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Electric Vehicles and Green Mobility in Africa: Challenges and Opportunities

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Humanity's Path to Self-Annihilation

That humans are the most destructive species on this planet is not a subject of debate. We are constantly inventing new ways and things that will make us comfortable and setting prices for them to distinguish our species from the rest. Our conversations about life range from rapid extraction of oil, stones, and steel, to building skyscrapers, and to manufacturing the best cars for ourselves. We can't stop cutting down trees to create space to live and graze our cattle, pigs, and fowl to quench our insatiable appetite for meat, and of course, to play golf. From drilling oil in the deepest offshore well, burning it in engines to move faster, and generating electricity and plastics. We don't have a way of disposing waste from some of these sources of pleasure without affecting our environment.

It seems like humanity cannot live without this destruction, but what does it leave behind? Destruction of homes for other species like insects, oil and plastic pollution of our seas, no fodder for grazers, no leaves for browsers, no prey for species that depend on it for survival. Only huge mounds of soil, stone, concrete, and steel, which we can stop calling homes and offices, and, of course, a planet that is worse than we found it. Any person who is observing what humanity is doing from a hypothetical planet away from Earth can tell that we don't care about anything about this planet, apart from our unending desire for comfort. But wait! There is a ray of hope. Those of us who believe that this cannot continue forever without subjecting humanity to self-annihilation continue preaching the gospel of climate protection, emission reduction, pollution control, and general sustainable living. This has been the basis for the proposed new ways of life, to shield us and for our future generations from our careless actions. We are now talking about sustainable ways of living through the reduction of waste, emissions, cleaner water sources, and fresh air to breathe.

EVs as Hope for Green Mobility

There is no doubt that Electric vehicles (EVs) are shaping how we treat our environment. The vehicles are the bridge for humanity to transition to low-emission transportation, driven by the urgency to combat global warming and climate change. This transition is based on the ability of EVs to shift energy demand from fossil fuels to electricity, which can be generated from cleaner sources like solar and wind. As a result, EVs help eliminate pollutants and particulate matter, indirectly mitigating climate impacts from carbon and nitrogen emissions. Both battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) are positioned to revolutionize transportation, as future passenger vehicles, public transit, commercial fleets, and last-mile delivery are expected to shift from ICE to electric. This transformation will significantly alter global infrastructure, urban planning, and energy systems. Ideally, EVs appeal particularly to sustainability-conscious consumers concerned about the carbon footprint associated with continued use of internal combustion engines (ICE). For these individuals, the zero tailpipe emissions of EVs present a promising, eco-friendly alternative.

Model	Number of used sold globally in 2023	Vehicle type, Manufacturer and rival
Tesla(Model Y)	One of the world's best-selling EVs 1.2M units produced in 2023. Projected to reach 1.3-1.5 Million in sales in 2024. Powered by 60-81 kWh battery pack offers up-to 300 miles EPA for conventional model and 751 km CLTC for 2024 6-seater version. Priced at around $45,000 in the US (before $7,500 federal incentive)	Type-Compact midsize crossover SUV Manufactured by-Tesla.Inc Rivals like the Ford Mustang Mach-E or Rivian R1S
Tesla model 3	VW's best-selling EV Powered by 60-82 kWh battery (usable ~57-75 kW that offers up-to 830 km (CLTC)529,000 units were sold in 2023 39, 384 units were sold in the first half of 2025. Priced at around $40,000 in the US (before $7,500 federal incentive) but incentives can net effective prices under $35,000	Feature: Compact Sedan Manufactured by Tesla.Inc Rivals Chinese models like Geely Geome Xingyuan models
Volkswagen ID.4	Uses a 77 kWh battery that offers 260-360-mile range. Competitively priced and reliable. VW partnered with IONITY for charging. Ranks 10 globally by sales. Sold more than 17,000 units in the first quarter of 2025. Major EV market player in Europe Costs about €40,000 in Europe and MSRP $38,995 in USA and $31,000 after credits in USA	Produced in Chattanooga (US), Zwickau (Germany), and Emden (Germany) Major market is USA and Europe- Minor market is China (20%) Rivals like the Kia EV6 and Ford Mustang Mach-E
BYD Song Pro/Plus	Affordable and Reliable 4M units in 2024, 543,000 units produced in 2023 up from 410,000 in 2022. Offers 71-110 km electric- only range	Type. Mid-Size SUV available as PHEV Manufactured by BYD Auto, China
Geely Geome Xingyuan	Currently ranks 3rd EV manufacturer globally. 28, 146 units were registered in China in January 2025.	A compact EV with competitive pricing that is designed for urban markets Manufactured by BYD Auto, China

EVs are rapidly transforming global transportation, with accelerating adoption in both developed and emerging economies, like China and USA. Cities such as Singapore and Dubai are piloting autonomous electric shuttles, and manufacturers like Tesla, Proterra, and BYD are now global leaders in electric bus supply. Projections indicate that by 2025, the annual global EV market could exceed 20 million units worldwide, amounting to roughly 25% of new car sales, with this figure expected to

rise to 50% by 2030 in high EV adoption regions like China and Europe. The industry is projected to grow further, with major delivery companies, including DHL and Amazon, committing to net-zero fleets by 2040 through EV adoption. Charging infrastructure is expanding rapidly to support this shift, with more than 3 million public chargers being installed globally in 2024 alone. Fast-changing technology from Tesla and Electrify America can d a 200 miles of charge in just 15-20 minutes. Additionally, vehicle-to-grid (V2G) technology is gaining momentum in Europe and Japan, helping EVs stabilize renewable energy systems. Further adjustments are in place to ensure the emission mitigation is achieved. Like now, EVs are increasingly integrated with renewable sources such as solar and wind.

16.7 million	The total number of battery-electric vehicles(BEVs) and Plug-in-hybrid vehicles(PHEVs) that were sold worldwide in 2024
8.1 million	The total number of new globally-sold cars that were manufacture in China in 2023
9.1 million	The number of EVs that were sold in the first quarter of 2025
4.05 million	The total number of globally-sold EV cars that were manufacture in China in 2023
3.2 million	The total number of EVs that were sold in Europe in 2022
1.4 million	The number of EVs that were sold in the USA in 2023
2 million	The total number of EVs that were registered in the USA in 2023
1.2 million	The total number of EVs that were registered in California state of USA(36% of the total)
51.4 million	The projection of global EV sales by 2030
40 million	The number of EVs that were on the road by 2023 globally
26 million	The number of EVs that were on the road by 2022 globally
60 million	The number of EVs that were on the road by mid-2025 globally
141,714	The number of EV public charging ports in the USA in 2022
2.2 million	The number of EV public charging ports in China in 2024
$0.03-$0.04	The average cost of transport reduction per mile for EV users against ICE's $0.15
~$0.20-$0.25	The average fuel and maintenance costs for EVs compared to $0.15 for ICE
182,000	The projected demand for public fast EV chargers by 2030 in the USA
1000,000	The projected demand for public level-2 EV chargers by 2030 in the USA
132kwh-$80/kwh	The reduction of EV battery costs from 2022-2030

Besides climate change awareness, there are multiple other factors which are behind the dramatic shift to EVs in developed nations and emerging markets. The EU's mandate for zero-emission new cars by 2035, and China's target of 50% EV sales by 2030 are phasing out ICE. The USA created a $7,500 tax credit while China's established trade-in subsidies of up to 20,000-yen drive adoption as incentives to encourage purchase and use of EVs. The UK and France expanded the low emission zones in London and Paris encouraging EV use. Production costs for EVs are also reducing due to a reduction in battery prices, lower running costs and comparable running general performance.

In 2024, global EV sales were about 17–17.8 million, exhibiting a 25% YoY growth, with China leading at approximately11 million (estimated at 50% of the global market share). Europe's sales were also significant and 3.1 million in sales, which was a 20% YoY growth. EV sales in the USA was about 1.6 million, representing about 10%of the world.

EV sales to the rest of the world in 2024 was 1.3 million, representing about 4% of the total global sales. In the first quarter of 2025, global EEV sales hit 9.1 million units, up 28% year-over-year. China alone produced 5.47 million, representing more than 50% of the global EV market share, while, Europe's sales stood at 1.34 million (24% of the global market share). The US contributed to about 607,000 in global EV sales, which is about 8%). Tesla's share of EV market share in the USA was 55% in 2023. This represented a 10% decline from 2022. However, the company projected an increase its global sales by 1.3-1.5 million units globally in 2024. The other car producers that have ventured significantly into EV offerings are BMW, Mercedes-Benz and Volkswagen. By 2023, Volkswagen controlled 11.5% of the global EV sales.

80%+	The percentage of EV charging that occurs at home
7.8%	The estimated percentage of public fast EV chargers that are available in the USA
85-90%	The percentage of EV energy that is converted to motion
20-30%	The percentage of ICE vehicle energy that is converted to motion
10.7%	The percentage of the needed public level-2 EV chargers that are available in the USA
75%	The proportion of global EV stock and charging infrastructure that is in China
50%	The projection of the percentage of the new global car sales that will be EVs by 2030
40%	The percentage increase in the sale of EVs in the USA between 2022 and 2023
7.6%	The percentage increase in the new EV car sales in the USA between 2022 and 2023
22%	The percentage of new PHEVs and BEVs cars that were sold globally
59%	The proportion of new globally-sold cars that were manufacture in China in 2023
25%	The percentage of EVs which are sold globally that came from European manufacturers
92%	The proportion of new cars in Norway that are electric
58%	The proportion of new cars in Sweden that are electric

EV Adoption Views at a Glance

Adopting EVs instead of ICE vehicles offers substantial financial advantages. These include benefiting from the reduced costs of purchasing and maintaining the vehicles. As an illustration, between 2021 and 2024, the average battery pack prices reduced from $132k per kilowatt hour to $100K per kilowatt hour. Currently, the average cost of running, including fuel and maintenance, of EVs is significantly lower than that of ICE vehicles. The lifetime cost savings range from $ 8,000 to $12,000.

The environmental benefits of EV adoption are striking when compared to traditional vehicles.

Consider this. It has been established that in 2021 alone, 40 million tons of CO2 equivalent emissions were avoided through the adoption of EVs. In 2024, about 40% of global electricity came from low-carbon sources (renewables, nuclear). This indicates how much the world is cutting its reliance on fossil fuels, especially oil. As global power grids incorporate more renewables and EVs become more popular, we are likely to experience lower emissions. EVs convert a higher percentage of energy to motion compared to ICE vehicles, reducing overall energy waste. However, factors like battery production emissions and local grid uncleanliness may offset the gains. As an illustration, EVs using heavy coal grids in India exhibit a higher lifecycle emission than Norway's renewable-heavy grids. EV battery manufacturing emits approximately 17,000 tons of CO2 annually. An EV must be driven for up to 37,000 kilometers to offset this emission. Battery mining can also have a significantly adverse environmental toll, but innovations in recycling and cleaner production methods are addressing this challenge.

Recent studies depict rapid improvements in EV reliability, easing adoption concerns. A 2024 review by ADAC on 3.6 million vehicles revealed that the reliability of these vehicles is significantly high, reducing the adoption concerns. The battery life of more than 50 EV models was at least 300 miles in 2023. This range is expected to rise above 400 miles in the future. The main challenges to EV adoption are the inadequacy of infrastructure, especially charging points in rural areas, and its uneven global distribution. The Trump administration also expressed an intention to remove $7500 EV tax credit in September 2025 for EV manufacturers, which could be a major adoption disincentive.

Africa is at the Periphery of EV Conversation

We are ecstatically talking about fresher air through green mobility. But where does this conversation end? China, Europe, and North America dominate the EV landscape with China alone accounting for over 60% of global sales. Yet, in the midst of global electric vehicle (EV) revolution conversations, Africa remains on the sidelines. This is evident from Africa's EV market is which is significantly minuscule. Electric car sales grew by more than 200% to nearly 11,000 units in 2024. The global EV value was $623.3 billion during this period. Forecasters anticipate this value to grow at 9.82% annually, reaching $906 billion by 2028. In real currencies, the African EV market was valued at $15.94 billion in 2024, projected to reach $17.58 billion in 2025. As of quarter 1 of 2025, the EV market value for Africa is at $209.9 million and has been projected to grow modestly to $314.1 million by 2029. However promising these numbers look, it is hard to rule out the fact that Africa's EV share is less than 1% of the global market share, a stark contrast to Europe's 25% or China's 60% projections for 2025.HypoSTAT Research Limited Views this as a major concern that is being ignored, but projecting dire consequences in the fight against fossil-fuel-linked emissions.

Region	Expected EV share in 2025
China	53%
Europe	24%
USA	6%
South-East Asia	13%
The rest of the World	4%

HypoSTAT Research Limited stands for environmental protection through planetary tree cover sustenance, effective waste management, and effective elimination of emissions. That is to say, this organization supports those who speak about green transport systems through the adoption of EVs. **HypoSTAT's** main concern in the EV debate is how Africa's EV state pales in comparison to the global EV market's explosive growth. We can see the glaring disparity both in terms of consumer demand and how major EV manufacturers, especially the Western ones like VW, Ford, and Tesla, ignore Africa in their expansion strategies. This is conspicuous, despite Africa's vast mineral resources that are used and exported to China and the West for EV battery production.

The number of questions that these companies create by underserving Africa, based on lame excuses like structural challenges and limited corporate focus, is large, according to HypoSTAT Research Limited. Think about this. Africa is the largest continent in the world. Its population is about 1.4 billion people is a potentially huge market for EV vehicles, especially in public transport. The continent is rich with resources that help to manufacture critical EV components like batteries. The clean energy potential, especially hydro, wind, and geothermal, is remarkably high in Africa. Why does it look like the continent is out of the EV equation? If the EV advocates and manufacturers are sincere about EV adoption to address global emissions and climate change, why do they make Africa an afterthought?

Region	The current Market Share of Electric Vehicles on the road
China	48%
EU	21%
Norway	92%
India	2%
USA	10%

Recent EV Developments indicate that the renowned EV manufacturers are deliberately not determined to bring Africa on board in terms of EV transition.

Morocco stands out with a 3% EV share in some segments. In Sub-Saharan African countries, the adoption of EVs is fragmented. South Africa, Kenya, and Rwanda exhibit signs of transitioning like the developed countries. Ethiopia is leading in relative terms due to import bans on ICE vehicles. Yet even in Ethiopia, adoption data is inconsistent, and EV numbers are still low. How much do these companies invest to ensure Africa transitions to EVs to mitigate ICE emissions? How sincere is this conversation?

Tesla, the leading EV manufacturer, established only one subsidiary in Kenitra, Morocco, and infrastructure like Superchargers in May 2025, but this is more inclined to leverage the country's renewable energy and export hubs than serving the broad African market. Ford, another popular automaker, upgraded its South Africa Silverton plant to produce the Ranger PHEV in 2025, but this is primarily for export to Europe, Australia, and New Zealand. The affordable new midsize electric pickup that Ford is designing is not tailored for the African market. Hyundai and Kia established plants in Algeria, aiming for the Middle East EV share, with intentions to serve sub-Saharan Africa remaining vague. It accounts for the limited EV imports in Kenya. General Motors (GM) announced in 2021 plans for 13 new EVs tailored for the Middle East market, not Africa. VW experimented with the e-Golf in Rwanda and has expressed the same interest in South Africa alone. Its entry-level EVs are like the ID. EVERY1, with Africa as an afterthought, as its current focus is still Europe. The worst of it all is Toyota. This company has been a dominant player in African ICE markets. However, so far, it has delayed entry into EV production for Africa and only plans three EV models for South Africa in 2026.

HypoSTAT Research Limited perceives the indirect omission of several African countries from the EV conversation bench as deliberate fragmentation that could see the continent lagging behind in the EV transition to curb emissions. It is even surprising that companies like Toyota, which have sold a significant proportion of automobiles in Africa, are ignoring the continent in terms of EV transition. Why should they enter Africa to extract resources to manufacture products that they sell in rich countries? HypoSTAT Research Limited, this is a betrayal by our favorite automobile brands that the continent has been loyal to for decades, and a show that Africa's interests are considered last, despite its contribution to this major transport revolution.

66%	The percentage of new urban buses that were electric in China in 2024
53%	The rate of increase in electric bus fleet in Europe between 2022 and 2023
20%	The percentage of Uber-US rides that are EVs in 2025
100%	Uber's EV ride target in major markets by 2030
70%	The reduction of lifecycle emissions when EVs are powered by renewable energy like solar and wind, compared to ICE vehicles
10-15%	The rate at which EV battery prices are reducing annually
60%	The percentage of European buyers who consider EVs today as opposed to 40% in 2020.
60-70%	The percentage of total vehicles that will be EVs by 2035 worldwide

Excuses may illuminate insincerity in developing EVs for Africa

Chinese manufacturers like BYD, Chery, and Great Wall are aggressively entering Africa with affordable EVs and hybrids via South Africa as a gateway. China also established a major EV plant in Nigeria, but even this is an early-stage industry that targets select markets, rather than the entire continent of Africa. Western and Japanese giants lag, viewing Africa as high-risk. Local African start-ups in Rwanda and Kenya for e-motorcycles and bus conversions are promising but lack the scale of

global players to serve the entire continent. We may predict that the pace of growth will be high in Africa in the future, but without a major key player like Toyota leading, this will only remain aspirational.

The major industry players may attribute their Africa market snubbing to deep-rooted barriers like affordability: Quite a number of them allege that EV prices are prohibitively expensive in poverty-stricken countries, which as struggling to solve basic economic issues. Others allege that most African countries lack infrastructure, like unprepared power grids for large-scale charging, and major policy gaps, like inconsistent incentives, like EV transition subsidies and infrastructure support rapid scaling. Indeed, these are challenges. Africa has fewer than 10,000 public chargers, and most of them are available in South Africa and Morocco. The current price of EVs, which is on average $40,000 to $50,000, may be unaffordable in low-income regions. Why is it too hard to design cheap models that are reliable to be used on the continent? Battery production relies on lithium, cobalt, and nickel that come from Africa. Interestingly, 60% of cobalt, which is used in EV batteries, is obtained from the Congo. Depending on the region for this primary EV production component, without giving the county an opportunity to benefit from the technology is more of a moral and economic concern.

Way Forward

Indeed, the frequent sub-Saharan Africa power shortages signify unreliable power grids. But how hard is it to address this challenge? Some of the sites where the EV materials like Lithium are mined are extremely remote, but the manufacturers devise ways to hark the extraction and transportation challenge. Can they convince us that they cannot do the same with addressing the power grid unreliability to bring Africa EV market to life? Any company that seeks to be a key player in emissions must do all it can to address these challenges to penetrate the market, not use them as excuses.

We have evidence that Africa is ready to board. Look at the ambitious targets by individual African countries like Cape Verde's 100% EV transition by 2035 or Morocco's 60% EV exports by 2030. Ethiopia has placed restrictions on ICE importation, and Kenya has electric bikes and bus startups. Africa require corporate partnerships with key EV players to be at par with the rest of the world in transitioning to EVs. Failure of the key EV players to invest in EV system supports where there is a deficiency indicates that the sincerity in their global emission mitigation fight is insincere.

If the EV manufacturers continue ignoring Africa in EV discourse, emission mitigation will remain a pipedream, not only in the continent but also the rest of the world. EV infrastructure like superchargers will continue to be nonexistent if the EV manufacturers fail to invest in them actively. The urge to invest in reliable power grids to support EV transition in Africa will remain irrational as it is now, because the stakeholders are sleeping. Casting a blind eye to the reality that 1.3 billion people in Africa, using fossil fuels, can thwart the potential gains that the developed world is making in addressing emissions through EVs is irrational. Yes, the population of 1.3 billion people who are using fossil fuels to power their economies can offset all gains made by 3 billion people who are using EVs. I know the questions that are lingering in your minds right now. But the best option is to

have EVs that are built for Africa, and create support structures to sustain this transition.

Green energy advocates should help EV manufacturers to address what they consider impossible, like investing in affordable EV models and charging networks in Africa if they are sincere about their anti-emission agenda. Until then, the continent risks being left behind in the green mobility shift, undermining the fight against emissions.