enable the automatic dispatch of charging vehicles when the fleet's battery level reaches a predefined threshold.

⁸ The state of charge (SoC) is a measure of the current battery capacity as a percentage of its rated capacity. In other words, it's the level of charge of an electric battery relative to its capacity.

Building battery swapping station network



India

Model: Freelance

Swiggy is testing different strategies to promote EV adoption among its delivery partners. The two-pronged strategy focuses on enabling easier access to EVs for gig workers, as well as helping the development of the broader charging ecosystem. Initially, the company partnered with a 2W EV rental operator, offering a discount on monthly rentals for its drivers. However, the pilot programme encountered significant challenges as it met with resistance from drivers, mainly stemming from the critical issue of inadequate charging infrastructure.

In response to this challenge, the company has partnered with Sun Mobility, the leading provider of energy infrastructure and services for EVs in India, to establish charging stations deploying battery swapping technologies. Through this partnership, Swiggy's e-bike fleet will have access to a wide network of swapping stations in the city of Bangalore.

Even though mobile charging is expected to remain a niche application, it is an interesting complement to traditional charging stations and can support early-stage markets or EV operators with limited financial resources.

Battery swapping service



Taiwan

Gogoro is a Taiwanese company that developed a battery swapping refuelling platform for urban electric 2W scooters, mopeds, and motorcycles. Stations for swaps are available 24/7, station sites can be mapped en route, and users have the option to pay cash-free or secure a subscription plan for ease of riding. Gogoro also has its own line of smart scooters that have features tailored to different users' needs. The vehicles are encrypted and have face ID for security, and are connected to Gogoro app and iQ system for system updates. Gogoro has collaborated with the Taiwanese and Indian government to promote the EV adoption, and with delivery platforms such as Swiggy, India's leading on-demand convenience delivery platform.

4. EV fuel cards

Especially in markets where grid expansion is propelled by public investments, fleet operators may find it advantageous to access, fully or partially, the public charging infrastructure, to reduce the need for establishing their own charging stations. In this case, fleet drivers are equipped with fuel cards, available in both physical and virtual forms, enabling them to connect to standard chargers at home or on the road. Payments are facilitated via prepaid cards or reimbursement for charging expenses. Cards are typically programmed to distinguish and exclude private vehicles from charging and can offer preferential pricing. They can also include a fleet management system, providing comprehensive driver usage tracking through the fleet owner's account.

By negotiating preferential tariffs for on-road charging of an owned fleet it is possible to break down some of the barriers to public charging network access. By subsidising road or home charging for freelancers, platforms have another tool to incentivise transition with their freelance drivers.

5. Developing EVs fit for commercial purposes

OEM play a critical role in driving the electrification of delivery through the design and production of vehicles customised to suit the unique demands of delivery operators. They need to efficiently cater to fit-to-purpose vehicles for the delivery segment, with diverse requirements depending on both geography and the type of vehicle, be it 2Ws, 3Ws or 4Ws.

The market's growth potential for new commercial EV models depends on achieving a balance between range and price while ensuring that vehicles deliver high performance. High performance includes extended range, low maintenance requirements, extended longevity, superior comfort and safety across different road conditions.

Even when delivery platforms do not have their own fleet, they have a major influence on their driver's vehicle selection. For this reason, some OEMs have found it useful to strike collaborative ventures with platforms and EV operators to conduct pilots aimed at identifying drivers' needs and matching them with their best-suited models. These initiatives are notably successful in regions with a thriving culture of 2Ws, where vehicles serve dual purposes for both personal and commercial use, and vehicles with improved performance can cater to different technical and functional requirements. The fit of the vehicle also hinges on local infrastructure. Developed markets favour comfortable, efficient vehicles, while regions with poor infrastructure might require sturdier options to navigate rough terrain and ensure dependable transport.

As battery swapping technologies gain traction, particularly within the 2W segment, battery compatibility also becomes a crucial consideration for OEMs, as it influences seamless integration and accessibility, ultimately impacting the overall success and acceptance of their vehicles.

Concurrently, as the trend toward electrification in the sector continues, OEMs must learn how to integrate their business clients more extensively into their product offerings and market strategies. In certain countries, OEMs can leverage policy support in the form of incentives. Nonetheless, they

should also prepare for a transition toward a subsidy-free operational and sales model, with a primary focus on acquiring market insights, establishing a robust market presence, and fostering collaborations with key EV adopters.

Custom-built refrigerated trucks



Norway

Model: Own Fleet

Norway's largest online grocery store, **Oda**, has embarked on a collaboration with Ford to introduce a fleet of specially adapted fully electric Ford E-Transit refrigerated trucks. These E-Transit vehicles have been customised to meet Oda's insulation and cooling requirements, completed with tailor-made storage compartments. Charging infrastructure and efficient routes are essential for a smooth transition, with the E-Transit offering a battery range that meets Oda's requirements. The vehicles have been integrated into the company's digital fleet management tools, providing enhanced productivity and reduced operating costs. The new vehicles have been successfully tested, but an ongoing learning period is what will prepare Oda for an all-electric future.

Pioneering electric trucks in South Africa



 **South Africa** | **Model: Own fleet**

October 2023 – South Africa’s leading online retailer, takealot.com, has announced a pioneering step towards sustainable ecommerce in South Africa with the launch of a new fleet of electric trucks. Through its collaboration with renewable-energy company Aeversa and lease vehicle supplier Avis, the online retailer is setting a new standard for environmentally sustainable transportation, coupled with retail innovation and sustainability.

“As the world of sustainability continues to evolve, we will continue to evolve with it. This exciting collaboration marks an important step for us as a consciously innovative business in South Africa,” says Frederik Zietsman, CEO of takealot.com.

“Backed by the Forest Stewardship Council, introducing electric trucks into our business reinforces our commitment to sustainability. We don’t just deliver packages; we are delivering on our promise to reduce our carbon footprint and provide a sustainable shopping solution to our customers,” adds Zietsman.

Says Adrian Van Tonder, Avis’ General Manager for Sales – Commercial Fleet: “This journey has been a great learning opportunity and experience as we navigate our way through uncharted waters. We are proud to be partnered with the forward thinkers and runners within the EV space. The journey towards this milestone has been filled with meticulous modelling of the JAC electric trucks

which will be taken into service by takealot.com in October. To keep elevating its approach to sustainability, the company has worked closely with Aeversa to strategise and implement optimal integration methods, ensuring the seamless operation of the fleet in the Western Cape. The support from Avis onboarding the fleet is a first-of-its-kind project in the world of commercial vehicle leasing. One of the key highlights of this partnership is Aeversa’s innovative approach to addressing driving range of EVs. By harnessing the potential of the JAC N75EV’s impressive 200-kilometre range per charge, Aeversa has transformed it into a 400-kilometre-plus daily driving range by implementing strategic charging solutions. This revolutionary approach not only enhances operational efficiency but substantially minimises environmental impact”.

“This partnership is about so much more than electric trucks and charging stations; we envision this as the first step towards a much-needed shift in logistics,” says Rick Franz, CEO of Aeversa. “Through this partnership, we are excited to weave a more sustainable approach into the fabric of logistics and transport in South Africa,” adds Franz. The partnership also marks a significant milestone in the realm of charging infrastructure, with the inauguration of the largest DC fast charging station in the Western Cape. The station, boasting a remarkable 240-kilowatt capacity earmarked for 2024, ensures rapid charging and reliability, enabling takealot.com to maintain an uninterrupted supply chain and meet customer demands without disruption.

Aeversa’s commitment to sustainability extends beyond the vehicles themselves. The company leverages its proprietary Ampcontrol software to maximise the use of green energy sources, further reducing carbon emissions while lowering the TCO for takealot.com’s vehicle fleet. The JAC N75EV electric trucks, powered by Aeversa, are also equipped with advanced safety features, enhancing driver safety and operational reliability, ultimately reinforcing takealot.com’s dedication to delivering swiftly, safely and sustainably. The collaboration signifies a significant stride forward in South Africa’s reimagined transportation practices, driving the online retail sectors towards greater innovation in the quest for a greener future.

Collaborative approach to electrification



 **UAE** | **Model: 3PL**

Talabat is currently undertaking electrification initiatives, driven by a commitment to environmental sustainability and economic efficiency. The company is actively addressing a variety of challenges, including technological and regulatory limitations, and behavioural change of riders, through engagements with OEMs, distributors, 3PLs, and government bodies. Ongoing collaborative efforts are pivotal in piloting EVs, testing infrastructure viability, and seeking regulatory approvals. Talabat has filtered multiple EVs based on performance and safety metrics. Out of 15 EV brands assessed, only five 2W EVs had the basic capabilities required. These brands were then piloted for at least two weeks with live orders in limited areas, and were assessed on their safety through rider focus groups, internal testing and performance, compared to their 2W counterparts and on scaling capabilities based on their battery replacement infrastructure planning. Three different EV bikes have already been integrated into the fleet. The process has also encouraged competition to strive for better technology and pricing models for 3PLs within Talabat’s logistics ecosystem. These partnerships continue to facilitate the development of safe and efficient EVs, enabling to adapt to different market challenges while maintaining an efficient and competent delivery fleet through 3PL-owned vehicles. As part of the ongoing electrification strategy, the company is focused on improving financial feasibility for all 3PLs companies by using different incentives to encourage them to transition to EVs while leveraging governmental support. With this approach, Talabat has started to successfully launch over 30 EVs in its fleet.

E-motorcycles in Brazil



 **Brazil** | **Model: Freelance**

iFood, in collaboration with Vammo, has introduced an e-motorcycle rental service for its delivery partners. Supported by iFood’s investment, this service offers various advantages, including discount rates and a rental package that covers maintenance, assistance, and spare bike options, with no additional charges for swapping at designated stations.

The programme aims to optimise operational efficiency, offering an intelligent recharging infrastructure with a choice of three e-motorcycle models and three rental plans tailored to different delivery needs. Efficiency is achieved through a data-driven fleet management approach, optimising charging station placement and enhanced fleet control. As a result, this programme significantly reduces fuel costs for freelancers, while increasing their net earnings.

6. Private financing for delivery partners

One effective incentive for drivers involves offering attractive financing options to facilitate EV adoption. Many delivery platforms are partnering with OEMs and EV operators to establish financing lines for their delivery partners. These financing arrangements are designed to make it more affordable for gig workers to purchase, rent, or lease EVs. This not only provides economic viability to the workers but also increases their motivation by offering access to a high-performing vehicle.

Platforms also have the option to facilitate the collection of subscription or rental fees on behalf of their drivers. These fees are deducted directly from the drivers and subsequently transferred to the EV operator. This approach aims to minimise delinquencies and prevent delays in payments, to reduce dropouts in case a driver falls behind on their rental payments.

Sustainable transport and financial inclusion in East Africa



 Kenya | Model: Freelance

In Kenya, **Glovo** runs a project aimed at promoting sustainable transport and financial inclusion in East Africa through a collaboration with Roam (EV provider) and M-Kopa (financing platform). Couriers are offered a subsidised leasing price to acquire electric motorbikes over a 24-month period, with M-Kopa providing loans to ensure the viability of the acquisition. This decision is particularly beneficial for couriers in Kenya, given the high fuel prices in the country, as it enables them to reduce their daily expenses compared to using an ICE vehicle. Subscribers to this offer are also provided insurance and maintenance services by Roam. At the time of writing this report, three couriers have already acquired electric motorbikes, and the project aims to expand to a pool of 30 couriers by the end of 2023.

Similarly, in Spain, Glovo has signed agreements with electric bicycle suppliers to offer freelance couriers affordable leasing or procurement options. In Madrid and Barcelona, over 800 couriers currently utilise electric bicycles provided by the company Zoomo. Especially in compact cities like Barcelona, these vehicles maintain efficiency levels equivalent to motorbikes, ensuring a stable source of income for couriers while reducing operational costs related to fuel and maintenance. In cities where low carbon emission zones have been established by the government, electric bicycles enable couriers to access and deliver within city centres.

EV operators: EVaaS and shared mobility platforms

Delivery partners can be supported in switching to greener vehicles without incurring the upfront costs associated with ownership, by providing **incentives to rent or lease EVs via an EV operator such as EV-as-a-service (EVaaS) providers or shared mobility platforms**. Those companies, frequently start-ups, offer innovative solutions to support delivery partners in transitioning to greener vehicles without the burden of significant upfront costs. Such incentives not only alleviate the financial load on drivers but are also meant to ensure efficient and hassle-free operation to the platform.

The mismatch between range and affordability is still a critical concern for gig workers in many countries.

There is a significant gap in knowledge and awareness surrounding the financial benefits tied to EVs. Many drivers are unaware of the substantial long-term savings associated with EVs, underscoring the urgency of facilitating access to information and education on the matter.

EVaaS operators acquire EVs and make them available through a subscription plan. What sets this model apart is the convenience it offers to drivers: they can charge

their EVs for free at designated charging stations, or use battery swapping stations, reducing operational costs and minimising downtime. The monthly lease fee generally covers comprehensive maintenance and repair services, significantly reducing the running costs for the drivers.

Following a similar approach, **shared mobility providers** enable access to shared vehicles for both private and commercial use, optimising resource utilisation and promoting efficient last-mile delivery. The efficiencies in this approach are based on the utilisation of off-peak private use times, which coincide with peak hours for commercial deliveries. This synchronisation benefits both the share provider and the delivery operators. By identifying and accommodating commercial drivers through digital integration, the shared mobility provider can offer more favourable conditions, such as extended rental times beyond the typical time limit for private users. Moreover, strategically located stations optimised for shared mobility make the process convenient for the gig workers.

These alternative business models help align the cost structure of EVs more closely with that of ICE. By offering the battery pack on rent or lease, rather than purchase, they significantly reduce the initial acquisition cost of the vehicle. Subsequently, the battery cost is recovered by the operator via a fee charged per kWh or km.

7. Gradual fuel duty reduction

Another financial incentive strategy aimed at motivating freelancers to transition to EVs involves the implementation of a transition period during which drivers receive the same compensation they were previously earning for each order, which includes payment for the fuel costs associated with ICE vehicles. This means that even if they have adopted EVs, drivers still receive the fuel cost compensation to maintain their income stability.

Following the agreed-upon transition period, the delivery platforms gradually phase out the fuel cost reimbursement for ICE vehicles. This progressive reduction encourages drivers to embrace EVs while ensuring that they continue to receive their usual payout, which no longer includes fuel costs, as they complete the transition to EVs

8. Preferential treatment of electric deliveries

Delivery platforms operating on a gig worker model have the flexibility to implement strategies such as preferential assignation of deliveries or better payouts as an incentive to drivers who opt for EVs, encouraging the transition and increasing their take-home earnings.

A similar possibility involves granting EV drivers priority or early access to selecting their preferred work hours, geographic zones, or the orders they wish to fulfil.

One incentive for drivers involves establishing “green zones” in selected cities, where EVs are given priority access and preferential assignments through algorithmic routing. This incentive not only encourages EV adoption but also optimises delivery distances for EVs, maximising their range. Additionally, it can provide advantages such as offering vendors, restaurants and retailer partners zero-emission deliveries, aligning with their sustainability goals and business benefits.

Development of green zones



 **Brazil** | **Model: Freelance**

As part of a set of green initiatives, iFood is testing a green delivery zone in São Paulo to promote sustainability and enhance the earning potential of its drivers.

The location chosen for the zone is characterised by bike-friendly terrain, a substantial order volume, and the presence of rest stations (support point), ensuring driver engagement in the pilot programme. In partnership with Vammo (refer to box on page 23), iFood is offering vehicles to freelancers with access to a battery swapping system. The initial phase of the pilot involved deploying 33 electric motorcycles in the designated area. During this phase, the performance of each EV was meticulously compared to that of traditional motorcycles, based on an analysis of drivers' earnings, occupancy rates, and weekly operational costs. Encouragingly, the results clearly demonstrated a strong driver preference for EVs, with nearly 50% of all orders being delivered through this programme. The success of the pilot has paved the way for the programme's expansion, with the ultimate goal of transitioning the entire area into a 100% green delivery zone.

iFood's support points are designated spaces for delivery drivers to rest during their shifts. They are found in iFood partner restaurants, hubs, or public spaces, often with private sector partnerships. They provide amenities such as microwaves, water filters, sinks, power outlets, a rest area, and internet access. The company's app indicates their locations, helping drivers plan breaks and support their well-being.

9. Expand pool of low-barrier vehicles

As societies transition toward electric transportation, the impact of the shift reaches far beyond the environmental sphere. While in-house fleet drivers may encounter difficulties related to the availability of charging infrastructure, it is the 2/3W freelancers who contend with the most significant hurdles, and thus stand to gain the greatest advantages from the uptake of EVs.

Considering that 2Ws – comprising mopeds, scooters, motorbikes, and motorcycles – constitute approximately 30% of global mobility, particularly in regions like China, South Asia, and south-east Asia [30], the potential social impact of electrification in these areas holds significant relevance.

Expanded accessibility of electric 2Ws opens new avenues for employment, specifically for companies switching from traditional or e-motorcycles to e-bikes in their fleet. This benefits creates job opportunities and gives platforms the opportunity to increase their pool of drivers to meet growing market demand. To fully realise the promise of accessible electric 2Ws, careful attention to inclusivity in design is essential. Features like lowered ground clearance, wide entry points, and reduced noise levels create a user-friendly experience, regardless of physical capabilities.

10. Training and awareness programmes

Addressing the inclusivity and accessibility aspects of the transition makes the integration of EVs in delivery services even more compelling. To overcome secondary adoption challenges, such as the lack of awareness among riders about EV benefits, platforms and EV operators need to understand existing perceptions and attitudes toward EVs in each market they operate in. Proactive and strategic communication initiatives can help bridge the knowledge gap. Offering training programmes for delivery drivers to familiarise them with the operational aspects of EVs is instrumental in addressing initial concerns and uncertainties, and generating behavioural change. These programmes provide comprehensive guidance on efficient driving techniques to optimise EV range, the use of digital applications, safety regulations, maintenance support, and overall utilisation of EVs. They equip delivery personnel with the necessary skills and knowledge for a seamless transition.

Empowering South African youth



 **South Africa** | **Model: Freelance**

In South Africa, a distinctive approach is being employed to support unemployed youth and address the demand for skilled riders in the delivery sector. Delivery companies such as **takealot.com** partner with driver training academies to upskill young individuals from low-income, urban neighbourhoods, particularly those who are unemployed and lack opportunities for higher education. These academies offer training in riding e-bicycles. They provide an avenue for young South Africans to gain essential skills and subsequently equip them with a vehicle and other necessary tools to become delivery riders. This initiative not only provides a means of income for young individuals but also meets the rising demand for 2W delivery services in South Africa. It's a win-win solution, addressing unemployment while supporting the growing delivery industry. Future plans include expanding the partnership with driver training academies to assist young South Africans in acquiring their motorbike driver's licences. Once qualified, the graduates will then be connected with companies that rent e-motorcycles, equipping them with the necessary tools to become delivery riders.

Social impact initiatives



 **UAE** | **Model: 3PL**

Talabat provides a range of social impact programs to support its drivers. These initiatives encompass summer programs, safety summits, and focused safety messages aimed at enhancing its drivers' well-being and road safety. The company also actively participates in water distribution sponsorships, partnering with initiatives like Dubai Can, a sustainability project aimed at reducing single-use plastic water bottle waste in the city of Dubai. Furthermore, Talabat promotes the establishment of vendor waiting areas and has set up multiple cooled rider rest stops across various countries.

11. Carbon credits for drivers

In certain regions, delivery platforms are starting to venture into carbon credits for green vehicles, primarily to provide an additional income source for freelancers who use EVs for their deliveries.

These projects need to be carefully evaluated and undergo rigorous external audits to ensure strict compliance with third-party environmental standards.

While being an innovative initiative, its impact may be limited. Nonetheless, it presents a possible avenue for improving revenue streams for businesses and individuals utilising commercial EVs.

12. Public finance

Public finance plays an important role in EV adoption, serving as a critical element upon which many stakeholders depend. There is a consensus on the crucial role that this form of financing can fulfil in reducing the financial burden on value chain players and infrastructure providers through the provision of financial instruments, making the transition to electric fleets a more viable and attractive option.

Public institutions such as infrastructure funds and development banks can offer a range of subsidies and incentives to promote the adoption of EVs in the delivery sector, ranging from subsidies and tax credits to produce and purchase EVs and EV components, to the provision to financial institutions and companies with credit lines and guarantees, thereby reducing risks and enhancing the feasibility of various electrification projects. Financing instruments can also be used to boost the establishment of critical infrastructure that typically requires high upfront investment and extended construction periods, enhanced grid capacity, and fast charging technologies, and to provide incentives for scrapping ICE vehicles.

It is also important to note that many countries differentiate between incentives for private and commercial use.

Most common forms of financing

Subsidies

Direct payments or grants from governments or organisations to reduce the purchase price or operational costs of EVs.

Rebates

Partial refunds of the purchase price or operational costs of EVs.

Tax credits

Reductions or refunds of taxes related to the purchase or use of EVs to reduce a company's tax liability, making the transition a more appealing investment. The exact credit amount can vary, taking into account factors like the type of EV, its battery capacity, and local regulations. In some tax systems, businesses are given the opportunity to accelerate the depreciation of EV costs, allowing them to deduct a more substantial portion of the EV's expense from their taxable income each year. Tax deductions or credits can also be directed to the installation of EV charging infrastructure at business locations.

Tax exemptions and discounts

Waivers or reductions of taxes or fees normally applied to conventional vehicles, such as registration fees, road taxes, parking fees, or congestion charges.

Bonus payments

Additional payments or rewards for purchasing or using EVs or related services, such as free charging stations, access to bus lanes, or loyalty programmes.

Preferential loan conditions

Banks and financial institutions can also offer specialised financing solutions for commercial fleets looking to adopt EVs, and discounted EV loans.

Accessing public subsidies for EV purchase

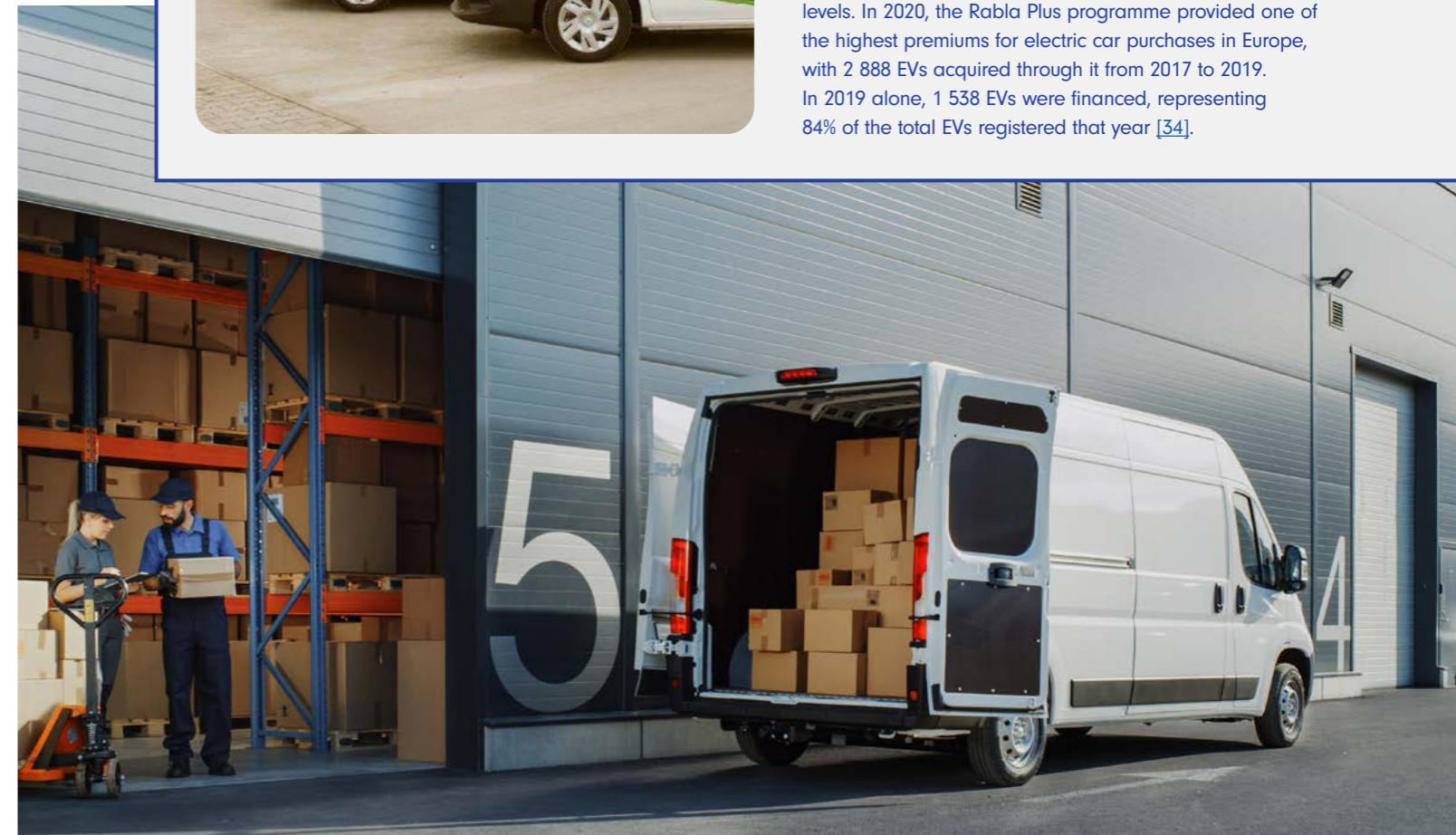


Romania

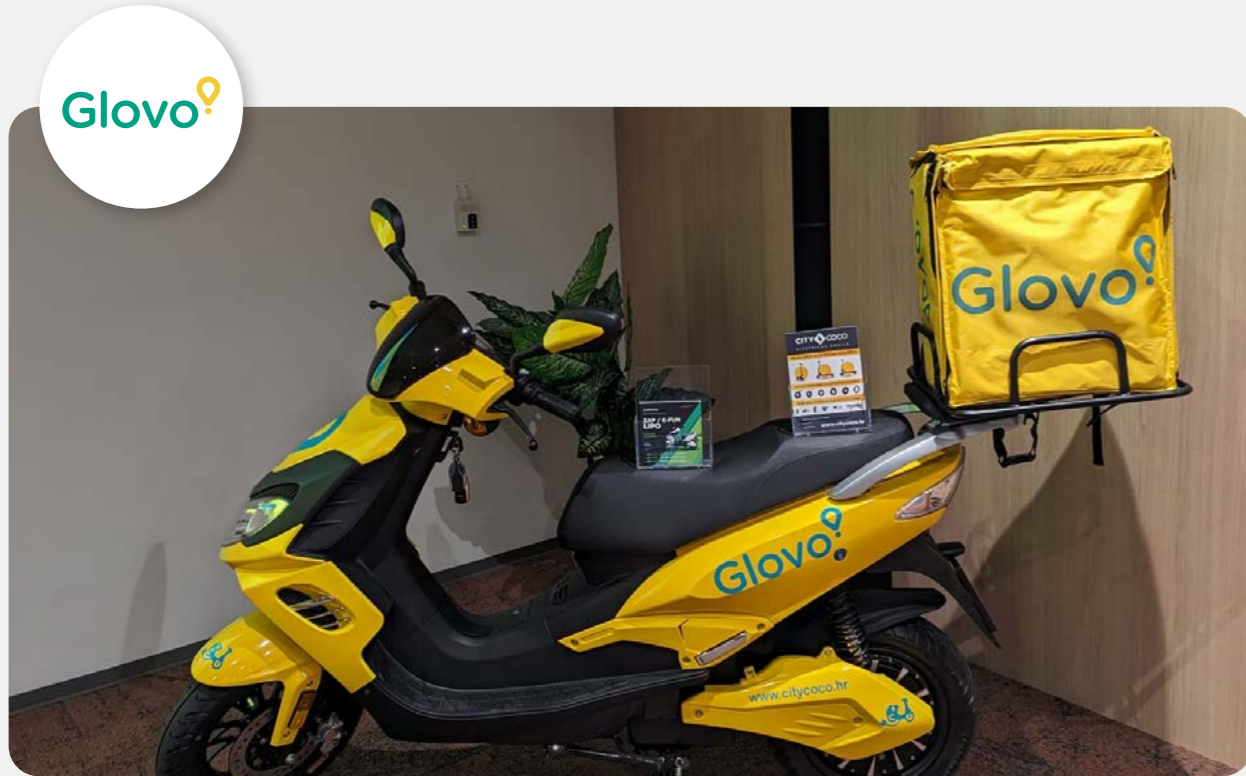
Model:
Own fleet

The online Romanian retailer **eMAG** and **Sameday**, the majority-owned courier company, have in recent years benefitted from a programme granted by the Romanian Environmental Fund Administration (an autonomous institution functioning under the Ministry of Environment) to finance operational leasing for about half of their EVs to date.

The programme, called Rabla Plus, is a well-structured funding mechanism that actively encourages the acquisition of EVs. It extends its benefits to a wide array of entities involved in economic activities, regardless of their legal structure, encompassing diverse individuals and business entities. The specific funding amount may vary from year to year, but it consistently provides eco-label subsidies for the acquisition of both new pure EVs and plug-in vehicles, subject to maximum permissible emissions levels. In 2020, the Rabla Plus programme provided one of the highest premiums for electric car purchases in Europe, with 2 888 EVs acquired through it from 2017 to 2019. In 2019 alone, 1 538 EVs were financed, representing 84% of the total EVs registered that year [34].



Financing vehicles and structural investments



 Spain | Model: 3PL

In Spain, Glovo has committed to transitioning its entire owned fleet, which consists of over 300 motorbikes, to EVs. This fleet is exclusively dedicated to facilitating deliveries from Glovo's 28 micro-fulfilment centres (virtual supermarkets) across 13 cities in the country. Glovo has successfully accessed €500 000 in public funding from the NextGenerationEU Funds, a programme deployed by the European Union to support the economic recovery from the coronavirus pandemic and build a greener, more digital and resilient future [35]. This funding covers 20% of the vehicle costs and up to 40% of the structural investments related to EVs, such as charging stations or safety measures in the micro-fulfilment centres.

In Croatia, Glovo collaborates with 3PL companies responsible for managing the delivery fleet. In 2022, the company's primary logistic partner made the strategic decision to convert its entire fleet to electric motorbikes. To facilitate this transition, Glovo worked closely with the 3PL, sharing transparent information and committing to certain volumes of business in the future. This choice resulted in a significant increase in the proportion of orders delivered using EVs, rising from 5% in January 2022 to 35% in May 2023. The 3PL also accessed the NextGenerationEU Funds, to invest in EVs and charging infrastructure.

13. Policy measures⁹

In addition to purchase incentives, governments and regulators have a crucial role in designing policy measures to boost the demand for EVs without imposing fiscal burdens on the state. These measures may include **creating dedicated lanes and parking spaces for EVs and designating zero-emission commercial vehicle zones**. To drive these initiatives, governments derive substantial benefits from intelligence sharing with platforms and EV operators. These collaborations allow them to gain valuable insights that can drive efficient and well-informed infrastructural investments, that not only aid delivery companies in optimising their operations but also create a positive social impact by enhancing the safety and convenience of urban transportation for citizens.

Other policy measures involve the efforts toward **standardising chargers** and accessibility of stations, as well as regulations that promote **market openness** to new actors and business models within the charging infrastructure sector. Furthermore, some government interventions encompass the implementation of **fleet mandates** with progressively increasing EV requirements over time and the **enhancement of fuel economy standards** [26].



To drive these initiatives, governments derive substantial benefits from intelligence sharing with platforms and EV operators."



⁹ This report focuses on decarbonisation of fleets, therefore will not discuss the role of governments and regulators in supporting the adoption of sustainable biofuels even though some policy makers are considering interventions in this area, with a focus on enhancing supply chains, exploring new sources of supply, and advancing innovative production techniques [26].

Green Easybox



 Romania | Model: Own fleet

Sameday is rolling out a network of energy-independent lockers called Green Easybox. These lockers are fully powered by solar energy, they are interconnected, monitored and managed remotely, using Sameday's proprietary technology. They also have a high-capacity internal battery, optimised by the company's specialists. This guarantees the operation of the device, regardless of the weather conditions.

The first parcel locker fully powered by solar energy was inaugurated as the 2 000th Easybox. Currently, 36 lockers have been installed in Romania, strategically positioned near residential centres, office spaces and shopping areas. By allowing for order consolidation, this solution helps to reduce up to 50% of the CO₂ emissions associated with the delivery and collection of packages. The green Easybox service is part of Sameday's effort to develop environmentally friendly out-of-home delivery solutions, and their development is complemented by the use of electric cars for delivery.

14. Investments in new technologies, alternative power sources and digital systems

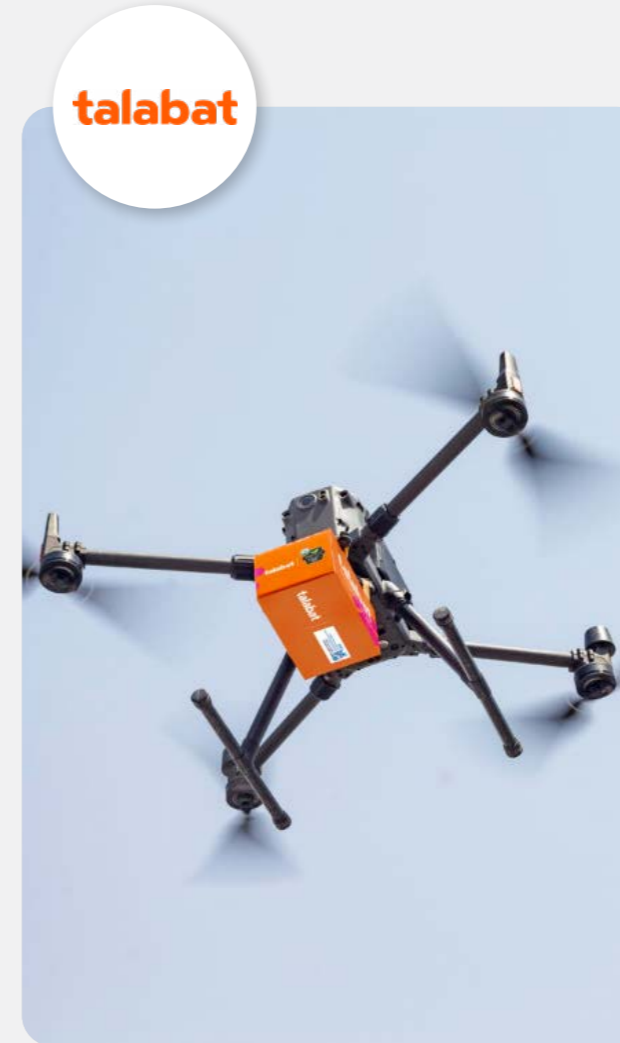
Promising new technologies are exploring enhancements in battery capacity, the utilisation of alternative power sources, electric retrofit, and the scaling of digital systems as a way to empower the proliferation of new business models and drive operational efficiency. To amplify the impact of those innovations and drive greater cost-effectiveness, it is crucial to secure investments from both the private and public sectors.

To advance along the learning curve, reduce costs, and realise significant societal benefits, governments, especially, must play a primary role by providing targeted incentives and support.

Battery technology needs to improve, specifically in terms of capacity and efficiency, to achieve longer ranges, reduce the need for frequent charging, and therefore address range anxiety. Furthermore, companies are investing in **alternative power sources**, such as hydrogen fuel cells, which hold significant promise in applications where extended range and heavy payloads are required. **Electric retrofit** aims to offer a solution to convert ICE LCVs to electric drivetrain while ensuring that vehicle quality and specifications are maintained. Retrofitting is gaining interest as a solution for actors looking to transition to zero emissions and cut down their TCO, all while retaining their existing vehicles. Despite promising partnerships to develop proofs of concepts and pilot programmes, widespread adoption still necessitates a substantial investment and research boost.

Technology enables the development of innovative business models and corresponding financing systems tailored to EV adoption. We have seen how models like EVaaS are developing, helping to address the high upfront purchase costs of EVs. The EVaaS approach not only makes EVs more accessible but also reduces business risks through dedicated

Drone and robot deliveries



 UAE | Model: 3PL

At the end of 2022 Talabat launched its first drones in partnership with UVL Robotics in Muscat Bay. The first-of-its-kind drone delivery in the region was successfully piloted and launched and is still operating today. A less dense area with fewer high-rise buildings has allowed such technologies to come to fruition. With its success, Talabat is looking to expand the delivery area and add more drones to its fleet.

In February 2023, the Roads Transport Authority (RTA) in partnership with Dubai Integrated Economic Zones Authority (DIEZ) and Talabat UAE, announced the pilot launch of autonomous food-delivery robots, also known as "Talabots". The pilot phase saw the introduction of three "Talabots" to serve residents in a closed gated community. The robots travelled within a 3km radius from the launch point, ensuring a speedy 15-minute delivery time. The launch of autonomous delivery robots was part of ambitions to support riders in the next generation of sustainable delivery by having them cover short-distance deliveries to increase efficiency, fleet optimisation and reduce carbon emissions. This required extensive mapping of the location and was limited to the vendors and customers of the community. However, the pilot success has built interest in expanding the coverage of the "Talabots".

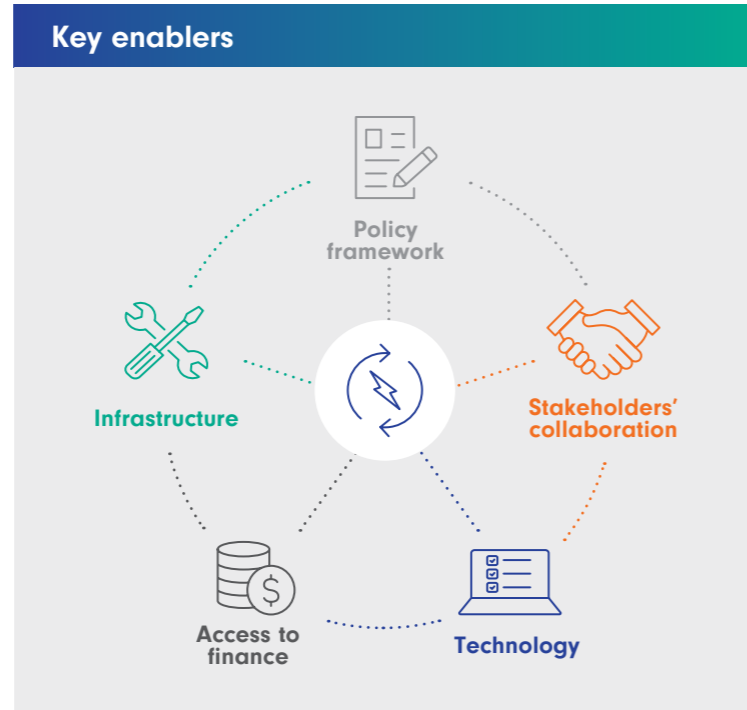
technical and servicing support. Additionally, it can encompass the installation of charging infrastructure and other services, simplifying the transition to electric mobility for businesses and improving the overall feasibility of EV adoption. However, companies in the industry are relying on private investments, as governmental support for what is considered high-risk investments is still very limited. Where a suitable infrastructure subsists, private investments should focus on the development of **digital systems**, such as routing software, to analyse current mileages, payloads and distance between drops. This way, data and technology have become crucial in the EV transition. Notably, DHL a logistics company, has invested in a start-up that created an innovative algorithm that factors in various variables, including vehicle type and EV range restrictions, to optimise delivery routes for reduced carbon emissions [36]. Other companies are deploying, for example, electric drones for delivery.

“*Despite promising partnerships to develop proofs of concepts and pilot programmes, widespread adoption still necessitates a substantial investment and research boost.*”

THE PATH FORWARD

Electrification represents a unique opportunity to simultaneously address a multitude of objectives, encompassing environmental responsibility, social impact, and enhanced business performance.

To ensure a swift and successful transition, it is imperative to approach electrification as a holistic system, underpinned by critical and interconnected components. Consider, for example, the need for delivery companies to have access to an adequate charging infrastructure before embarking on the transition, while infrastructure builders seek high adoption before committing to investments. Balancing this intricate system of relationships, containing trade-offs and complex interactions, is essential to achieve significant market uptake.



Robust policy framework to create a favourable environment for the growth of electric deliveries

To drive the transition effectively, policy needs to support changes with legislation, regulatory support and appropriate subsidies. This demands governments are not only financially and institutionally capable, but able to provide accessible financial incentives while pursuing ambitious innovation policies. Creating trust and confidence in entrepreneurs and companies is a crucial aspect of the overall policy environment.

Development of viable financial support

EV adoption may entail substantial capital costs, despite vehicle prices being reduced over time. The establishment of charging infrastructure also introduces significant expenses, often including space acquisition, installation or leasing for charging stations. Accessible financial support can not only facilitate early-stage investments but, together with a favourable policy environment, is pivotal to fostering the development and scale of innovative solutions.



Establishing an extensive charging infrastructure

The development of a robust charging network is needed to meet the fleet's operational requirements. This effort requires substantial financial and institutional support to prevent potential obstacles from becoming bottlenecks in the electrification process. Innovative business models are instrumental in expanding charging stations and their accessibility.

Technology aligned with operational needs

Technology serves as an enabler of electrification by continually advancing the efficiency, accessibility, and practicality of EVs. Through innovations in battery technology, charging infrastructure, and fleet management software, technology enhances the viability of EVs. It enables longer ranges, shorter charging times, and efficient charging management, addressing concerns like range anxiety and infrastructure constraints. Moreover, technology-driven business models, such as EVaaS, alleviate upfront costs and facilitate EV adoption.

Close collaboration with public and private stakeholders

Achieving a successful transition demands close coordination, and financial and policy alignment between government bodies and private entities, as they collectively shape the ecosystem. Drawing from lessons learned from early adopters and in local pilots is also essential to define a roadmap for the transition and improve efficiency and resource utilisation.

A final essential consideration is that achieving scale must be done thoughtfully, with a keen awareness of the potential risks associated with a rapid transition in an ecosystem that may not yet be fully prepared. Images of obsolete EVs accumulating in urban areas [37] bring to light a significant aspect of the main environmental challenges in the EV landscape: resource extraction, waste management of EV and batteries (LIBs), and health impacts of the disposal of LIBs.

The carbon footprint associated with the production of vehicles and batteries poses a significant challenge in achieving the carbon reduction goals that EVs are meant to achieve. To avoid dirty electrification, it is essential for the industry to pursue clean energy procurement, through power purchase agreements (PPAs) or other instruments. Moreover, collecting, disposing, and recycling LIBs remains an underdeveloped process. Despite the existence of recycling programmes, their reach is limited, and the recovery rates are still suboptimal. This, in turn, drives a loss of materials, the emergence of illegal activities, and a concerning lack of accessible recyclable materials for the industry. It is evident that while the electric transition presents a promising path toward sustainability, it must be executed with prudence and under an integrated approach. Addressing this type of challenge is imperative to fully realise the benefits that EVs are intended to bring.

We believe EVs are set to shape the future of food, grocery and retail delivery, offering a compelling combination of economic, social, and environmental benefits.

However, this transition requires a comprehensive and collaborative approach from stakeholders within the ecosystem. As delivery platforms increasingly commit to electrification, key elements such as operational models, infrastructure, regulations, and financing must adapt to this new reality. Emerging markets for electrification must be able to rely on proper regulatory support and financing mechanisms, as policy and finance are critical enablers of the transition. Vehicle manufacturers, delivery platforms, and EV operators must reimagine their strategies and embrace innovation to stay competitive. OEMs should not only transform their vehicles but also rethink their commercial approaches.





Platforms need to explore diverse collaboration models to ensure efficient resource utilisation, and support and reward their drivers in leading the transition. Drivers, too, must be informed and empowered to make the switch.

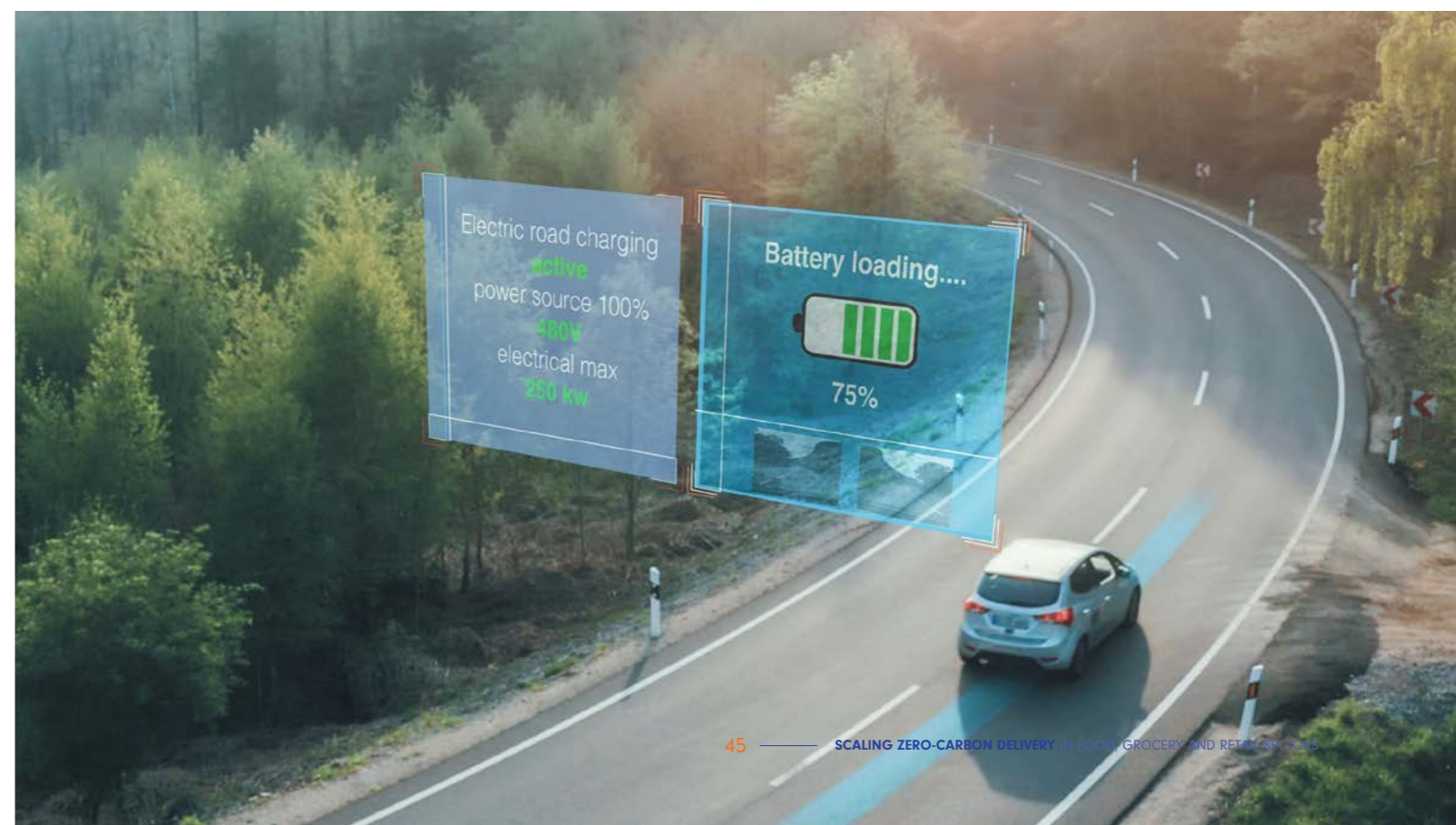
For the vision of an electrified delivery to become a reality, all ecosystem players should come together to develop a holistic solution that enables overcoming the multifaceted challenges posed by the electrification process.

Abbreviations and acronyms

- 2/3/4W:** Two, three and four-wheeler vehicles
- BEV:** Battery electric vehicle
- Capex:** Capital expenditure
- ENO:** Electric network operator
- EV:** Electric vehicle
- EVaaS:** EV-as-a-service
- EVCIPA:** Chinese Electric Vehicle Charging Infrastructure Promotion Alliance
- GHG:** Greenhouse gas emissions
- ICE:** Internal combustion engine
- LCV:** Light commercial vehicle
- LIB:** Lithium-ion battery
- M-CaaS:** Mobile-charging-as-a-service
- NDC:** Nationally determined contributions
- OEM:** Original Equipment Manufacturer
- Opex:** Operating expenditure
- PPA:** Power purchase agreement
- SOC:** State-of-charge
- TCO:** Total Cost of Ownership
- UACA:** UAE Alliance for Climate Action

Companies mentioned in this report

Company	Headquarters	Classification
eMAG 	Romania	Food, grocery and ecommerce
Glovo 	Spain	Food and grocery delivery
Gogoro 	Taiwan	EV operator, battery swapping
Flink 	Germany	Grocery company
iFood 	Brazil	Food and grocery delivery
ODA 	Norway	Grocery delivery
Sameday 	Romania	Delivery company
Swiggy 	India	Food and grocery delivery
takealot.com 	South Africa	Food, grocery and ecommerce
Talabat 	United Arab Emirates	Food and grocery delivery
Vammo 	Brazil	EV operator, battery swapping



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09 ABOUT THE AUTHORS

Naspers/Prosus

Naspers and Prosus form a global consumer internet group and one of the largest technology investors in the world. We create sustainable value by building consumer internet companies that address big societal needs – they improve people’s everyday lives and enrich the communities they serve. As an investor in pioneering technologies, our software-driven and asset-light digital services develop sustainable solutions for big societal needs. As a result, our locally owned and built businesses are not only driving innovation in key areas of life – from finance to education – but are creating jobs and helping to transform social and economic inequalities.

Ubuntu

Ubuntu is an environmental solutions platform designed to accelerate the implementation of sustainability goals of companies and other organisations. A one-stop knowledge platform to empower and scale the collective intelligence of impact communities and help accelerate their ESG benchmarks. Ubuntu has a team of dedicated researchers, experts, and content creators to make the transition to environmentally friendly practices easy with sustainable innovations, trending news, events, and top-tier knowledge carefully curated for any global environmental challenge.

