

2023 ELECTRIC VEHICLES MARKET INTELLIGENCE REPORT



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GREENCAPE

GreenCape is a non-profit organisation that works at the interface of business, government and academia to identify and remove barriers to economically viable green economy infrastructure solutions. Working in developing countries, GreenCape catalyses the replication and large-scale uptake of these solutions to enable each country and its citizens to prosper.

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LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|------------------------|---|
| AC | Alternating current |
| AIS | Automotive Investment Scheme |
| Al | Aluminium |
| APDP | Automotive Production and Development Programme |
| AU | African Union |
| AV | Autonomous vehicles |
| BEV | Battery electric vehicle |
| BMS | Battery management system |
| BRT | Bus Rapid Transit |
| CaF₂ | Calcium fluoride |
| CCS | Combined charging system |
| Co | Cobalt |
| CO₂ | Carbon dioxide |
| CSIR | Council for Scientific and Industrial Research |
| Cu | Copper |
| DC | Direct current |
| DFFE | Department of Forestry, Fisheries and the Environment |
| DMRE | Department of Mineral Resources and Energy |
| DoT | Department of Transport |
| dtic | Department of Trade, Industry and Competition |
| E-buses | Electric buses |
| E-mobility | Electric mobility |
| ES | Energy storage |
| ESG | Environmental, Social and Governance |
| EU | European Union |

| | |
|---------------------------|--|
| EV | Electric vehicle |
| Fe | Iron |
| GDP | Gross domestic product |
| GHG | Greenhouse gas |
| GTS | Green Transport Strategy |
| HEV | Hybrid electric vehicle |
| I & F | Infrastructure and facilities |
| ICE | Internal combustion engine |
| IEA | International Energy Association |
| LCV | Light commercial vehicle |
| LFP | Lithium iron phosphate |
| LIB | Lithium-ion battery |
| MIR | Market Intelligence Report |
| MtCO₂eq | Metric tonnes carbon dioxide equivalent |
| NAAMSA | National Association of Automobile Manufacturers |
| NHTS | National Household Travel Survey |
| Ni | Nickel |
| NPTS | National Public Transport Subsidy Policy |
| OEM | Original equipment manufacturer |
| OES | Original equipment supplier of South Africa |
| PGM | Platinum Group Metals |
| PHEV | Plug-in hybrid electric vehicle |
| PI | Production incentives |
| PRCC | Production Rebate Credit Certificate |
| PV | Photovoltaic |
| RE | Renewable energy |
| SA | South Africa |
| SAAM | South African Automotive Masterplan |
| SADC | Southern African Development Community |
| SANEDI | South African National Development Institute |
| SEZ | Special Economic Zone |

| | |
|--------------|--|
| TIPS | Trade and Industrial Policy Strategies |
| UNIDO | United Nations Industrial Development Organization |
| USA | United States of America |
| VAA | Vehicle Assembly Allowance |
| VALA | Volume Assembly Localisation Allowance |

Provinces:

| | |
|------------|---------------|
| EC | Eastern Cape |
| FS | Free State |
| GP | Gauteng |
| KZN | KwaZulu-Natal |
| LP | Limpopo |
| MP | Mpumalanga |
| NC | Northern Cape |
| NW | North West |
| WC | Western Cape |

Metropolitan Municipalities:

| | |
|--------------|--------------------|
| BC | Buffalo City |
| CoCT | City of Cape Town |
| Ekur | Ekurhuleni |
| eThek | eThekweni |
| JHB | Johannesburg |
| Mang | Mangaung |
| NMB | Nelson Mandela Bay |
| Tshw | Tshwane |

Exchange rate conversion: An exchange rate of 1 USD = R16.94



EXECUTIVE SUMMARY

This market intelligence report is written for investors, original equipment manufacturers (OEMs), component and manufacturing equipment suppliers, and technical advisors. It highlights the current investment opportunities in the electric vehicle (EV) market in South Africa.

The global transition to EVs has accelerated in the past year due to a number of key policy drivers and incentives. The shift to EVs has been primarily driven by national emission reduction commitments and resulting policy initiatives by signatories of the Paris Agreement on climate change. This momentum has led to the European Union voting to officially ban the sale of new petrol and diesel fuel vehicles in Europe by 2035. The EV manufacturing industry has experienced global geopolitical pressures and supply-chain shocks over the past year, which is a driving factor towards the development of regional manufacturing industries and component supply chains to supply local EV markets.

South Africa is a signatory to the Paris Agreement and has announced its ambition to limit greenhouse gas (GHG) emissions to 398-510 metric tonnes of carbon dioxide equivalent (MtCO₂eq) by 2025, and to 350-420 MtCO₂e by 2030 (DFFE, 2021).

The South African Green Transport Strategy (2018) estimates that the transport sector contributes 10.8% of the country's total GHG emissions. According to the Climate Transparency Report (2021) South Africa's transport sector contributed to 12% of South Africa's GHG emissions from fuel combustion. South Africa aims to reduce transportation related GHG emissions by 5% by 2050 (South African Green Transport Strategy, 2018).

EVs are an important mechanism for the decarbonisation of the transport industry through the reduction of direct tail-pipe emissions. A transition to zero-emission vehicles could contribute significantly towards achieving South Africa's GHG emissions reduction targets. The use of renewable energy for EV charging would further improve the sustainability of the EV transition through the reduction of indirect GHG emissions associated with Eskom's coal power dominated grid electricity supply.

In addition, the use of renewable energy for EV charging could enable large fleet owners to benefit from trading of carbon credits.

The vehicle market segments which have been identified as market opportunities for investment with regards to EV uptake include public transport, micro-mobility, and private passenger vehicles. The electric minibus taxi industry has a total addressable market size of 356 485 vehicles that is valued at approximately R540 billion. The unit cost of an electric minibus taxi has been estimated at R1.5 million rand including import taxes. The electric bus industry has a total addressable market size of 65 329 vehicles that is valued at R460 billion. A unit cost of R7 million per bus has been estimated to calculate this market size. The South African electric private passenger vehicle market size is approximately 7.8 million vehicles with an estimated value of R7.8 trillion (assuming R1 million/vehicle).

A unit vehicle cost of R1 million was used to estimate the market size of the electric passenger vehicle market. The market shift towards fleet electrification in each of the vehicle segments is driven by different factors ranging from rising fuel costs, government procurement practices favourable to EV uptake (particularly in the Western Cape) and a greater focus on corporate environment, social and governance (ESG) aspects of business. In niche markets, such as safari game viewing vehicles, a key driver for electrification has been the relative quietness of EVs which prevents wildlife from being scared away during game drives. In the mining industry, the case for the electrification of underground mining vehicles is driven by decreased requirements for cooling and ventilation when using EVs.

Other industrial vehicle fleets are expected to become electrified in the medium to long term as battery range technology advances.

The barriers to EV uptake in the identified market segments include: limited public charging infrastructure, high capital costs associated with procuring EVs and limited market availability with regard to affordable and fit-for-purpose EVs. One of the identified contributors to the high cost of EVs in South Africa is the customs duty of 25% that is applied to imported EVs, as well as the additional *ad valorem* (luxury goods) tax that is applied to imported vehicles of more than R600 000 in value.

These tax barriers have been created by the Department of Trade and Industry to protect the local automotive manufacturing industry, which is a significant contributor towards job creation and export revenue for South Africa. An enabler of an EV transition in South Africa could be to incentivise and support the South African automotive manufacturing industry to transition to the production of EVs – a shift that may be required ultimately to enable continued participation in key automotive export markets.

Table 1: Highlights the market opportunities in the EV industry in South Africa and provides an overview of the major drivers and barriers to these.

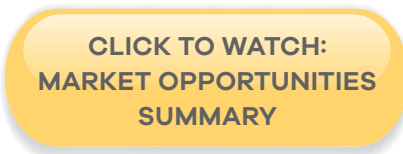


Table 1: Overview of the market opportunities, drivers and barriers within the EV market in SA

| Opportunity | | |
|--|---|----------------|
| Local manufacturing and electrification of public transport | | |
| Key Drivers | Barriers | Term |
| <ul style="list-style-type: none"> Rising fuel costs South African Green Transport Strategy's 5% decarbonisation target by 2050 Government procurement policies in favour of EV procurement (Western Cape Government Motor Transport and CoCT Fleet Services are leading in this regard) 80% bus body local component requirement for public procurement¹ | <ul style="list-style-type: none"> High capital cost of procuring electric buses Low market availability of electric bus and minibus taxi manufacturers Limited charging Infrastructure along public transport routes and facilities | Medium to long |

¹ Note that there is some uncertainty with regard to this requirement due to changes to regulations affecting public procurement

Table 1 continued...

| Opportunity | | |
|--|--|-----------------|
| Electric micro-mobility for last-mile delivery | | |
| Key Drivers | Barriers | Term |
| <ul style="list-style-type: none"> Affordability of electric micro-vehicles Low import duties Ease of local assembly of Complete Knock Down Kits Local component supply chain currently exists | <ul style="list-style-type: none"> Battery range limited to 100 km Limited charging infrastructure Limited applicability beyond last-mile delivery and shared mobility services | Short to medium |
| Opportunity | | |
| Local manufacturing of electric private passenger vehicles | | |
| Key Drivers | Barriers | Term |
| <ul style="list-style-type: none"> European Union ban on the sale of new internal combustion engine (ICE) vehicles by 2035 has a direct impact on SA vehicle exports Auto Green Paper on the Advancement of New Energy Vehicles in South Africa: The South African Road to Production of EVs High custom duty and <i>ad valorem</i> taxes applied to imported EVs in South Africa | <ul style="list-style-type: none"> A large financial investment in new production lines and manufacturing equipment is required to transition the local automotive manufacturing industry to produce EVs Lack of government policy clarity around the future of ICE vehicles in South Africa and incentives for EV production | Medium to long |
| Opportunity | | |
| Local lithium-ion cell manufacturing | | |
| Key Drivers | Barriers | Term |
| <ul style="list-style-type: none"> Increasing need for lithium-ion batteries (LIB) in renewable energy and stationary storage, EVs, consumer electronics, and other sectors, both in SA and globally Availability and relative ease of access to lithium, cobalt, nickel, manganese and other critical raw materials in SA and the sub-Saharan Africa region | <ul style="list-style-type: none"> High energy intensity of lithium-ion cell production Industrial energy insecurity with regards to frequent load-shedding Global Battery Alliance: Battery Passport has total Life Cycle Assessment and ESG requirements which favour green industrial practices and renewable energy usage for battery cell manufacturing European Green New Deal which aims for the Eurozone to be Carbon Neutral by 2050, provides an emission reduction challenge that may limit South Africa's integration into global EV supply chains due to the carbon footprint of shipping cells from South Africa to Europe, and Eskom's grid electricity emission factor | Medium to long |

Figure 1 below shows a ranked breakdown of these identified market opportunities according to the growth potential and ability to overcome market entry barriers

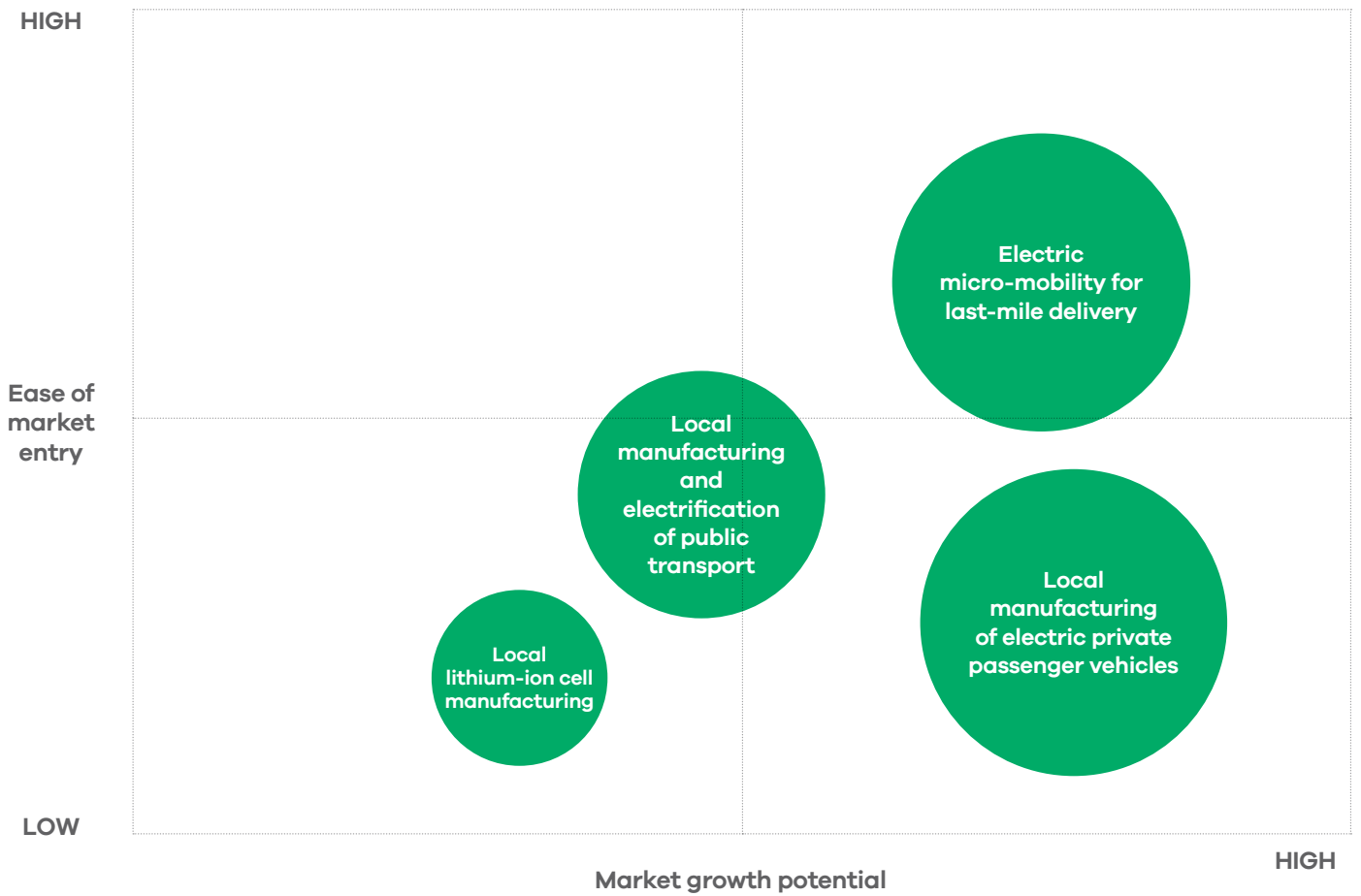


Figure 1: EV market opportunities according to the growth potential and ability to overcome market entry barriers

WHAT'S NEW?

Since the 2022 Electric Vehicles Market Intelligence Report (MIR), there have been several important developments in the sector. Updates and additions have been made to reflect these developments, which include:

EV policy:

- The South African Green Transport Strategy has now been ratified by all provinces with an ambition to reduce the GHG emissions of the transport sector by 5% by 2050.
 - The European Union officially banned the sale of all new internal combustion engine vehicles by 2035, which will put pressure on the South African automotive market to transition to the production of EVs to protect the export market.
 - The European Green New Deal with its target of ensuring that the Eurozone is carbon neutral by 2050 will increase the pressure to use renewable energy for industrial processes to protect existing export markets.
-

EV OEMs:

- Audi South Africa has launched six new EV models in the e-tron range in the South African market.
- BMW has announced the decommissioning of its BMWi3 production line. The BMWi3 has been one of the most affordable and popular EV models in South Africa.
- Volkswagen has announced plans to manufacture an electric SUV model in South Africa by 2035.
- The rise of the electric micro-car with a range of 100 km continues to grow with the addition of Funky Electric to the South African market in addition to the Eleksa City Bug.
- Scania South Africa in partnership with the Shoprite Group has piloted the first heavy duty battery electric truck with a range of 350 km.

EV charging service providers:

- Zero Carbon Charge has announced plans to develop a national EV charging network powered by renewable energy sources such as wind and solar.
-

WHAT'S NEW?

- ZimiCharge has launched its app-based payment system for EV charging in South Africa with ambitions to partner with existing onsite solar PV installations at shopping malls and office parks.
- Grid Cars in partnership with Audi South Africa has developed 33 new public EV charging stations in South Africa.

Public transport:

- Golden Arrow Bus Services has procured the first electric 65-seater commuter bus in South Africa for pilot testing and has announced plans to procure 60 electric buses annually from 2023 / 2024 onwards.
- FlixBus has announced plans to bring the first electric minibus taxi to South Africa for field testing with local minibus taxi associations in 2023.
- MiPower has launched the first electric student shuttle bus service with the University of Johannesburg in 2022.

Last-mile delivery services:

- MellowVans has achieved 70% local components usage in its local manufacturing of electric three-
-



wheelers for last-mile delivery, with the first exports from South Africa to the European Union.

- Go-Electric has launched its first electric moped pilot project with Spar online grocery delivery services.
- Green Riders has launched a fleet of 600 electric cargo bikes to support the growing electrification of last-mile food and grocery delivery services, such as Uber Eats and Mr Delivery.
- Everlectric in partnership with Woolworths has piloted the first electric panel van with a range of 300 km.

Mining:

- Anglo American has piloted the world's largest EV for mine haulage services in Limpopo in 2022.
 - This was the first commercial application of a hydrogen fuel cell vehicle in the South African market, and the mining industry in particular.
 - Anglo American aims to develop the hydrogen fuel cell value chain in South Africa based on its existing investments in the mining and processing of Platinum Group Metals (PGMs).
-



INTRODUCTION AND PURPOSE

This market intelligence report is written for investors, OEMs, component and manufacturing equipment suppliers, and technical advisors. It highlights the current investment opportunities in the EV market in South Africa.



Globally, the EV market has grown steadily since 2010, supported by financial and non-financial incentives to make EVs an attractive purchase for private consumers. According to the Global EV Outlook 2022 (International Energy Association, 2022), there were 16.5 million electric cars on the world's roads, following a decade of rapid growth. Global electric car registrations increased by 65% in early 2022 compared to the previous year.

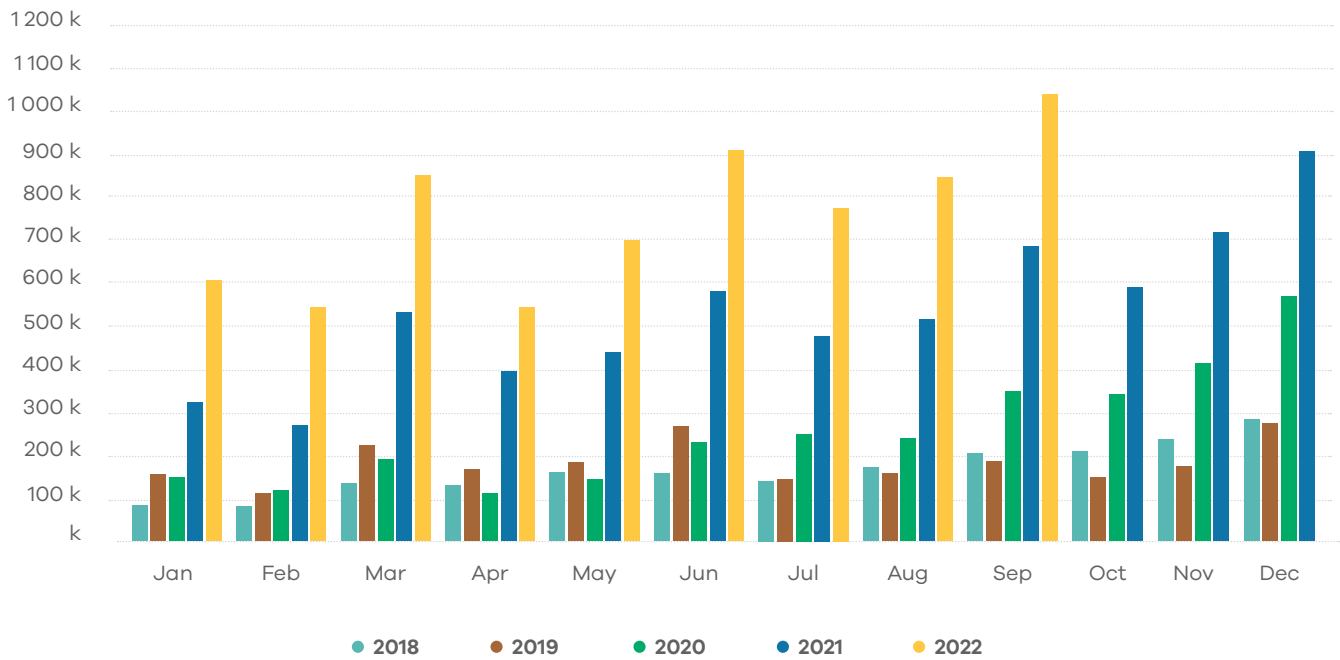


Figure 2 Global plug-in electric car sales worldwide 2018 to 2022

Source: Inside EVs, 2022



There is a global shift towards EVs, which is driven by technology advancements, improvements in affordability (as EV manufacturers begin to reach economies of scale) and government regulation and policy around the reduction of GHG emissions in the transportation sector. South Africa has a well-developed automotive assembly and components manufacturing industry which produces ICE vehicles for the South African and export market. EVs are currently not manufactured in South Africa and are largely imported.

The 2022 South African Automotive Export Manual indicates that ICE vehicle exports from South Africa increased to 298 020 units in 2021, up from the 271 287 vehicles exported in 2020, while export value increased by R17.1 billion to R138.3 billion.

ICE automotive component exports saw a substantial increase of R14.7 billion to a record R69.2 billion in 2021, up from R54.5 billion in 2020. South Africa's seven major vehicle manufacturers invested R8.8 billion in 2021, the second highest yearly figure on record, while the component sector invested a record R5.7 billion in 2021. In 2021, the broader automotive industry's contribution to South Africa's gross domestic product comprised 4.3%, i.e., 2.4% manufacturing and 1.9% retail.

Considering these global and local dynamics, this market intelligence report (MIR) provides potential investors with a greater understanding of market opportunities in the EV sector in South Africa.

In what follows:

Section 2: Summarises the global EV market size and sales trends, and provides potential investors and businesses with an overview of the state of the South African EV market.

Section 3: Outlines the relevant policies and regulations.

Section 4: Highlights emergent opportunities, barriers, and market uncertainties that may affect the growth of the EV industry in SA.

Section 5: Focuses on funding and incentives.

Section 6: Focuses on the services that GreenCape provides to its members.



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SECTOR OVERVIEW

This section provides an overview of the global EV industry to provide context for the South African industry and discusses the unfolding of the EV market in the South African context.



2.1. Global context

2.1.1. Global EV market in 2022

The year 2021/22 was a significant year for EVs. As indicated in Section 1, global electric car stock reached 16.5 million units, a 65% increase compared to 2021 (International Energy Agency, 2022). The growth can be attributed largely to governments' commitments to emission reduction targets, such as the Paris Climate Agreement. As a result, many governments have put in place enabling policy frameworks and mechanisms and created generous incentives to encourage the uptake of EVs. The leading markets in 2021 in terms of EV sales were China (3.5 million), USA (631 000) and Germany (696 000) as summarised in **Figure 3**:

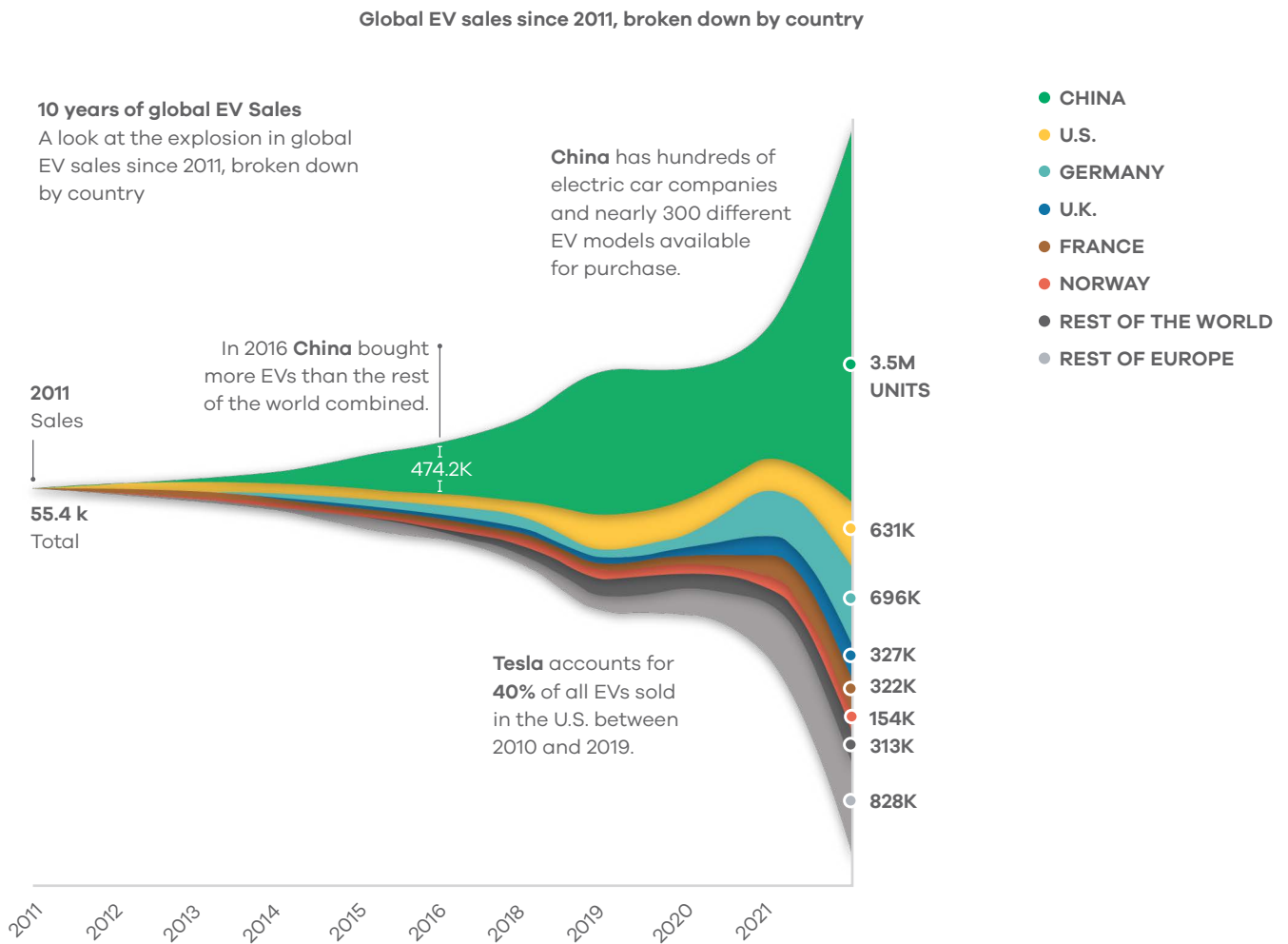


Figure 3: Ten years of global EV sales by country

Source: Visual Capitalist, 2022 (based on data from IEA and Argonne National Laboratory)

According to the IEA's Global EV Outlook report (IEA, 2022), the large increase in global EV sales in 2021 was primarily led by China, which accounted for half of the growth of the industry. More EVs were sold in China in 2021 (3.3 million) than the rest of the world in 2020. EV sales in Europe showed continued growth of 65%, leading to 2.3 million EVs sold in 2021. The United States market grew to 630 000 EVs after two years of decline. In the first quarter of 2022 similar trends were observed: Sales in China more than doubled compared with the first quarter of 2021 (accounting for most of global growth), and there was a 60% increase in the United States and a 25% increase in Europe.

In China, electric cars are smaller in size than those in other markets. This market characteristic, combined with lower development and manufacturing costs, has contributed to decreasing the price gap with conventional cars in the Chinese market. In 2021, the sales-weighted median price of EVs in China was only 10% more than ICE vehicles, compared with an almost 45-50% on average price difference in other major markets. China accounts for 95% of new registrations of electric two- and three-wheeler vehicles, and 90% of new electric bus and truck registrations worldwide. Electric two- and three-wheeler vehicles now account for half of China's EV sales.

This is an important insight for the South African market as the trend of electric micro-mobility for last-mile delivery services is already showing growth in the local market.

The global EV market has been dominated by five major OEMs in 2022. The top selling EV OEMs in quarter 2 of 2022 are presented in **Figure 4**, which also indicates the number of cars sold and market shares.

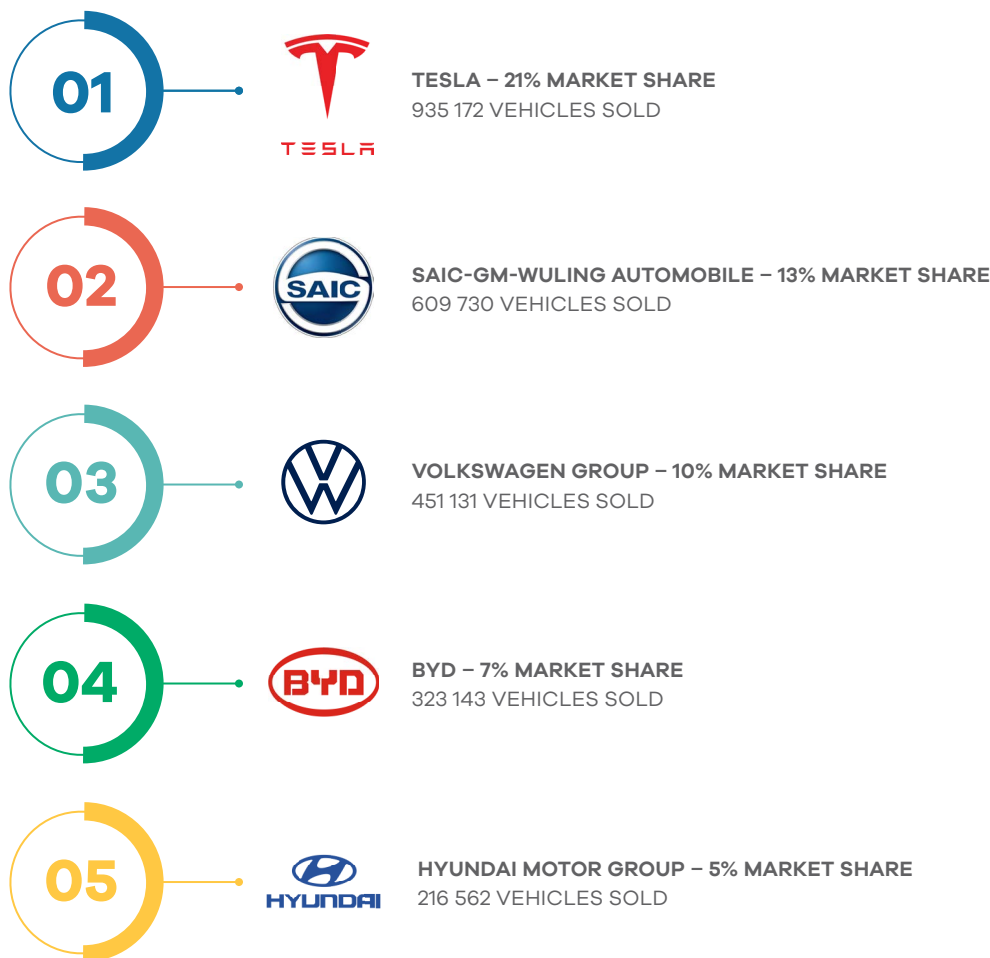


Figure 4: Global EV market share by OEM in Q2 of 2022

2.1.2. Global lithium-ion EV battery market in 2022

The global EV battery market is anticipated to grow from US\$17 billion in 2019 to an estimated market size of US\$95 billion by 2028 (Bloomberg, 2022). The top 10 EV battery manufacturers by market share are presented in **Figure 5**. The largest lithium-ion cell manufacturer by global market share in 2022 was CATL at 34%, followed by LG Energy Solution at 14%, BYD at 12%, Panasonic at 10%, and SK Innovation at 7%.

CATL produces batteries for companies such as Tesla, BMW and Volkswagen. It expanded its market share from 32% in 2021 to 34% in 2022. BYD doubled its market share over the past year and overtook Panasonic, in addition to being the world's second largest EV OEM by sales in Q2 of 2022.

The total lithium-ion cell manufacturing market share is also dominated by three Asian countries, China, South Korea and Japan, which leaves global supply chains vulnerable to market shocks.

This has been a major driver of the investment in new regional or localised lithium-ion cell manufacturing value chains in the United States and Europe. An example of this is the development of lithium-ion cell start-ups such as BritishVolt (United Kingdom) and NorthVolt (Sweden). In the United States, Tesla has invested in in-house lithium-ion cell manufacturing and has announced plans for a lithium refinery to be developed on the Texas Gulf Coast to gain more control of EV battery supply chains.

The Top 10 EV Battery Manufacturers in 2022

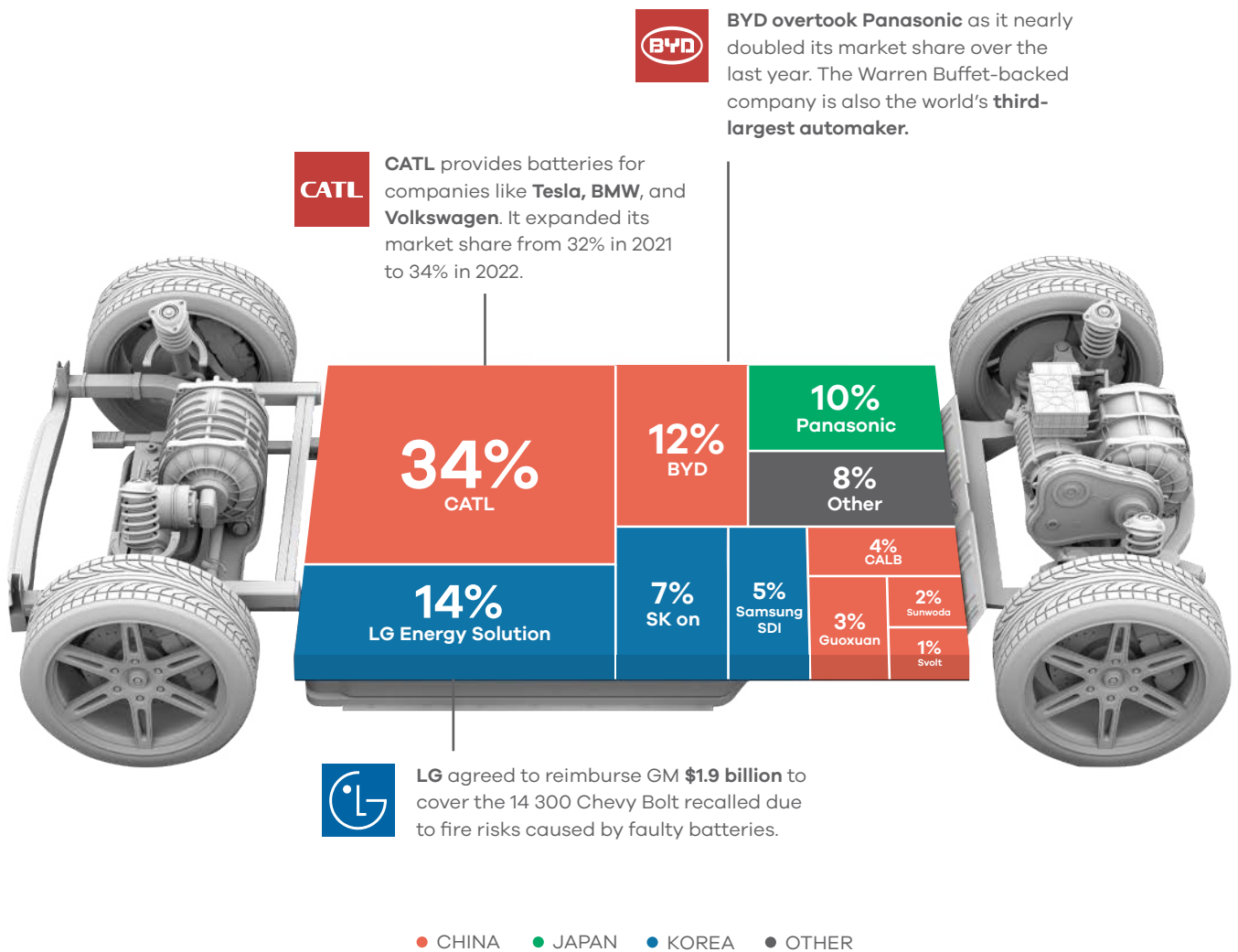


Figure 5: Global lithium-ion cell manufacturing market share by OEM in 2022

Source: Visual Capitalist, 2022 (based Bloomberg drawing on SNE Research)

Indonesia announced in 2022 that they would be banning the export of raw unprocessed nickel as a means of attracting investment in the local processing and beneficiation of the metal. Indonesia has the world's largest reserves of nickel, producing 37% of the world's global supply.

The Indonesian government is developing a future lithium-ion cell and EV manufacturing strategy based on strategic metals involved in the manufacturing value chain. South Africa in comparison has the world's largest reserves of manganese and could in the future play an important role in global lithium-ion cell manufacturing value chains.

When this is considered in relation to other key minerals that are in close market proximity to South Africa, a business case for local lithium-ion cell manufacturing is possible.

2.2. South African context

According to the South African Automotive Export Manual (2022), the automotive industry contributes 4.3% to the South African gross domestic product (GDP), with 2.4% allocated to manufacturing and 1.9% to retail of vehicles. In 2021, exports of vehicles and automotive components from South Africa reached a record value of R207.5 billion, which is equal to 12.5% of South Africa's total exports. The automotive industry accounts for approximately 17.3% of the country's manufacturing output in 2021.

Vehicles and components are exported to 152 international markets with the automotive manufacturing industry employing 110 000 people, ranging from component manufacturing to vehicle assembly. The automotive industry's strong multiplier effect has resulted in the creation of approximately 457 000 jobs in the formal economy in South Africa.

South Africa has a well-developed automotive assembly industry that will need to transition towards the manufacturing of EVs in the years to come. Several vehicle OEMs ([Table 2](#)), currently have a manufacturing presence in South Africa and supply the private passenger vehicle market. Of these companies, Volkswagen has announced plans to produce the first EV model in 2035 at their Eastern Cape plant. This will be an electric SUV model designed for the African market, and is likely to require localised EV supply chains.

Table 2: Private passenger automotive OEMs, in SA

| OEMs | Location of manufacturing facility |
|---|------------------------------------|
| BMW South Africa (Pty) Ltd | Gauteng |
| Ford Motor Company of Southern Africa (Pty) Ltd | Gauteng |
| Mercedes-Benz SA Ltd | Eastern Cape |
| Volkswagen Group South Africa (Pty) Ltd | Eastern Cape |
| Nissan South Africa (Pty) Ltd | Gauteng |
| Toyota South Africa Motors (Pty) Ltd | KwaZulu-Natal |
| Isuzu South Africa (Pty) Ltd | Eastern Cape |

Figure 6 highlights the three main automotive manufacturing hubs in South Africa, which are located in the Eastern Cape (EC), KwaZulu-Natal (KZN), and Gauteng (GP). The EC has attracted significant automotive manufacturing investment despite having lower commuter patterns compared to GP, the Western Cape (WC) and KZN. This is due, in part, to the East London and Coega Special Economic Zones (SEZs) which are close to sea and river ports, respectively.



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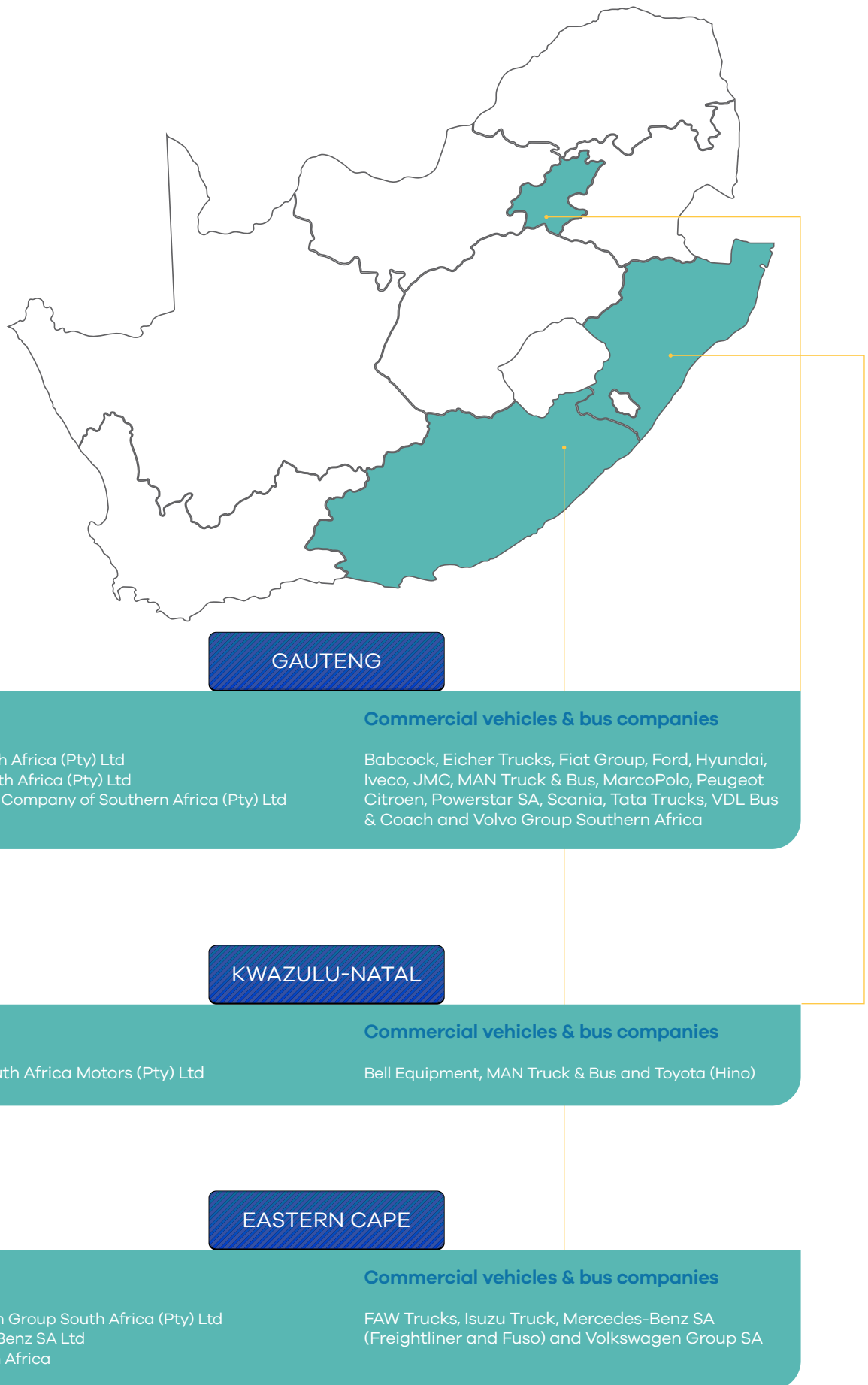


Figure 6: Map of the automotive manufacturing hubs in South Africa

Source: NAAMSA, 2022

According to NAAMSA, South Africa’s automotive manufacturing sector produced 449 087 ICE vehicles in 2021. The largest ICE vehicle segment by production volume in 2021 was passenger cars (239 267) followed by light delivery vehicles (232 166). This represents a sizable production volume to transition towards EV production locally. It would require a capital investment by the existing OEMs to transition their production lines and component supply chains.

Of note is that 685 ICE buses were produced in South Africa in 2021, which indicates an existing bus manufacturing industry that has the potential to transition towards the manufacturing of electric buses should the right incentives and supply chains be developed to support this. In 2021, 464 493 ICE vehicles were sold, according to NAAMSA. This comprised 304 340 passenger cars, 133 078 light commercial vehicles, and 27 075 medium and heavy commercial vehicles.

Approximately 298 020 ICE vehicles were exported from South Africa in 2021. The largest export market was the European Union, with 229 672 vehicles exported. This was followed by Asia (24 170 vehicles exported) and Africa (21 825 vehicles exported) in 2021. **Figure 7** below shows that 244 400 ICE vehicles were exported from South Africa to Europe between October 2021 and September 2022.

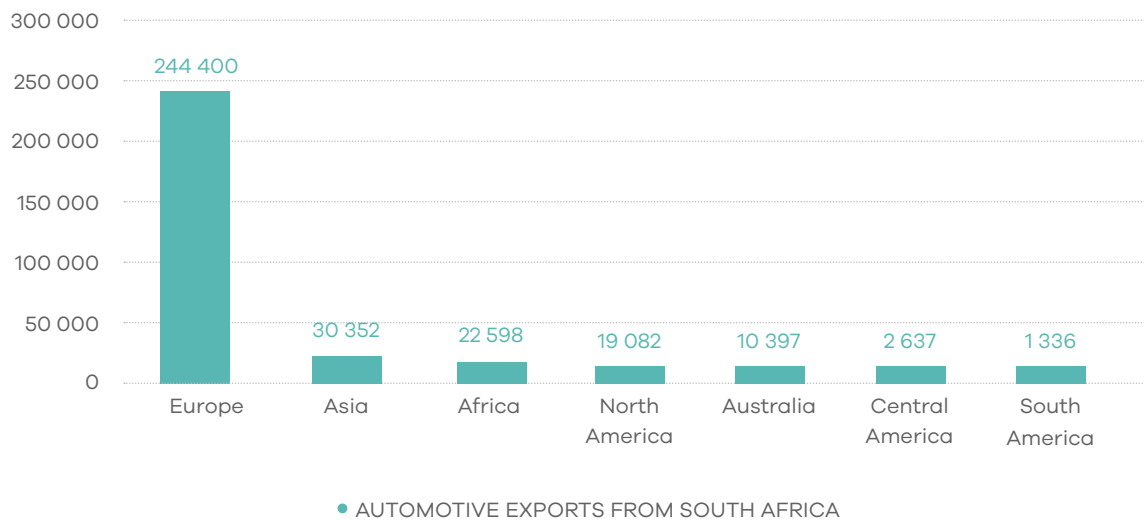


Figure 7: Automotive exports from South Africa October 2021 to September 2022

Source: NAAMSA, 2022

2.2.1. Market sizing and dynamics

The live registered vehicle population in South Africa as of September 2022 as recorded on the eNatis² system is presented in **Table 3**. The largest vehicle market in South Africa is the private passenger vehicle segment at approximately 7.8 million registered vehicles.

This remains the most difficult vehicle type to electrify in South Africa, due to the high cost of the luxury EV brands which are available in this market segment. Light delivery vehicles make up the second largest vehicle segment. This market consists of a large number of light commercial vehicles, which are mostly used for last-mile delivery services in South Africa.

The sizable market size of 2.7 million light delivery vehicles is a promising investment opportunity for OEMs looking to introduce electric light delivery vehicles in the last-mile delivery space. The organic growth of electric two- and three-wheelers in the last-mile delivery space has been largely driven by a commercial business case for fleet owners due to the savings on fuel costs.

² eNatis is the National Traffic Information System of South Africa and is a product of the Road Traffic Management Corporation.

The heavy-duty truck market at 395 972 vehicles remains a sizable investment opportunity for electrification in the medium to long term. Battery technology with regard to range is still currently limited to ~350 km in South Africa, which is suitable for urban deliveries but remains a challenge for long distance freight and logistics.

Advances in fast direct current (DC) charging technology, innovations in battery capacity and the rollout of charging infrastructure for long-distance travel will lead the way towards ensuring that electric trucks become more feasible for long-distance freight and logistics in the years to come. In December 2022, Tesla delivered their first electric heavy-duty truck (Tesla Semi) to Pepsi in the United States. The Tesla Semi is available in a 482.8 km and 804.7 km battery range respectively for long-distance haulage.

The public transport vehicle market in South Africa, which consists of 356 485 minibus taxis and 65 329 buses has been highlighted as a market opportunity for electrification. Public transport electrification is driven by low operational margins and the need to save fuel costs, in addition to policy targets as set out in the South African Green Transport Strategy.

Table 3: The live registered vehicle population in South Africa by market segment: September 2022

Source: eNatis 2022

| Vehicle class | Province | | | | | | | | | Total | % of total self-propelled |
|---|------------------|------------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------------|----------------------------|
| | GP | KZN | WC | EC | FS | MP | NW | L | NC | | |
| Motor cars and station wagons | 3 247 469 | 1 077 438 | 1 343 611 | 493 119 | 331 445 | 464 210 | 351 222 | 380 406 | 137 532 | 7 826 452 | 65,5% |
| Minibuses | 133 608 | 60 136 | 38 066 | 27 194 | 13 463 | 27 207 | 22 196 | 27 869 | 6 746 | 356 485 | 3% |
| Buses, bus trains, midibuses | 20 608 | 8 190 | 6 946 | 4 746 | 3 447 | 8 203 | 4 090 | 7 105 | 1 994 | 65 329 | 0,6% |
| Motorcycles, quadrucycles, tricycles | 148 618 | 33 130 | 89 589 | 21 542 | 17 538 | 17 332 | 12 778 | 8 820 | 7 483 | 356 830 | 3% |
| LDVs, panel vans, other light load vehs GVM <= 3 500 kg | 892 302 | 387 386 | 349 563 | 213 082 | 137 280 | 232 462 | 164 512 | 252 574 | 84 223 | 2 713 384 | 23% |
| Trucks (heavy load vehicles GVM > 3 500 kg) | 147 582 | 53 518 | 47 593 | 23 014 | 24 651 | 43 976 | 18 176 | 28 001 | 9 461 | 395 972 | 3,3% |
| Other self-propelled vehicles | 38 244 | 32 511 | 41 790 | 17 156 | 35 396 | 27 969 | 21 493 | 17 736 | 9 718 | 242 013 | 2% |
| Total self-propelled vehicles | 4 628 431 | 1 652 309 | 1 917 158 | 799 853 | 563 220 | 821 359 | 594 467 | 722 511 | 257 157 | 11 956 465 | % of total vehicles |
| Provincial % of total | 38,7% | 13,8% | 16% | 6,7% | 4,7% | 6,9% | 5% | 6% | 2,2% | 100% | |

The potential EV market size in South Africa has been estimated using the live vehicle population data from eNatis³ for September 2022. **Figure 8** is a visual representation of the live registered vehicle population by segment in South Africa.

³ eNatis is the National Traffic Information System developed by the Road Traffic Management Corporation.

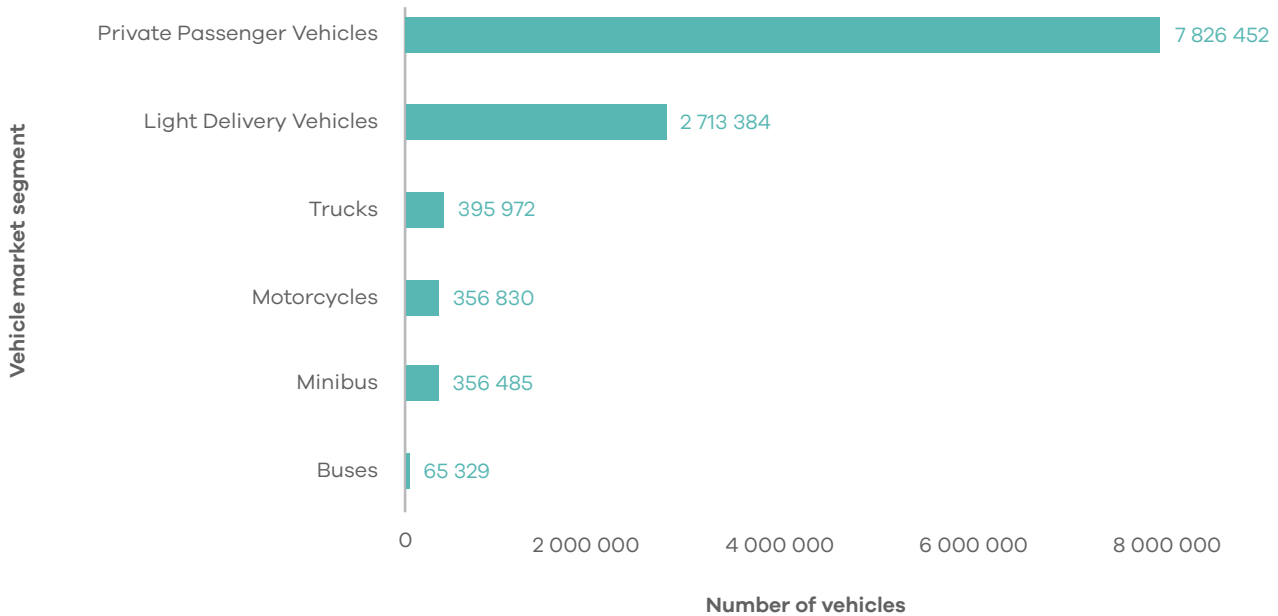


Figure 8: Total available vehicle market size in South Africa in 2022 in terms of number of vehicles

2.2.2. Electric private passenger vehicle market

According to the Auto Green Paper on the Advancement of New Energy Vehicles in South Africa (dtic, 2021) and NAAMSA's Quarterly Review of Business Conditions: New Motor Vehicle Manufacturing Industry /

Automotive Sector: 3rd Quarter 2022 (NAAMSA, 2022), EV sales recorded per year from 2016 to 2020 has been modest with a peak of 154 battery electric passenger vehicles sold in 2019. The National Association of Automobile Manufacturers of South Africa (NAAMSA) has released figures which indicate

that a record number of 218 EVs was sold in 2021, as shown in **Figure 9**. By the end of Quarter 2 of 2022, 205 battery electric passenger vehicles were sold in South Africa, with a growth trajectory that is set to surpass the number of EVs sold in 2021.

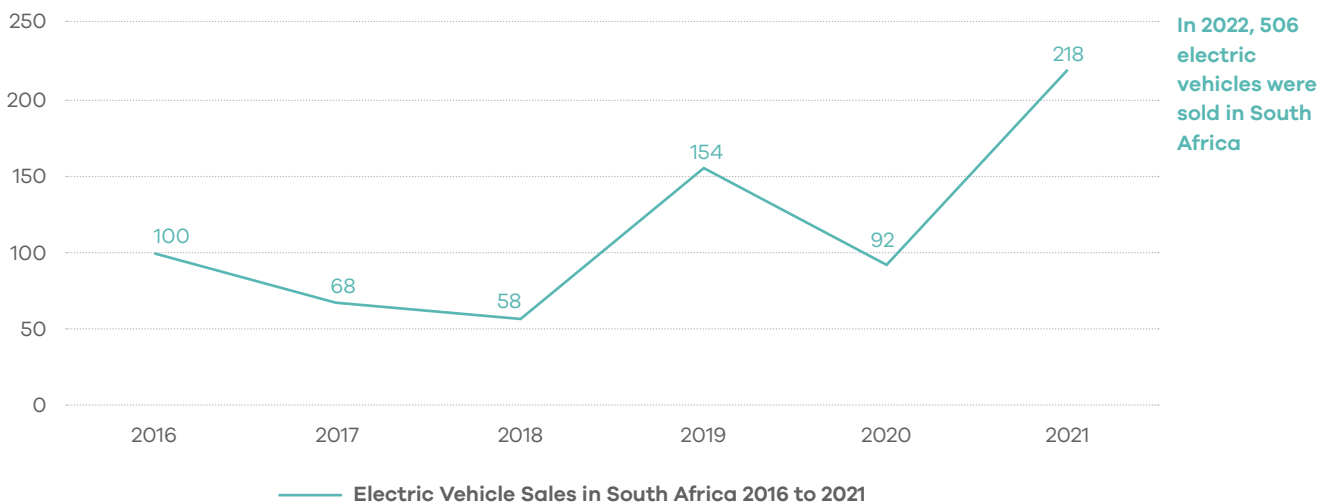


Figure 9: Private passenger EV sales in South Africa 2016 to 2021

Source: NAAMSA, 2022

A breakdown of the number of EVs sold in South Africa in 2022 by brand is shown in **Figure 10**: The highest selling EV was the BMW iX3 with 106 vehicles, followed by the Mini Cooper SE at 96 vehicles, and the Audi e-Tron at 75 vehicles (EV Volumes.com, 2022).

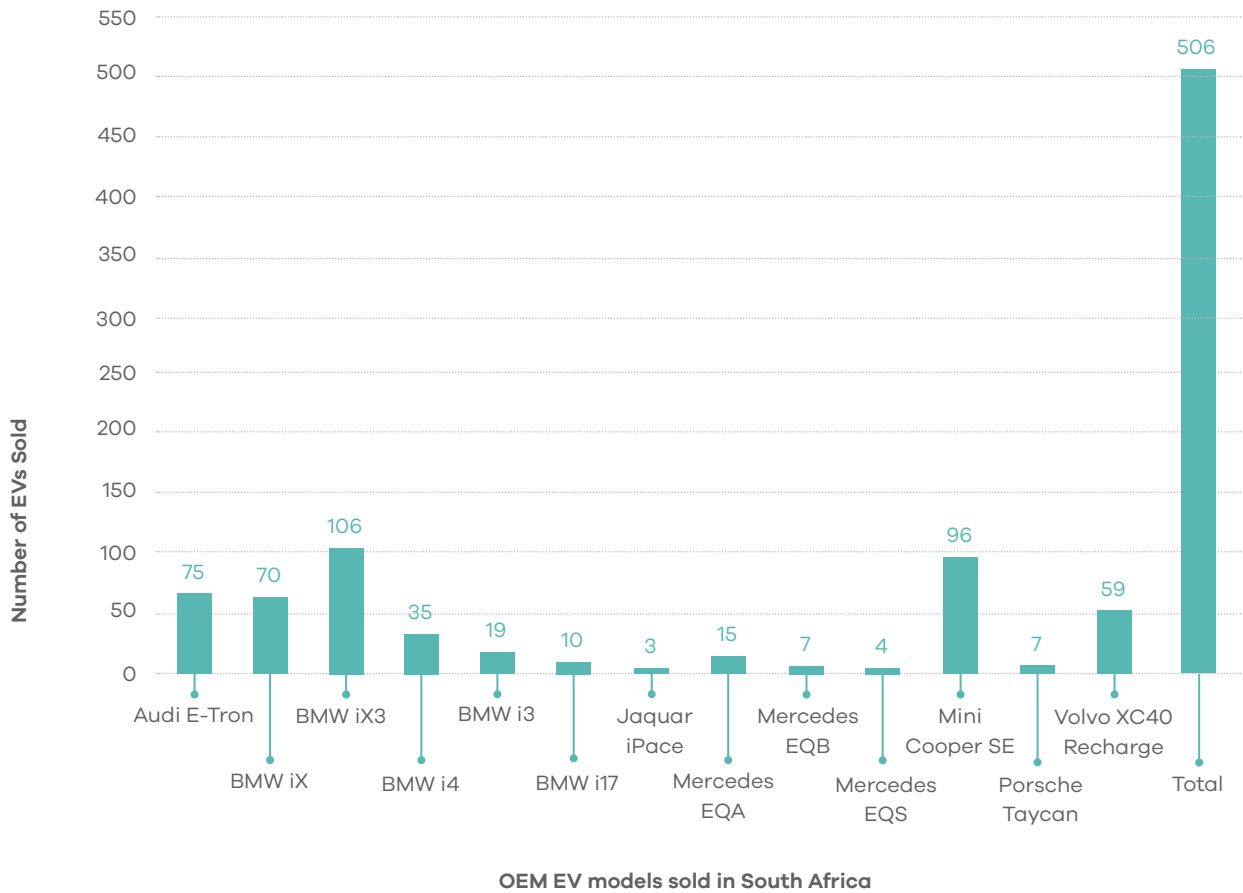


Figure 10: EV sales in South Africa in 2021 by OEM brand
 Source: EV Volumes.com, 2022

The announcement by BMW that it was ending the production of the highly popular BMWi3 model in June 2022 removed one of the cheapest EVs from the South African market.

This has resulted in the Mini Cooper SE becoming the most affordable electric private passenger vehicle in South Africa, apart from the Funky Electric and Eleksa CityBug, which are considered to be electric micro-cars.

Micro-cars are defined as electric four wheelers which are similar in size and range to electric micro-vehicles such as the electric 3-wheeler that is manufactured by MelloVans.

Table 4 provides a list of EVs available on the South African market in 2022, as well as the retail prices of EVs (as at December 2022).

Table 4: Private passenger EVs currently available on the South Africa Market

Source: Autotrader, 2022

| OEM Brand | Range | Price | Top Speed |
|-----------------------------------|--------|------------|-----------|
| Funky Electric | 100 km | R190 000 | 60 km/h |
| Eleksa CityBug | 100 km | R230 000 | 55 km/h |
| MiniCooper SE | 215 km | R694 600 | 150 km/h |
| Volvo XC40 P6 Recharge | 423 km | R1 075 000 | 160 km/h |
| Mercedes-Benz EQA 250 Progressive | 429 km | R1 169 500 | 160 km/h |
| BMW iX3 M Sport | 460 km | R1 290 000 | 180 km/h |
| Audi e-tron 55 Quattro | 440 km | R1 745 000 | 200 km/h |
| Jaguar I-Pace EV400 AWD S Black | 470 km | R2 029 800 | 200 km/h |
| Porsche Taycan | 573 km | R2 303 000 | 260 km/h |

Figure 11 provides a comparative range analysis (km) of private passenger EVs available in SA

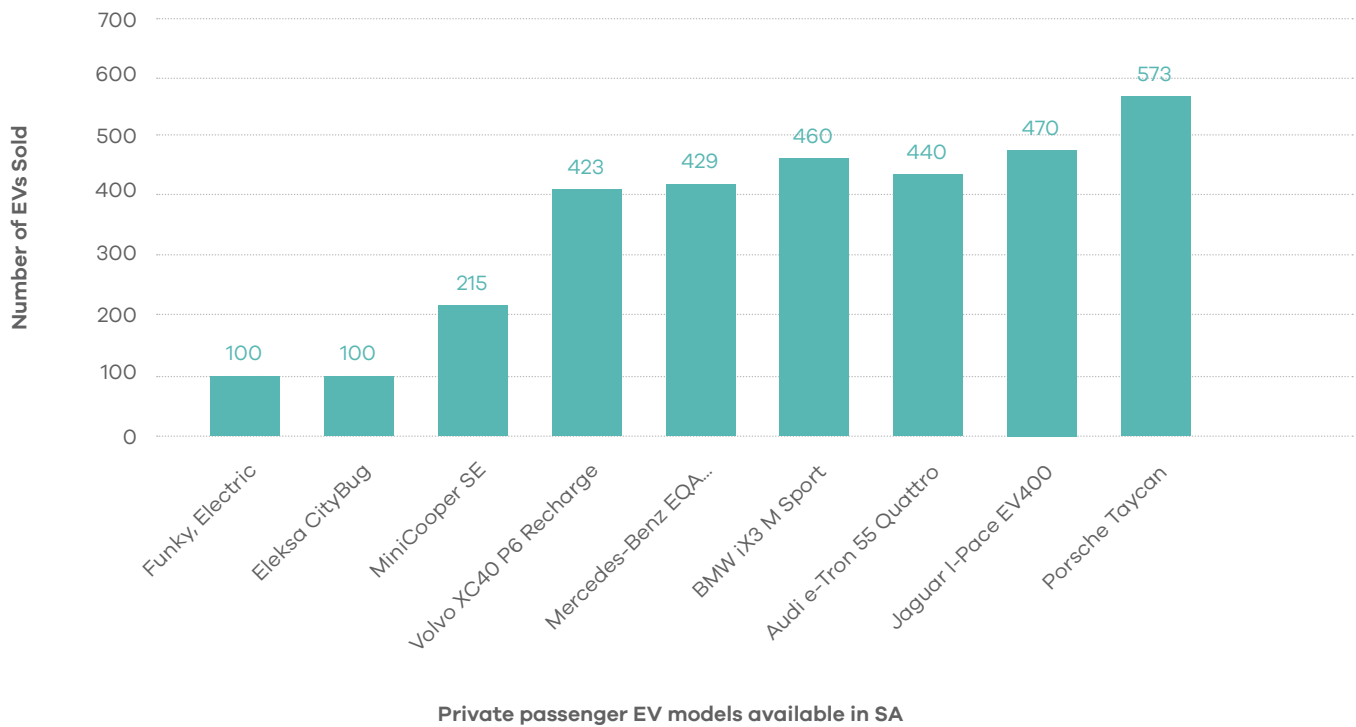


Figure 11: Comparative range analysis of private passenger EVs available in SA in 2022

Figure 12 provides a comparative price analysis (Rand) of private passenger EVs available in SA in 2022.

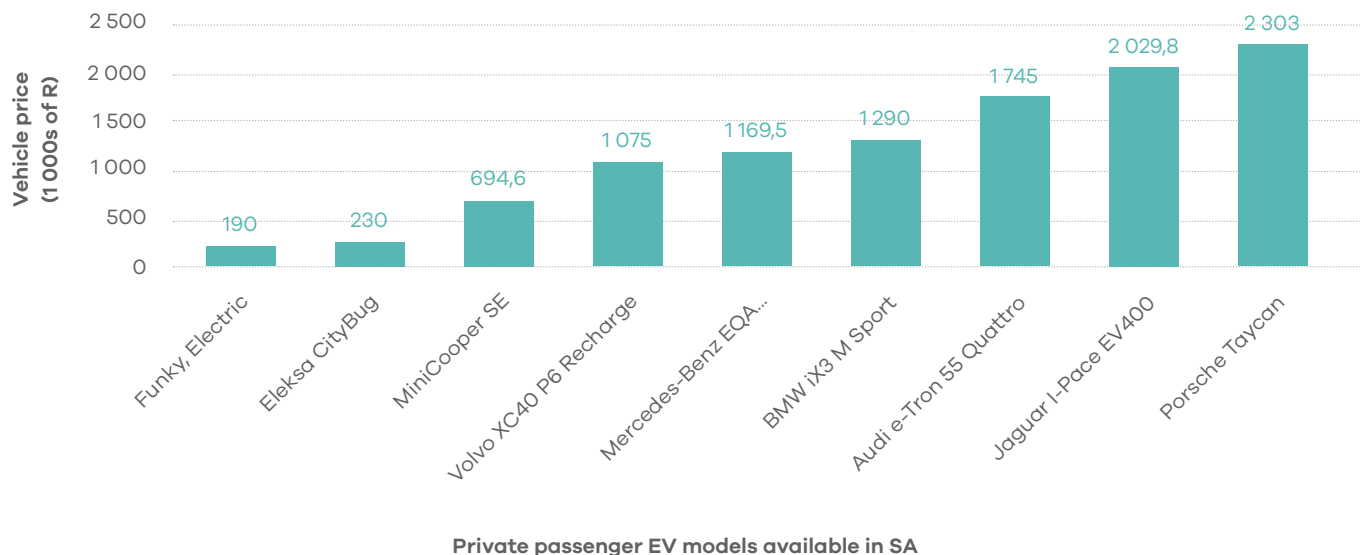


Figure 12: Comparative price analysis (Rands) of private passenger EVs available in SA in 2022

Figure 13 provides a comparative top speed analysis (km/h) of private passenger EVs available in SA in 2022.

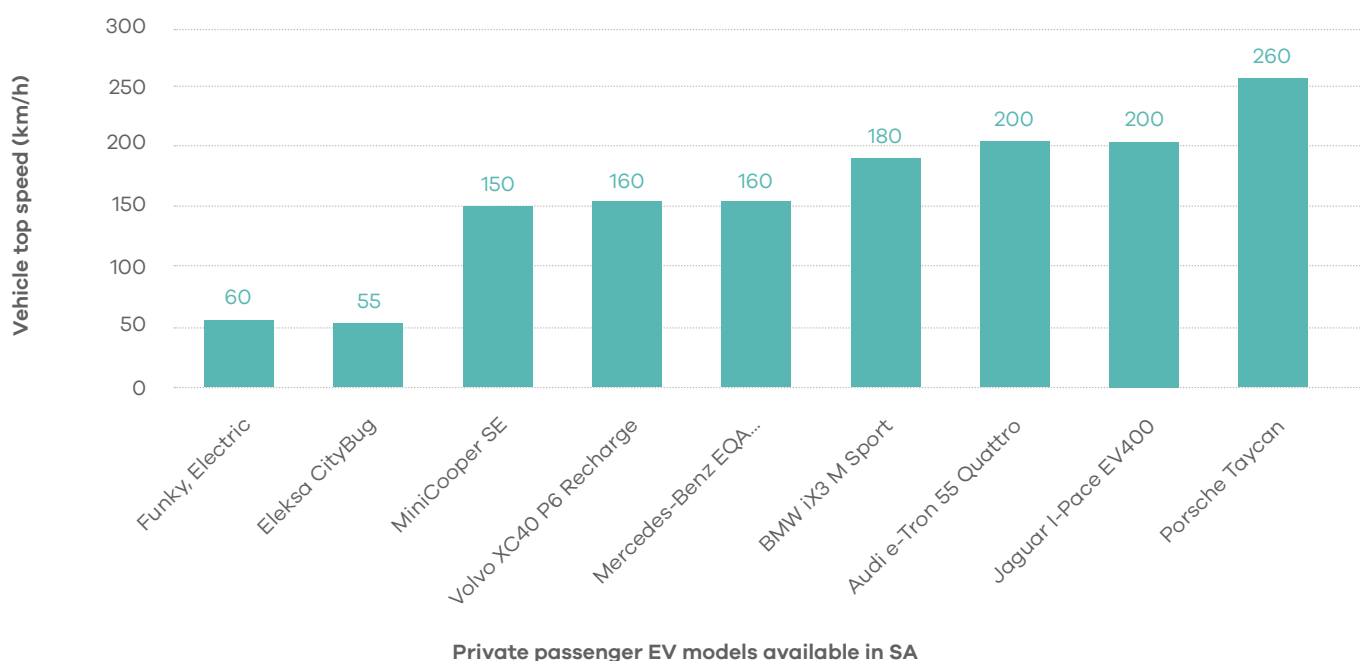


Figure 13: Comparative top speed analysis (km/h) of private passenger EVs available in SA in 2022

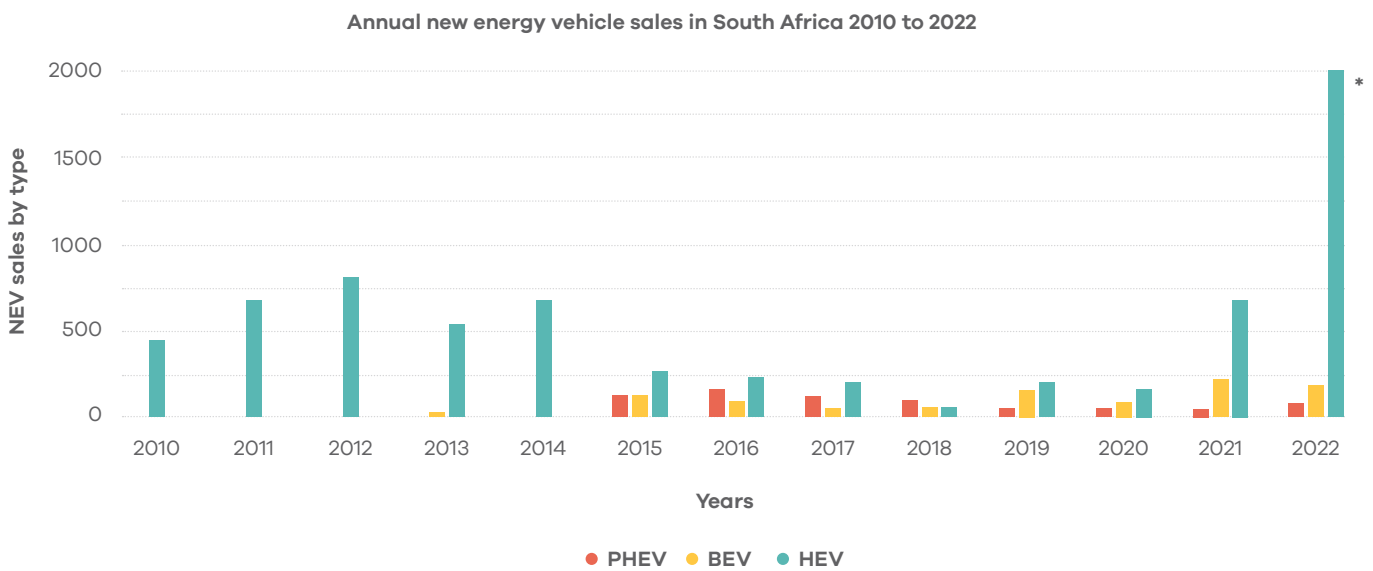
Table 5 shows the trend in vehicle sales by propulsion technology in South Africa from 2010 to 2022. **Figure 12** compares the sales of specifically new energy vehicles in South Africa from 2010 to 2022.⁴ The overall vehicle sales data shows an overall decrease in the sale of petrol and diesel vehicles, with a modest growth in sales for plug-in hybrid electric (PHEVs), battery electric (BEVs) and hybrid electric vehicles (HEVs) over time. In terms of new energy vehicles (**Figure 12**), it can be seen that despite an apparent drop in sales once alternative new energy vehicles were available for sale, HEVs have largely remained the most popular new energy vehicle.

⁴ New energy vehicle refers to plug-in hybrid electric, battery electric and hybrid electric vehicle.

Table 5: Annual automotive sales volumes by propulsion technology for South Africa

Source: TIPS, 2022

| | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------|-------|
| Petrol | 289 911 | 343 489 | 373 022 | 370 392 | 360 122 | 340 982 | 297 019 | 302 227 | 302 440 | 299 408 | 210 996 | – | – |
| Diesel | 48 598 | 56 317 | 68 260 | 79 357 | 78 155 | 70 908 | 63 765 | 65 516 | 62 605 | 55 563 | 35 221 | – | – |
| PHEV | – | – | – | – | – | 124 | 168 | 121 | 89 | 72 | 77 | 51 | 122 |
| BEV | – | – | – | 34 | 14 | 117 | 100 | 68 | 58 | 154 | 92 | 218 | 506 |
| HEV | 430 | 627 | 766 | 513 | 646 | 266 | 213 | 182 | 55 | 181 | 155 | 627 | 4 050 |



* In 2022 the total number of HEVs sold was 4 050

Figure 14: Annual new energy vehicle sales in South Africa 2010 to 2022

Source: TIPS (2022)

2.2.3. Electric micro-mobility market

The uptake of electric micro-vehicles in South Africa has been a growing trend. This can be ascribed to their low cost as they do not attract the high import duties and luxury goods taxes which are applied to the importation of electric passenger vehicles. The last-mile delivery industry saw a boom in the use of e-commerce platforms during the Covid-19 pandemic, an experience which continued into 2022. This was compounded by erratic fluctuations in the fuel price, which created a demand for cost-effective delivery vehicles that could swiftly cater to the demands of a rapidly decentralised, localised and sustainability driven urban logistics environment. Fleet owners such as Takealot, Spar, DPD, Skynet and DHL embraced innovative ideas, such as using electric micro-vehicles for deliveries within a 100 km radius of their central business district depots. In 2022, Green Riders expanded their electric cargo bicycle delivery fleet to 600 eBikes to cater for the growth in demand. On the back of this growth MellowVans, which leases electric three-wheelers to some of the key fleet owners mentioned above, has achieved a 70% local component inclusion in their electric micro-vehicles, and exported to the European market for the first time in 2022.

2.2.4. Electric public transport market

The public transport market in South Africa is well suited for the adoption of electric buses and minibus taxis. There is a total addressable market size of 65 329 buses and midibuses, and around 356 485 minibus taxis in South Africa in 2022.

The South African minibus taxi recapitalisation programme aims to improve the safety and roadworthiness of the minibus taxi industry through the provision of a scrapping allowance for vehicles manufactured on or before 4 September 2006. The value of the scrapping allowance is currently R141 100 per vehicle, which is funded through the national Department of Transport. There is great potential for the minibus taxi scrapping allowance to be used as a mechanism to accelerate the transition to electric minibus taxis going forward. Flix EV has announced that they will pilot the first electric minibus taxi in the Western Cape in early 2023.

In 2022, Golden Arrow Bus Services procured their first electric 65-seater commuter bus from BYD after completing a year-long pilot test with two electric BRT specification buses. Should the field testing of the electric 65-seater bus prove successful with comparable energy efficiencies, they would look to procure 60 electric buses every year. It was reported in November 2022 that the University of Johannesburg (UJ) launched the first electric bus for student shuttle transport services in South Africa, in partnership with MiPower.

The electric bus is being operated at the UJ Doornfontein campus between the main campus and four off-campus UJ-owned residences. A further two electric buses are expected to be ordered from MiPower to service intercampus routes in 2023.

2.2.5. EV charging infrastructure and network

It is widely accepted that having charging stations in locations that commuters can easily access is key to the adoption and growth of the EV market. In SA, the network currently consists of ~286 publicly accessible charging stations (including dealerships) (Grid Cars, 2023). In total, 1 361 battery electric private passenger vehicles have been sold in South Africa to date. This means that there is a ratio of one public charging station for every 4.76 private passenger EVs in South Africa. According to the IEA EV Outlook 2022 report, the European Union's average EV-to-charger ratio was 14 in 2021, increasing from nearly 11 in 2020 and above the recommendation of 10. In addition, the IEA report states that the largest markets in Europe – France, Germany and United Kingdom – all do not meet the European Union's recommended charger availability recommendation of 10 EVs per public charger. The worldwide average in 2021 was 10 EVs per charger. China's market is pulling the global averages downwards with 7 EVs per charger.

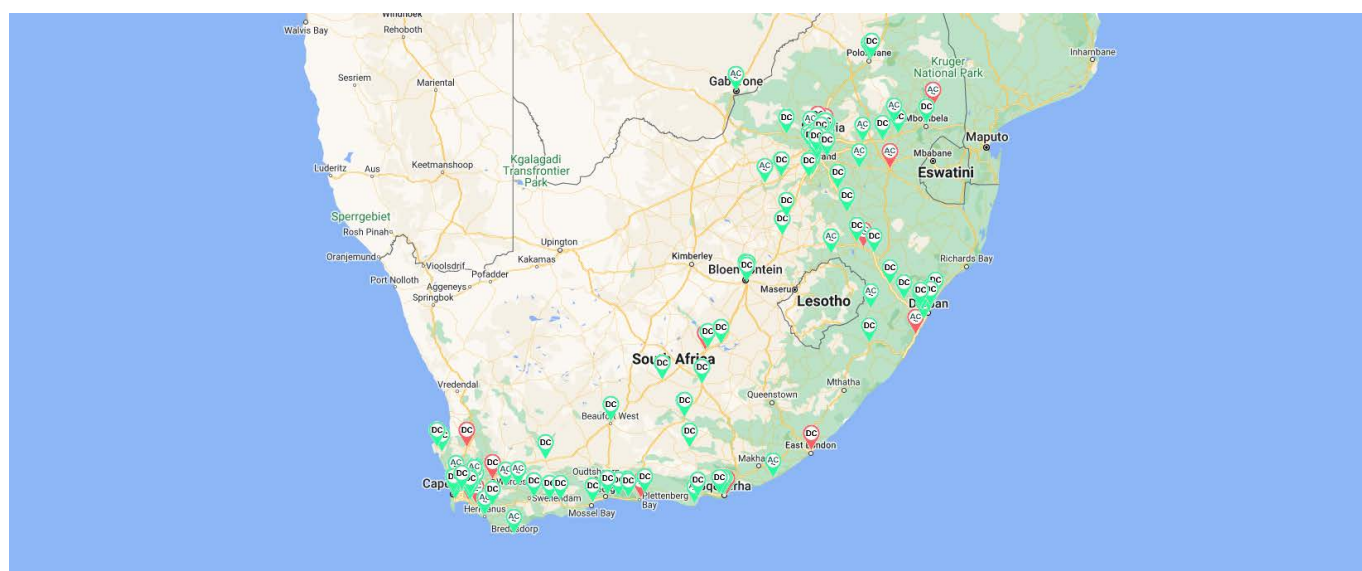
There has been significant investment in the public EV charging network in 2022, the most significant of which was the investment by Audi South Africa, in partnership with Grid Cars, which led to the development of 33 new EV charging stations across South Africa. Other EV OEMs that have made large investments in the public EV charging network include BMW with over 60 ChargeNow stations across South Africa, and Jaguar and Nissan.

New market entries in 2022 include Zero Carbon Charge and Zimicharge, which are aiming to use renewable energy exclusively at their charging stations as a market differentiator.

The largest growth in the EV charging industry will continue to be the public EV charging station market as the South African network continues to grow and expand to accommodate long distance EV charging between cities and provinces.

According to Plugshare there are 277 public EV charging stations in South Africa (GridCars (214), Rubicon (60) and Zimicharge (3)).

Figure 15 is a map of all existing public EV charging stations in South Africa as published by Plugshare in 2022.



● DC FAST-CHARGING STATIONS ● AC CHARGING STATIONS

Figure 15: Map indicating the location of 250 public EV charging stations in South Africa

Source: Grid Cars, 2023

In South Africa, the Type 2 plug is the standard plug for EV alternating current (AC) charging, and supports single or three-phase AC charging. The Combined Charging System (CCS 2) is an extension of the Type 2 plug that provides DC to enable high-power DC fast charging. This is the standard plug type that is used for all public DC charging stations in South Africa.

| | |
|----------------------|--------------|
| 模组型号 Pack Type | K51 |
| 额定电压 Nominal Voltage | 125.58 V |
| 额定容量 Rated Capacity | 228 Ah |
| 额定能量 Rated Energy | 28.63224 kWh |
| 模组重量 Pack Weight | 180±5 kg |
| 产品批次 Product Batch | 2109 |

BYD 比亚迪储能有限公司
Qinghai BYD Battery Co., Ltd.



锂离子电池 LI-ION BATTERY



| | |
|----------------------|--------------|
| 模组型号 Pack Type | K51 |
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Qinghai BYD Battery Co., Ltd.



锂离子电池 LI-ION BATTERY





POLICY AND REGULATION

This section focuses on the policy and legislative framework relevant to the SA transport sector. It also highlights policies and strategies specific to new energy vehicles.



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The regulatory framework for transport is governed by the Department of Transport (DoT) in SA. The Department of Trade, Industry and Competition (dtic) is key to ensuring the policy environment is conducive to investment, assembly, manufacturing, and trade. Several policies apply to the automotive industry:

3.1. Automotive Production and Development Programme (2013-2020)

The Automotive Production and Development Programme (APDP) was implemented on 1 January 2013. A second revised APDP was approved in 2021 to support the South African Automotive Masterplan (SAAM) (see below), which would run until 2035: The initial APDP (2013-2020) consisted of four pillars that drove the programme:

- **Import duty (tax)** – these tariffs were meant to protect and support domestic vehicle manufacturing.
- **Production incentives** (rebate mechanism) – this was to encourage increasing levels of local value addition along the automotive value chain, with positive spin-offs for employment. A higher production incentive valuation allowed for a greater duty account reduction.

- **Volume assembly allowance (VAA)** (rebate mechanism) was targeted at doubling domestic vehicle production lines by providing lower tax rates for domestic vehicle manufacturers.
- **Automotive investment scheme** (cash grant) – effective from 2009, this support was available to encourage investments by OEMs and component manufacturers in a manner that would support productive capacity upgrading.

The APDP applied only to light vehicles (passenger cars and commercial vehicles). However, components produced for heavy commercial vehicles also qualified for the production incentive (PI).

While the automotive industry has not declined since introducing the APDP in 2013, it has not shifted SA's global position as a second-tier player. Aggregated vehicle sales have increased, but local and regional markets have declined. The local market is far from having sufficient demand to attract local assembly exclusively for domestic market supply.

This policy did not make provision for EV manufacturing. It merely outlined taxes, rebate mechanisms, and incentives in the traditional automotive industry.

3.2. The South African Automotive Masterplan 2035 and post 2020 APDP

The SAAM guides policy on growing and supporting the domestic automotive industry from July 2021 to 2035. It addresses some of the APDP 2013-2020's shortcomings. This master plan, which came into effect in 2021, has adapted the VAA to the Volume Assembly Localisation Allowance (VALA).

The difference is that VAA was based on the wholesale selling price of a vehicle produced in SA, irrespective of local content (whether parts were locally produced or imported). On the other hand, VALA has changed this, so the incentive is no longer based solely on the wholesale selling price. Rather, OEMs must deduct the value of imported content from the vehicle's wholesale selling price. The figure is then multiplied by the applicable VALA percentage specified in the updated APDP. The VALA percentage started at 40% in 2021 and progressively dropped to 35%.

Developed by the government and the automotive industry, the SAAM covers car and light commercial vehicle manufacturing, medium, heavy, and extra-heavy trucks, bus production (potentially including off-highway vehicles), motorcycles, and the South African components supplier industry. Vehicle importers and distributors are also covered. The Masterplan creates a framework for securing even higher levels of investments and production (Barnes, 2017).

SAAM's goals include:

- growing SA's vehicle production to 1% of global output (projected to reach 140 million units annually by 2035);
- increasing local content of vehicles assembled in South Africa to 60%, from a 38.7% base;
- doubling total employment in the automotive value chain from 112 000 to 224 000 jobs;
- improving automotive industry competitiveness levels to that of leading international competitors, such as Turkey and Thailand;
- achieving the transformation of the South African automotive industry by employing black South Africans, upskilling black employees, empowering dealerships and authorised repair facilities, and substantially increasing the contribution of black-owned automotive component manufacturers within the automotive supply chain; and
- deepening value addition within South African automotive value chains across selected commodities/ technologies.

Notable changes in the SAAM and post-2020 APDP:

- VAA, one of the four pillars of the APDP, has been phased out and replaced by VALA. VALA is being phased in between 2021 and 2026 to ensure that there are no disruptions to existing OEM investment models.
- By 2026, VALA is set at 35% of local value-add for OEM volumes above 10 000 units, but in 2021 it was set at 40%. This differs from the VAA, which gave vehicle manufacturers component import allowances of 20% (2013) of the ex-factory vehicle price. This was reduced to 19% and 18% in 2014 and 2015, respectively, for all light motor vehicles (LMVs) produced domestically. In short, the VALA advocates using local content in the components that manufacturers use by removing credits for imported content.
- The production incentives (PI) benefit has been increased by 25% on components (from 10% to 12.5% of value addition). The production rebate credit certificates (PRCCs) will be replaced by duty credits tied to local value addition. This is expected the practice by OEMs and importers of using a surplus of PRCCs to bring new vehicles into SA duty-free.

- The Automotive Investment Scheme (AIS) cash grant for capital investments has been retained. However, it is reduced by 5% in those instances where non-South African tooling and machinery is employed. Incentives for investment into new technologies, such as EVs and hybrids, are covered under this scheme.
- SA is seeking a one-tariff regime across all light vehicles, including EVs. This will potentially address the high import duty challenge.
- Previously, the APDP only applied to light commercial vehicles (LCVs). The SAAM, however, now also includes medium and heavy commercial vehicles and motorcycles, but the VALA formula is not to be applied in either category.

3.3. Auto AIS Green Paper on the advancement of new energy vehicles in South Africa (2021)

The draft version of the Auto Green Paper on the advancement of new energy vehicles in South Africa was released for comment in 2021. It is expected to be finalised as a White Paper in 2023. This policy was designed to develop a framework upon which a comprehensive and long-term automotive industry transformation plan could be developed to stimulate the local transition towards EV manufacturing in South Africa. The policy framework focuses on the following key elements:

- Creation of an enabling business environment, including an appropriate fiscal and regulatory framework, that develops South Africa into a leading competitive location in Africa and globally for EV manufacturing.
- Support and investment in the expansion and development of new and existing manufacturing plants to support the production of new energy vehicles and components within South Africa, and to stimulate job creation in the local labour market.
- Development of and investment in new energy vehicle component technology and expansion of the growing EV supply chain.
- Reinvestment and support towards reskilling and upskilling of the South African workforce to ensure the right skills are available for the design, engineering and manufacturing of EVs and related components and systems.
- Transition South Africa towards cleaner fuel technologies that are available globally.
- Adoption of new and sustainable manufacturing processes to significantly reduce greenhouse gas emissions in South Africa.
- Research and Development (R&D) investment should be strategically targeted at activities that are likely to give South Africa a competitive advantage.

3.4. Green Transport Strategy for South Africa: 2018 – 2050

To address the significant contribution of transport to GHG emissions, the DoT has developed a Green Transport Strategy (GTS). The GTS, based on sustainable development principles, aims to minimise the impact of transport on the environment and meet current and future transport demands. It promotes green mobility and is the first national government-led strategy aimed at providing sustainable transport. To radically grow the uptake of EVs in South Africa, in conjunction with dti (now the dtic) and National Treasury, the DoT will:

- offer producers of EVs manufacturing incentives to both produce and sell affordable EVs in South Africa, for both the local and export markets;
- work with local research institutions to research EV batteries;
- work with national, provincial and local government departments and authorities to develop procurement policies favourable to EVs as piloted by the City of Cape Town and the Western Cape Government Motor Transport. Government vehicle purchases in 2019, for example, accounted for 2.9% (15 423 vehicles) of total vehicle sales in the country, while corporate industry fleets accounted for 3.5% (18 695 vehicles).

Using procurement of such large fleets as a lever, these could be two areas to catalyse the EV transition;

- introduce the conversion of old technology vehicles with higher emission factors to be retrofitted with EV technology – this is, however, an expensive exercise, but typically more cost-effective than importing EVs at this stage due to current import duties and taxes;
- consider providing incentives related to the beneficiation of using local resources in the manufacturing of key machinery and components, e.g., hydrogen fuel cell EVs; and
- assist in establishing and developing local EV OEMs.

3.5. Preferential Procurement Policy Framework Act of 2000

Revised Preferential Procurement Regulations under the Preferential Procurement Policy Framework Act 5 of 2000 came into effect on 7 December 2011 to empower the dtic to designate industries, sectors, and sub-sectors for local production at a specified level of local content. Buses were one of the industries that was designated for local production with minimum local content thresholds.

Following further amendments in 2017 to the Preferential Procurement Regulations, new thresholds were prescribed in 2019: ~80% local content of the bus body for city and commuter buses (see National Treasury, 2019 for details). In the case of EVs, the regulations do not exclude the battery from the bodywork, thereby creating an import barrier as there is no local manufacturing of EV batteries.

Following a court judgement that the minister had exceeded his powers with the 2017 amendments, new amendments were introduced to take effect in January 2023, while the government is finalising a new Public Procurement Bill. Therefore, there is some uncertainty with regard to the application of preferential procurement and associated designation going forward.

3.6. The Carbon Tax Act 15 of 2019

The Carbon Tax Act No 15 of 2019 was gazetted in May 2019 and came into effect on 1 June 2019. The intent was that the carbon tax be applied over two phases: Phase 1 would be from 1 June 2019 to 31 December 2022, and Phase 2 from 2023 to 2030. Phase 1 would not have an impact on electricity prices. The carbon tax rate was imposed at R120 per tonne of carbon dioxide equivalent (tCO₂eq) emitted. However, taking the tax-free thresholds into account, this rate ranged closer to R6 and R48 per tCO₂e. In February 2022, National Treasury announced an increase to the carbon tax rate to R144 effective from 1 January 2022.

To uphold South Africa's COP26 commitments, the rate will increase each year by at least R15 until it reaches R300. From 2026, government intends to escalate the carbon price more rapidly every year to reach at least R450 by 2030. The finance minister has also extended the first phase of the carbon tax by three years until 31 December 2025. As a result of delaying the second phase, some sectors will remain beyond the reach of the carbon tax for now. These include the agriculture, forestry and waste sectors.

The Act assumed a 'polluter pays' principle to the tax. This relatively low tax rate and range of tax-free allowances in Phase 1 are designed to incentivise large emitters to transit to a low carbon profile before Phase 2. Once the tax results have been reviewed at the end of Phase 1, changes to rates and tax-free thresholds will be applied before the next phase begins. This would significantly affect businesses with high fuel and electricity consumption. The impact of the carbon tax on the uptake of solar and other renewable forms of energy (which present an opportunity to meet the energy demand from broad EV uptake in the country) is still to be determined and will be monitored.

3.7. Nationally Determined Contribution (2021)

SA submitted its first Nationally Determined Contribution (NDC) under the Paris Agreement in 2015. This came into effect on 1 November 2016 following the ratification of the Paris agreement, and outlined the country's pledge to transition to a lower-carbon economy.

The NDC covers adaptation, mitigation, and finance and investment requirements based on equity. In 2021, Cabinet approved South Africa's revised NDC climate change mitigation target range for 2030 for submission to the United Nations Framework Convention on Climate Change (UNFCCC).

SA has revised its target range to 398 – 510 MtCO₂eq by 2025 and to 350 – 420 MtCO₂eq by 2030.





MARKET OPPORTUNITIES, DRIVERS AND BARRIERS

There are several emerging opportunities in the South African EV market for local investors and investors looking to enter the South African electric mobility market.



The global shift towards EVs is driven primarily by technology advancements, improvements in affordability (as EV manufacturers begin to reach economies of scale) and government policy and regulation for the reduction of GHG emissions in the transportation sector. South Africa has a well-developed automotive assembly and components manufacturing industry which produces ICE vehicles for the South African and export market. EVs are currently not manufactured in South Africa and are largely imported.

South Africa's largest automotive export market is the European Union, which has banned the sale of new ICE vehicles by 2035. In addition, the European Green New Deal aims to ensure that the Eurozone is carbon neutral by 2050, which is expected to place further restrictions on automotive exports due to the carbon footprint associated with manufacturing in South Africa and transportation to the European market. There is a need for the South African automotive industry to transition towards the manufacturing of EVs to maintain export market access and to assist with the decarbonisation of the South African transport industry. This manufacturing transition would need to be accompanied by the use of renewable energy for manufacturing and logistics to meet the carbon neutral requirements of the European Green New Deal by 2050.

The private passenger vehicle segment is the largest automotive production and consumption market in South Africa with a market size of 7.8 million vehicles. This is also the largest export segment by volume to the European Union. Private passenger vehicles remain the most valuable market for EV adoption. It is driven by rising fuel prices and greater consumer awareness of the climate change and air pollution impact of transport emissions. Therefore, the local manufacturing of electric private passenger vehicles has been highlighted as a market investment opportunity for local consumption and export in the medium to long term.

The use of electric micro-mobility for last-mile delivery in South Africa has been gaining momentum due to affordability, low import duties, ease of local assembly and rapid deployment at a fleet scale. This market has been characterised mostly by electric two- and three-wheelers, which are assembled locally using imported completely knocked-down kits. This vehicle segment has been highlighted as a market investment opportunity for the short to medium term.

The public transport industry in South Africa has a market size of 356 485 minibus taxis and 65 329 buses and midibuses. The South African Green Transport Strategy has mandated the decrease of the transportation sector's GHG emissions by 5% by 2050, which has created government procurement practices that favour EV adoption.

An example of this policy development is the Western Cape Strategy for the Implementation of EVs, which has resulted in the procurement of EVs by Government Motor Transport, a provincial owned entity. In addition, the City of Cape Town: Fleet Management: Corporate Services has been running an EV pilot project from 2020 to 2022 consisting of five BMWi3 EVs with the City's Traffic Service's department to evaluate the feasibility of procuring EVs for the City of Cape Town in the near future.

In addition, the dtic has designated public transport vehicles with an 80% bus body local content requirement. This will be a key driver for the local manufacturing and electrification of public transport fleets in South Africa. It has therefore been highlighted as a market investment opportunity for the medium to long term.

The recent post-pandemic supply chain crisis has negatively affected the EV manufacturing industry worldwide and has resulted in governments prioritising regional or localised component supply chains as protection against unexpected market shocks. Lithium-ion cells are a key component in the production of battery packs for stationary energy storage and EV applications. The South African automotive industry has access to most of the minerals required to manufacture lithium-ion cells either from local mines or neighbouring African countries.

Therefore, the local manufacturing of lithium-ion cells in South Africa may become market investment opportunity in future with cell assembly / battery manufacturing being an initial medium to long term step towards this.

The four key market opportunities that have been identified as attractive sectors for investment in the EV industry in South Africa are summarised in **Table 6**.

These are: local manufacturing and electrification of public transport, electric micro-mobility for last-mile delivery, local manufacturing of electric private passenger vehicles and local lithium-ion cell manufacturing.

Table 6: Overview of the market opportunities, drivers and barriers within the EV market in SA

| Opportunity | | |
|--|---|-----------------|
| Local manufacturing and electrification of public transport | | |
| Key Drivers | Barriers | Term |
| <ul style="list-style-type: none"> Rising fuel costs South African Green Transport Strategy's 5% decarbonisation target by 2050 Government procurement policies in favour of EV procurement (Western Cape Government Motor Transport and CoCT Fleet Services are leading in this regard) 80% bus body local component requirement for public procurement⁵ | <ul style="list-style-type: none"> High capital cost of procuring electric buses Low market availability of electric bus and minibus taxi manufacturers Limited charging Infrastructure along public transport routes and facilities | Medium to long |
| Opportunity | | |
| Electric micro-mobility for last-mile delivery | | |
| Key Drivers | Barriers | Term |
| <ul style="list-style-type: none"> Affordability of electric micro-vehicles Low import duties Ease of local assembly of Complete Knock Down Kits Local component supply chain currently exists | <ul style="list-style-type: none"> Battery range limited to 100 km Limited charging infrastructure Limited applicability beyond last-mile delivery and shared mobility services | Short to medium |

⁵ Note that there is some uncertainty with regard to this requirement due to changes to regulations affecting public procurement

Opportunity

Local manufacturing of electric private passenger vehicles

| Key Drivers | Barriers | Term |
|---|---|----------------|
| <ul style="list-style-type: none"> European Union ban on the sale of new ICE vehicles by 2035 has a direct impact on SA vehicle exports Auto Green Paper on the Advancement of New Energy Vehicles in South Africa: The South African Road to Production of EVs High custom duty and <i>ad valorem</i> taxes applied to imported EVs in South Africa | <ul style="list-style-type: none"> A large financial investment in new production lines and manufacturing equipment is required to transition the local automotive manufacturing industry to produce EVs Lack of government policy clarity around the future of ICE vehicles in South Africa and incentives for EV production | Medium to long |

Opportunity

Local lithium-ion cell manufacturing

| Key Drivers | Barriers | Term |
|--|--|----------------|
| <ul style="list-style-type: none"> Increasing need for LiB in renewable energy and stationary storage, EVs, consumer electronics, and other sectors, both in SA and globally Availability and relative ease of access to lithium, cobalt, nickel, manganese and other critical raw materials in SA and the sub-Saharan Africa region | <ul style="list-style-type: none"> High energy intensity of lithium-ion cell production Industrial energy insecurity with regards to frequent load-shedding Global Battery Alliance: Battery Passport has total Life Cycle Assessment and ESG requirements which favour green industrial practices and renewable energy usage for battery cell manufacturing European Green New Deal which aims for the Eurozone to be Carbon Neutral by 2050, provides an emission reduction challenge that may limit South Africa's integration into global EV supply chains due to the carbon footprint of shipping cells from South Africa to Europe, and Eskom's grid electricity emission factor | Medium to long |

4.1. Outline of the EV manufacturing value chain

The complete EV value chain and potential investment opportunities are presented in **Figure 16**.

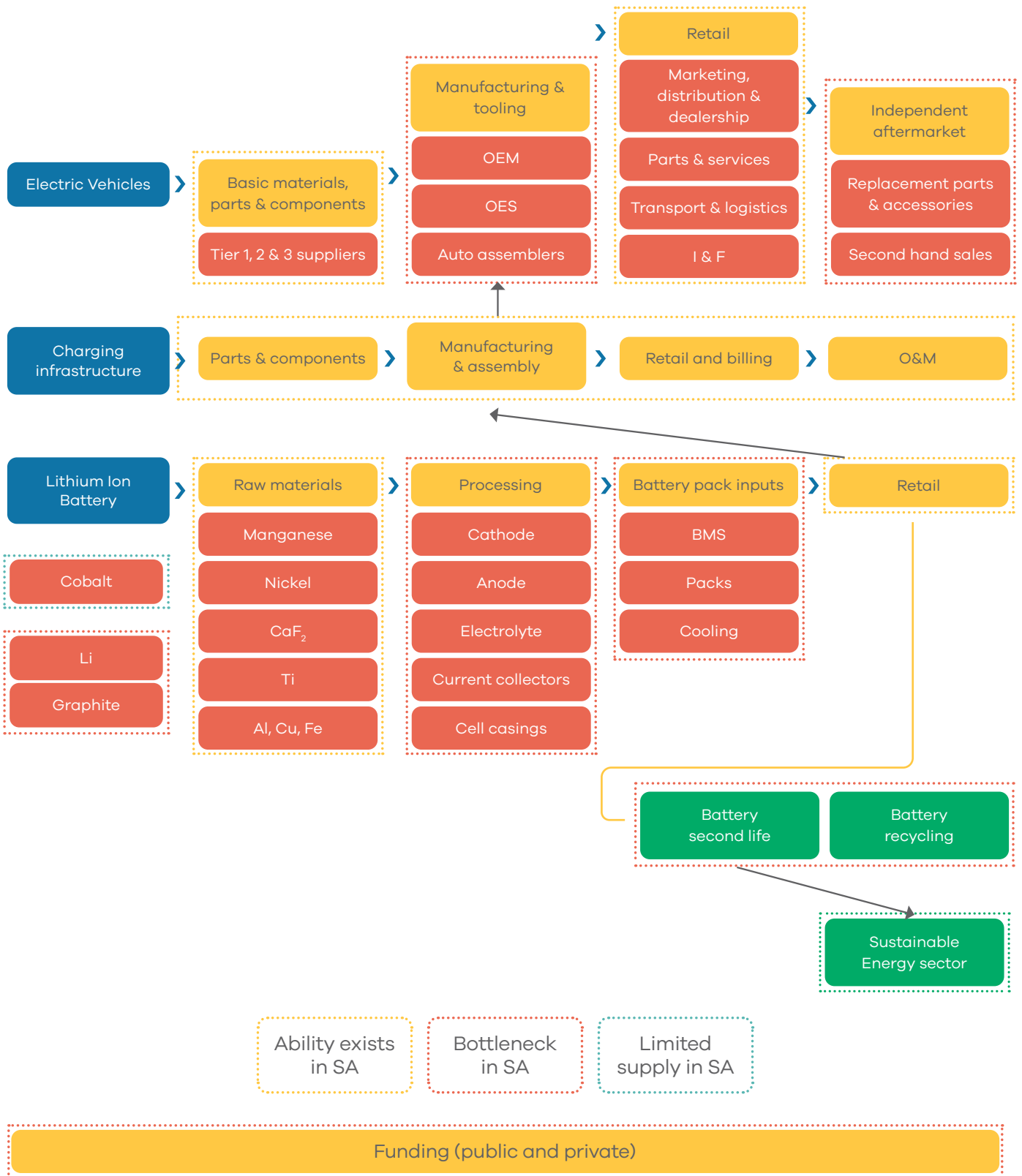


Figure 16: Electric passenger vehicle manufacturing value chain

4.2. Details of the investment opportunities in SA EV manufacturing value chain

The segments of the EV manufacturing value chain that have been identified as high potential investment opportunities for South Africa are presented in **Table 7**. Each opportunity has been accorded an appropriate timeline of implementation based on market readiness and consumer demand. The level of skill required for the jobs created per industrial opportunity has also been given a rating on a scale of 1 (low skill required) to level 5 (high skill required). The industrial investment required to create an industry for each identified opportunity has also been rated from 1 (low investment required) to 5 (high investment required).

Table 7: Summary of investment opportunities in the SA EV value chain

| EV market segment | EV value chain | Timeline | Skills level required | Industrial investment level required |
|--|-------------------------|---------------------|-----------------------|--------------------------------------|
| Electric passenger vehicle | Assembly | Medium to long term | 4 | 4 |
| Electric kick-scooter | Assembly | Short term | 3 | 3 |
| Electric bicycle | Assembly | Short term | 3 | 3 |
| Electric moped | Assembly | Short term | 3 | 3 |
| Electric 3-wheeler | Assembly | Medium term | 4 | 4 |
| Electric mini-bus taxi | Assembly | Medium term | 4 | 4 |
| Electric bus | Assembly | Medium term | 4 | 4 |
| Electric truck | Assembly | Medium to long term | 4 | 4 |
| Battery pack | Component manufacturing | Short term | 4 | 4 |
| Battery cell | Component manufacturing | Long Term | 5 | 5 |
| EV skateboard platform | Component manufacturing | Medium to long term | 5 | 5 |
| Automotive glass | Component manufacturing | Short term | 2 | 2 |
| Automotive plastic & composite materials | Component manufacturing | Short term | 2 | 2 |
| Semi-conductors | Component manufacturing | Medium to long term | 5 | 5 |

4.3. Local manufacturing and electrification of public transport

There is a demand for the local manufacturing of electric public transport vehicles such as buses and taxis. This would service the local South African market at first and could be developed into an export industry to supply the greater African market. This demand is driven by the need for public transport fleets to save operational fuel costs and reduce GHG emissions in line with the 5% emissions reduction strategy by 2050, as outlined in the South African Green Transport Strategy. This policy directive is expected to lead to government procurement practices which favour EV adoption in government-owned fleets. An example of this is the Western Cape Government's Strategy for the Implementation of EVs at Government Motor Transport, which is a provincial owned entity with a fleet of over 7 000 vehicles.

Table 8: Local manufacturing of public transport vehicles market demand and relevance

| Market demand | Relevance for opportunity |
|-------------------|---------------------------|
| Local | Yes |
| Regional (Africa) | Yes |
| International | No |

The electric minibus taxi industry has a total addressable market size of 356 485 vehicles that is valued at approximately R540 billion. The unit cost of an electric minibus taxi has been estimated at R1.5 million, including import taxes. The electric bus industry has a total addressable market size of 65 329 vehicles that is valued at R460 billion. A unit cost of R7 million per bus has been estimated to calculate this market size. The need to manufacture electric buses in South Africa has been driven by 80% local component requirements for bus bodies for public procurement. However, as indicated in [Section 3](#), there is some uncertainty with regard to procurement policy and associated designations going forward.

Market barriers include the high investment capital required to develop a greenfield electric public transport manufacturing industry, as well as the sourcing of advanced manufacturing machinery, vehicle assembly lines and the technician skills required. The investment risks associated with the local manufacturing of EVs for public transportation include the relatively limited size of the local market, which will present growth constraints unless manufacturing capacity to supply the greater African market is taken into consideration.

4.4. Electric micro-mobility for last-mile delivery

There is an investment opportunity in electric micro-vehicles (two- and three-wheelers) for last-mile delivery services in South Africa. Key drivers of uptake include affordability, low import duties, ease of local assembly and rapid deployment at a fleet scale. This market has been characterised mostly by electric two- and three-wheelers, which are assembled locally using imported completely knocked-down kits. For example, Green Riders is a local start-up which added 600 new electric cargo bikes to their delivery fleet in 2022.

Table 9: Electric micro-mobility for last-mile delivery market demand and relevance

| Market demand | Relevance for opportunity |
|-------------------|---------------------------|
| Local | Yes |
| Regional (Africa) | Yes |
| International | No |

There is a market size of 2.7 million light delivery vehicles in South Africa. If a 10% adoption of electric micro-vehicles is applied for the delivery of last-mile food, grocery and e-commerce services, there would be a market of 270 000 vehicles valued at R15 billion. The average unit cost of an electric micro-vehicle has been assumed to be approximately R55 000. This approximation has been calculated using the average price of electric micro-vehicles ranging from electric bicycles to electric mopeds. The investment risk that is associated with this opportunity would be the future affordability and advancement of larger electric light delivery vehicle (LDV) technology such as panel vans and trucks which could become more favourable for last-mile delivery.

4.5. Local manufacturing of electric private passenger vehicles

Consumer adoption of electric private passenger vehicles has been driven by the need to save on operational fuel costs, as well as greater awareness about the air pollution and climate change impacts of ICE vehicle use. All EVs are currently imported into the South African market, which attracts a customs import duty of 25% and an *ad valorem* tax of up to 18%. This almost 42% in extra costs is a contributing factor towards the high costs of electric passenger vehicles in South Africa, the cheapest of which, as indicated in [Section 2](#), is the Mini Cooper priced at R694 600. According to WesBank the average value of a new vehicle financed in 2022 is R377 252. This places most EV models out of the price range of the average South African consumer.

Table 10: Local manufacturing of electric private passenger vehicles market demand and relevance

| Market demand | Relevance for opportunity |
|-------------------|---------------------------|
| Local | Yes |
| Regional (Africa) | Some |
| International | Yes |

The South African electric private passenger vehicle market size is approximately 7.8 million vehicles with an estimated value of R7.8 trillion. A unit vehicle cost of R1 million was used to estimate the market size of the electric passenger vehicle market. The local manufacturing of electric private passenger vehicles is therefore a market investment opportunity which could result in more affordable EVs being brought onto the South African market due to not attracting customs duty and ad valorem taxes. This would be to supply both the local South African and global export market to achieve economies of scale.

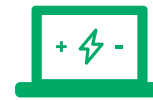
As indicated in [Section 3](#), the policy directive of the Auto Green Paper on the Advancement of New Energy Vehicles in South Africa seeks to transition the existing local ICE automotive manufacturing industry to produce EVs for both local consumption and export. The European Union, which is South Africa's largest export market for private passenger vehicles, has banned the sale of new ICE vehicles by 2035.

Market barriers include the high investment capital required to develop electric private passenger vehicle manufacturing capacity in South Africa, as well as the sourcing of advanced manufacturing machinery, vehicle assembly lines and technician skills.

The investment risks associated with the local manufacturing of electric private passenger vehicles include supply chain bottlenecks on key components such as lithium-ion cells for battery packs. International policy barriers such as the European Green New Deal which aims to ensure that the Eurozone is carbon neutral by 2050 may impact South Africa's ability to export electric private passenger vehicles to the EU due to the carbon footprint associated with industrial energy supply from Eskom. Additionally, the carbon footprint of shipping and logistics from South African industrial hubs to the European market will not be favourable compared to closer industrial hubs in North Africa. These barriers can be removed through the greater use of renewable energy for EV manufacturing and transitioning to the use of sustainable shipping fuels.

4.6. Local lithium-ion cell manufacturing

There is an investment opportunity for the local manufacturing of lithium-ion cells in South Africa to supply both the EV manufacturing and stationary energy storage industries. This is driven by the availability and relative ease of access to lithium, cobalt, nickel, manganese and other critical raw materials in South Africa and the sub-Saharan Africa region. Low cobalt reserves in South Africa did initially present a potential supply chain bottleneck within South Africa. However, battery manufacturers are moving towards the use of lithium iron phosphate (LFP) chemistry, which is cobalt free. The mineral reserves of South Africa and neighbouring African countries relevant to the lithium-ion-cell value chain is shown in [Figure 17](#).



Increases in the demand prices of EV minerals sand metals supply chain bode well for Southern African mining prospects

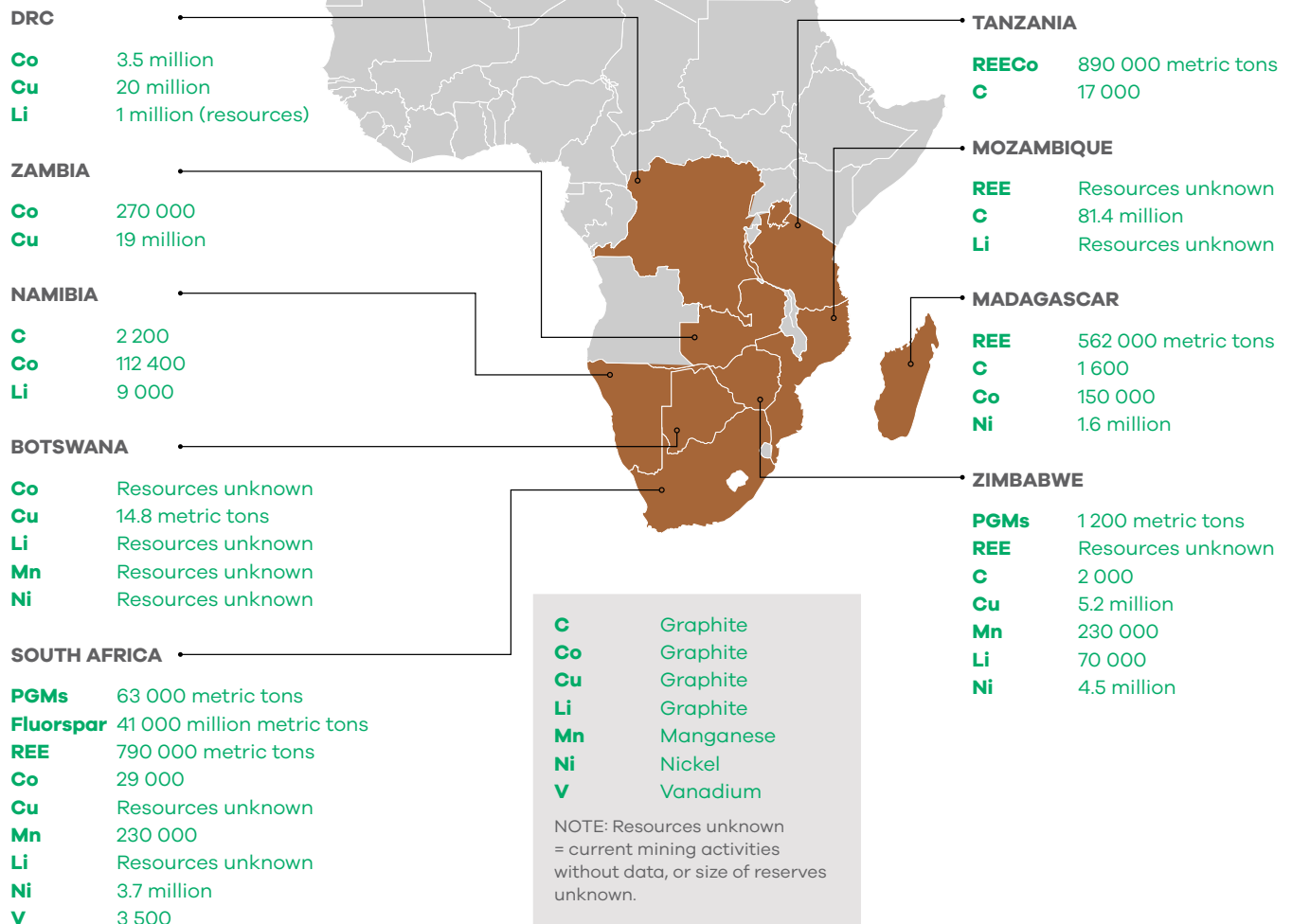


Figure 17: Reserves of EV minerals in the Southern Africa region

The global shift towards the development of regional industrial hubs is being driven by the impact of global supply chain constraints and market shocks that have negatively affected the EV industry in the post-pandemic economy.

The global EV industry is currently heavily reliant on China, Japan, and South Korea for the supply of lithium-ion cells. Germany's natural gas energy crisis, a consequence of the Ukraine-Russia war, and political tensions between

China and Taiwan impacting semi-conductor market supply, have placed the spotlight on the market vulnerability of being overly reliant on traditional markets for key components in the EV manufacturing supply chain.

Table 11: Local lithium-ion cell manufacturing market demand and relevance

| Market demand | Relevance for opportunity |
|-------------------|---------------------------|
| Local | Yes |
| Regional (Africa) | Yes |
| International | Yes |

Barriers to this opportunity include the high energy intensity of lithium-ion cell production which could be negatively affected by high precedence of load shedding in South Africa. The Global Battery Alliance has produced a Battery Passport framework which outlines the future importance of total life cycle assessment (LCA) and corporate ESG requirements of lithium-ion cell export markets.

This framework favours green industrial practices and renewable energy usage for battery cell manufacturing. To overcome the obstacles posed by the European Union’s objective of a carbon neutral Eurozone by 2050, greater use of renewable energy for EV manufacturing would be required. Transitioning to the use of sustainable shipping fuels should counter the carbon footprint of shipping cells from Africa to Europe.

There is an investment risk involved in high initial capital investment to develop a greenfield lithium-ion cell manufacturing supply chain. **Figure 17** above shows a detailed explanation of the lithium-ion cell value chain in South Africa.



FUNDING AND INCENTIVES

A range of general and sector-specific funding solutions and incentives is available to investors, manufacturers, and service companies in the green economy. It covers Development Finance Institutions, local public and private sector financiers and investors, and a considerable range of tax incentives.



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The GreenCape Green Finance Desk (GFD) primarily acts as a facilitator in the financing of green projects and green business. The GFD works across all sector desks at GreenCape. For more support please visit <https://www.greencape.co.za/content/sector/green-finance> Finance databases

5.1. Finance databases

GreenCape's GFD has compiled and continues to maintain a database of climate finance sources and incentives that could be relevant to companies and projects operating in the South African green economy. A few of the available databases are highlighted below and can be sourced here: <https://green-cape.co.za/archives/green-finance-databases/>

5.1.1. The Green Economy Climate Finance Database 2022

The database contains information on funding opportunities, the types of funding and institutions providing the funding, and contact details. This includes information on national market players (e.g. commercial banks, microfinance banks, private equity/debt, venture capital, angel investors etc.), as well as international climate finance streams (e.g. climate funds, DFIs, multilateral institutions, bilateral development partners) and domestic sources of finance. The Green Economy Climate Finance Database 2022 analysed ~150 financing solutions valued at ~R25 billion.

The database is ideal for any entity seeking a broad range of funding solutions and financial incentives, with a largely South African focus.

Bilateral development partners, local and international development finance institutions, and government departments/agencies make up the majority of the active financing stakeholders. Still, climate funds, commercial banks, private equity/debt, and venture capital make up most of the capital value available in the database.

Across the more than 150 climate finance opportunities, eight different financial products are available:

Debt [commercial (listed and unlisted) and concessional (listed and unlisted)] – A debt evidenced by a note which specifies, in particular, the principal amount, interest rate, and date of repayment at below-market rates. The concessionality can be achieved either through interest rates below those prevailing on the market, longer maturity or grace periods, or a combination of those.

Venture capital (limited) – Equity capital can be provided at various stages of funding rounds. Common funding rounds include early-stage seed funding in high-potential, growth companies and growth funding.

Mezzanine finance – Subordinated debt or preferred equity instrument representing a claim on a company's assets that is senior only to that of the common shares. Mezzanine financings can be structured either as debt or preferred stock.

Equity – A stock or any other security representing an ownership interest.

Guarantees and Risk Mitigation Instruments (RMIs) – RMIs facilitate access to debt and equity financing by mitigating and transferring risks from project sponsors and private lenders to third parties. Common instruments applied include contractual arrangements, joint ventures, insurance and guarantees.

Grants (very small "ticket size") – Transfers made in cash, goods or services for which no repayment is required.

Government spend –
Government development
finance or budget spend.

Finance products are available
for almost all the sectors
(biggest gaps remain in
adaptation-focused and new
and emerging sectors).

Still, as expected, clean energy
is the focus of most of the
tracked financial offerings,
including energy efficiency and
demand-side management and
mobility/storage.

**How to use the Green Economy
Climate Finance Database 2022:**

Each sheet is broken down into
types of sources of climate
finance (public, private and
blended). These are covered by
the government (local and
international), development
finance institutions, commercial
and others. The diagram below
details the five steps you can
follow to filter the dataset for the
best possible outcome.

**STEP
01**

Select the relevant source of finance sheet

**STEP
02**

Sort sheet by sector:

- Clean energy
- Energy efficiency & demand side management
- Low carbon transport

- Water conservation, supply & demand
- Agriculture, food production, fisheries and forestry
- Circular Economy

- Buildings and the built environment
- Material substitution
- General eco-system support
- Cross-sectoral

**STEP
03**

Sort sheet by investment instrument:

- Grant
- Concessional debt
- Debt / mezzanine debt

- Working capital
- Equity
- Budget expenditure
- Other

**STEP
04**

Check alignment of the size of investment and investment opportunity information.

**STEP
05**

Contact relevant financiers (including high-level ask, market size estimate and basic company track record).

For further information and support on any of the content provided here, please get in touch with GreenCape's Climate Finance team at finance@greencape.co.za

Additional resources on improving green economy financial resilience are available from: Government Funding and Incentives Database An updated document focused on government funding and incentives is available to view and download [here](#).

5.1.2. Allied Crowds Database

This database is ideal for any entity seeking a broad range of financial solutions.

“AlliedCrowds is the first complete aggregator and directory of alternative finance providers in the developing world. We help donors, investors, and entrepreneurs navigate the alternative finance space through our reports, data, and Capital Finder, increasing the flow of capital to deserving projects globally.”

Sign up to use the Capital Finder is free and allows users to access a global database where you can filter for a sector (including greentech, agriculture and social impact), type of capital (equity, lending, grant) and type of funding (crowdfunding, angel investing, venture capital, impact investing). The Entrepreneur Hub provides important tools and assistance for start-ups, including writing business plans and financial resources.

- In addition, themed databases around the Sustainable Development Goals (SDGs) and the World Green Economy Organization (WGEO) are found [here](#). You can also contact Allied Crowds to create a customised funding database for you.
- An Alternative Finance glossary can be found.

ALLIED CROWDS
WEBSITE

5.1.3. Finfind Database

Access to finance is the number one challenge experienced by SMEs - Finfind has been specifically developed to address this problem. Finfind is innovative, online access to finance solution that brings the providers and seekers of SME finance with a focus on finance readiness. Finfind has over 250 lenders and almost 500 loan products available to SMEs, and each lender’s listing and loan product information are kept up to date daily. This database is ideal for South African SMMEs seeking funding and business advisory services or upskill themselves on finance matters.

FINFIND WEBSITE

5.1.4. RECP Database

The Africa-EU Renewable Energy Cooperation Programme (RECP) is a multi-donor programme that supports the development of markets for renewable energy in Africa. It was launched by more than 35 African and European Ministers and Commissioners under the Africa-EU Energy Partnership (AEEP).

Aside from the Finance Database, the site also hosts the Finance Catalyst, an advisory service geared towards African projects. This is supplemented with market intelligence (including RE potential, country-specific regulatory framework and key stakeholders). This database is ideal for renewable energy project developers looking to work in Africa.

RECP DATABASE

5.1.5. Government Funding and Incentives Database

An updated document focused on South African government funding and incentives is available to view and download online. These incentives cover local manufacturing, critical infrastructure grants, small enterprise development and a diverse set of sector specific incentives (i.e. Aquaculture Development and Enhancement Programme).

GOVERNMENT FUNDING
AND INCENTIVE BOOKLET

5.2. South African Climate Finance Landscape

The South African Climate Finance Landscape looks at detailed project-level green economy finance data, understanding source, disbursement, instrument and use. The insights can support public and private role-players with information to shape sectoral strategies and selected policies and improve coherence and coordination between public and private level spending in the sectors. The South African Climate Finance Landscape has tracked R62.2 billion in annual climate finance invested in SA.

ACCESS TO THE SOUTH
AFRICAN CLIMATE
FINANCE LANDSCAPE

GREEN FINANCE
DATABASE

5.3. Further funding sources

Click the buttons below to access the different funding sources.

SA INSTITUTIONS
PROVIDING FUNDING FOR
ENTREPRENEURS

SA BUSINESS FUNDING
DIRECTORY 2016/17

THE GREEN
OUTCOMES FUND



GREENCAPE'S SUPPORT TO BUSINESSES AND INVESTORS

GreenCape is a non-profit organisation that works at the interface of business, government and academia to identify and remove barriers to economically viable green economy infrastructure solutions. Our vision is a thriving prosperous Africa, mobilised by the green economy.



Working in developing countries, GreenCape catalyses the replication and large-scale uptake of green economy solutions to enable each country and its citizens to prosper. We work with businesses, investors, academia and government to help unlock the investment and employment potential of greentech and services, and to support a transition to a resilient green economy.

We assist businesses by removing barriers to their establishment and growth and provide our members with:

- free, credible and impartial market information and insights;
- access to networks of key players in government, industry, finance and academia;
- an advocacy platform to help create an enabling policy and regulatory environment for green business.

We assist local, provincial and national government to build a resilient green economy by providing:

- support on the development of standards, regulations, tools and policies
- expert technical knowledge on key sectors in the green economy;

- access to networks of key players across business, academia, and internationally

Since inception in 2010, GreenCape has grown to a multi-disciplinary team of over 40 staff members, representing backgrounds in finance, engineering, environmental science and economics.

Our market intelligence reports form part of a working body of information generated by sector desks and projects within GreenCape's three main programmes – energy, circular economy and resources.

Benefits of becoming a GreenCape member

We currently have over 3 050 members, and offer free membership. Becoming a member of GreenCape will give you access to the latest information regarding developments in the various sectors; access to tools, reports, and project information; and offer you the opportunity – through our networking events – to meet and interact with various stakeholders in the green economy.

We have facilitated and supported ~R42 billion of investments in renewable energy projects and manufacturing. From these investments, more than 19 000 jobs have been created.

Through our WISP (industrial symbiosis) programme, by connecting businesses with waste / under-used resources:



435 000 fossil GHG emissions saved (equivalent to the electrical usage of 117 840 households in SA);



Over R150 million in financial benefits

(additional revenue, cost savings and private investments);



398 economy wide jobs.



135 00 tonnes of waste diverted from landfill



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2041



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