

New Energy Vehicles Dialogue Report

A PRESIDENTIAL CLIMATE COMMISSION ENERGY DIALOGUE REPORT

Wednesday, 22 November 2023 11h00 - 13h00

This report is a high-level summary of the virtual energy dialogue on the transition to NEVs, the full recording to the energy dialogue and presentations can be found on the PCC website.

1 INTRODUCTION

Global decarbonisation commitments and actions by South Africa's trade partners in their transport sectors has caused a need to transform the manufacturing of vehicles and components from internal combustion engines (ICE) to new energy vehicles (NEVs). The consequences of the global energy transition are not only felt in the energy sector, but in all other sectors of the economy, and the transition to new energy vehicles (NEVs) is one of the many moving pieces in South Africa's pursuit of a just energy transition. Specifically, the European Union (EU) and the United Kingdom (UK), major importers of our vehicles have set targets for phasing out all new sales of ICE passenger vehicles by 2035. However, impacts to outlaw the manufacturing of ICE vehicles will begin to sting the local vehicle manufacturing industry even before 2035 as the operational processes change and the global decline for ICE vehicles begins to materialise.

As part of its energy dialogue series, the Presidential Climate Commission (PCC) hosted an energy dialogue on the Transition to NEVs with the main objectives to understand the requirements for unlocking the market for local use and international export to mitigate the risks imposed by the ban on imported ICE vehicles and the inability to transform the industry timeously. Facilitated by Commissioner Joanne Yawitch, the energy dialogue included representatives from the Department of Transport, the National Association of Automobile Manufacturers of South Africa (naamsa), Department of Trade, Industry and Competition (DTIC), National Union of Metalworkers of South Africa (NUMSA) and Zero Carbon Charge (Pty) Ltd.

2 OVERVIEW

2.1 Global Market Share

The global market share of NEV had reached a size of \$57.58 billion in 2021. It is estimated that the market will grow \$866.51 billion by 2028 at a compound annual growth rate of 47.3%. China by far had the largest share in NEV sales in 2021, the second-highest region in the world for NEV sales was Europe followed by The United States. The large increase in global NEV adoption will have major implications for South Africa's automotive industry as currently, the country does not manufacture electric vehicles.

Vehicles produced in the country are mainly for the export market to obtain higher production volumes. Combined the European Union (EU) and the United Kingdom are South Africa's largest trading regions, with the EU being the largest. In 2021, the EU along with the United Kingdom, accounted for R124,7 billion or 60,1% of the total automotive export of R207,5 billion¹. For the past three decades, Germany has remained the country's top single trading partner concerning both exports and imports**Error! Bookmark not defined.**. Vehicle exports registered an increase in 2021, there was an increase in exports in Europe and the rest of Africa.

¹ National Association of Automobile Manufacturers of South Africa. 2022. *The Automotive Export Manual – 2022*. [Online] Available from: <u>https://naamsa.net/wp-content/uploads/2022/05/Automotive-Export-Manual-2022.pdf</u> [Accessed: 2023-12-02]



Figure 1: South African automotive industry's top export destination 2021 (R million)¹

2.2 South Africa's Automotive Sector

South Africa's global vehicle production ranking was 22nd in 2022 with a market share of 0.65%², South Africa is also regarded as a second-tier automotive producer and forms part of the countries with an annual production of below one million vehicles.¹ The South African automotive industry is one of the largest sectors in the economy with 555 889 vehicle units produced in 2022 and 360 000 of these units exported.²

The automotive industry is concentrated in three regions of the country. The assembly plants are located in Eastern Cape, KwaZulu Natal, and P Gauteng. The Eastern Cape accounts for 53.5% of manufacturing, the other 33.7% Gauteng 33.7%, and KwaZulu-Natal 12.8%. The assembly plants are also located close to components manufacturers such as catalytic converters, leather car seats, and tyres manufacturers. The Eastern Cape region is also where the major test facility of the South African Bureau of Standards (SABS), is located. The facility is one of the key support institutions for the automotive industry, as it provides testing facilities for the industry's products.¹

2.3 Contribution to South Africa's economy

The success of the automotive industry in the country's economy is illustrated in that in 2022, the sector accounted for 4.9 % of the country's GDP (2.9 % manufacturing and 2 % retail) and held a 21.7 % share in the manufacturing sector.² This is approximately one-third of the value addition in the sector derived directly or indirectly from vehicle assembly and component manufacturing activities.³ This makes it one of the largest single manufacturing industries in the economy. In 2022, the auto manufacturing segment of the industry across the different tiers from component manufacturing to vehicle assembly employed 116 683 people. An additional 380 725 people are employed across the value chain in auto sales, repair, and maintenance. Relating it to the total amount of people employed in the economy, the industry accounted for about 3% of the 16.2 million people employed, which was considerably higher than the national average of most

² Lamprecht, S. 2023. *PCC NEV Dialogue: The Transition to NEVs - Unlocking the Market*. [Online] Available from: <u>https://pccommissionflo.imgix.net/uploads/images/2.-20231122-NEVs-Unlocking-the-market_NAAMSA.pdf</u> [Accessed: 2023-12-18]

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sectors.**Error! Bookmark not defined.** The sector is, therefore, one of the key contributors to alleviating the three main challenges we have in the country of poverty, unemployment, and inequality.

3 CLIMATE CHANGE AND THE AUTOMOTIVE SECTOR

The transport sector is also a contributor to local and global climate emissions due to tailpipe emissions caused by liquid fossil fuel combustion from cars, trucks, ships, trains, and planes. South Africa's national greenhouse gas emissions inventory compiled by the Department of Environment, Fisheries, Forestry and Environment shows that emissions from the transport sector accounted for 13% of the country's 2020 emissions with 92% of these emissions being attributed to road transport. The sector has also been identified as the fastest-growing source of emissions.³ Climate change impacts are already being felt in this sector where the 2022 KZN floods damaged key strategic road and port infrastructure and produced goods.

The PCC is working with the National Department of Transport (NDoT) to develop the Just Transition Strategy for this sector to align industry plans with Nationally Determined Contributions (NDCs) commitments and objectives. This strategy will outline a pathway that reduces the increases the sector's resilience and simultaneously reducing vulnerability to impacts brought about by the changing climate. There is a shift in the global automotive industry to produce NEVs. This shift is primarily influenced by a combination of regulatory restrictions aimed at reducing the transport sector emissions due to climate pressures and rising demands for more environmentally friendly vehicles and environmentally sustainable automotive supply chains.

Stakeholders who attended the energy dialogue, including labour, were all in agreement regarding the need to transform this sector for socio-economic reasons that will have co-benefits for the decarbonisation of the transport sector. All stakeholders noted the urgency around the need to transition this sector, although, the rate and pace of transition remained unclear as the country still faces challenges of energy insecurity and electric vehicles would increase the energy demand on an already constrained grid that is not built for charging demand. If all EVs are charged using the current electricity grid, it will divert vehicle emissions from ICE combustion to electricity generation due to the country's dependence on thermal coal for generation. This challenge is not unique to South Africa and is being studied globally, however, in the long term, we will see a reduction of grid-tied emissions because of NEVs because of a future energy mix that includes low-carbon technologies.⁴

4 INFRASTRUCTURE DEVELOPMENT – EV CHARGING

The successful rollout of NEVs requires a widespread sustainable charging network. There is still much to be done concerning the charging infrastructure network, however, local company Zero Carbon Charge (Pty) Ltd has started rolling out a national network of 120 off-grid sustainable charging stations that will operate independently from the grid and use solar PV to charge⁵. Furthermore, the current electricity supply constraints add to the challenges as EV charging using

⁴ GreenCape. 2023. 2023 Electric Vehicles Market Intelligence Report. [Online] Available from: <u>https://greencape.co.za/wp-content/uploads/2023/04/ELECTRIC VEHICLES MIR 2023 FINAL-DIGITAL SINGLES.pdf</u> [Accessed 2023-12-04]

³ National Association of Automobile Manufacturers of South Africa. 2023. *South Africa's New Energy Vehicle Transitional Roadmap - The Route To White Paper*. [Online] Available from: <u>https://naamsa.net/wp-content/uploads/2023/02/20230220-naamsa-NEV-Thought-Leadership-Discussion-Document-1.pdf</u> [Accessed: 2023-12-04]

⁵ Venter, L. 2023. *PCC NEV Dialogue: The Transition to NEVs - Unlocking the Market*. [Online] Available from: <u>https://pccommissionflo.imgix.net/uploads/images/2.-20231122-NEVs-Unlocking-the-market_NAAMSA.pdf</u> [Accessed: 2023-12-18]

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the grid will further burden the energy system. One strategy to mitigate this challenge is the rollout of charging infrastructure powered by renewable energy resources (RES) and a national energy mix that includes more lower carbon and renewable energy generation.

Through a collaboration with local land landowners, Zero Carbon Charge (Pty) Ltd ports and lease land from existing owners and provide owners with 5% of the revenue generated annually⁵. Further, each site will contribute 1% of its gross turnover to skills and local development⁵. This infrastructure can also be used to support grid stabilisation and feedback electricity to the grid during peak hours. The widespread rollout of charging infrastructure on national roads will reduce consumer anxiety and increase confidence in the use of electric vehicles when traveling longer distances.

5 PRICING

Another constraint in NEV adoption in South Africa is the high purchase cost of NEVs, imports of NEVs into the country are subjected to a 25% customs duty which is higher than that charged for ICE vehicles at 18%⁶. The prices of NEVs currently fall into the 70th percentile of ICE model prices and can only be afforded by the wealthy. This barrier is further exacerbated by the high unemployment, poverty, and inequality challenges that the country faces, meaning that, the current market prices of over R0.5 million are unaffordable to most of the population, even the working class.⁷

The high prices of NEVs are mainly attributed to battery costs as they cost between 40% and 50% of the total price of EV units. However, this parity is closing fast and there is relative rapid convergence on NEVs and the local sale of NEVs (mostly hybrid) improved significantly in 2022. Furthermore, the auto industry requires supportive policy frameworks, consistency, and clarity to enable long-term investment decisions as the rate and scale of NEV rollout will influence the affordability of NEVs for passenger use, company vehicle fleets, and trucking.

There is a range of NEVs available in the market as an alternative to conventional internal combustion engine (ICE) vehicles. Battery electric vehicles (BEVs) and hydrogen fuel cell electric vehicles (FCEVs) are presently the two most competing for market share with ICE vehicles globally. In South Africa currently, there is a higher penetration of the hybrid form of ICE vehicles and a lesser share of plug-in hybrid electric vehicles (P-HEVs). The market share of these energy vehicles is still expected to increase before declining with the increased demand and price fall of full electric or hydrogen fuel cell vehicles. **Error! Bookmark not defined.**

6 SECTOR VULNERABILITY - JOBS AND SKILLS

6.1 Mining Sector

As the world moves towards more ambitious targets of decarbonizing the transport sector, other sectors will be adversely affected by this transition. The growth in NEV sales in South Africa will therefore displace ICE sales, as opposed to generating additional aggregate sales in the market. In the mining sector, palladium and rhodium made up approximately 73% of total Platinum Group

⁶ National Business Initiative. 2023. Decarbonising the South African Transport Sector. [Online] Available from:

https://www.nbi.org.za/report/decarbonising-the-south-african-transport-sector-2/ [Accessed 2023-12-07]

⁷ Mphethe, I.T., Mokhele, E.M. 2021. Status of electric vehicles in South Africa and their carbon mitigation potential. *Scientific Africa*, 14 (2021), 1-12

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Metals (PGM) sales in 2020 and platinum accounted for approximately 27% of those sales⁸. About 40% of PGM sales of both platinum and palladium are primarily used for catalyst production in conventional ICE vehicles⁸. There is however a new demand for PGM for the manufacturing of electrolysers used in the production of green hydrogen and FCEVs.

6.2 Petrochemicals and the value chain

Another sector that will be directly impacted by the adoption of NEVs is the petrochemicals sector value chain, including the petrol forecourts. As ICE vehicles are phased out, the demand for conventional liquid fuels such as diesel and gasoline could also significantly drop by 50-100%. The same fate is also expected in the South African context where 75% of diesel and gasoline consumption came from the road transport sector⁹.

Moreover, conventional ICE vehicles have more mechanical components such as complex engines. As a result, the amount of labour input and components required in NEV could be considerably less than those in ICE vehicles. This will have a significant negative impact on the value chain such as component manufacturing to maintenance of vehicles in the automotive industry. But the occurrence of raw materials needed to manufacture NEVs in the southern African region still affords South Africa the potential of being a production hub, not only for the country and the region but for the whole of Africa.⁴

6.3 Skills development

There was a huge concern from stakeholders regarding the skills required for NEVs manufacturing in the future and the risk to the petrol attendants and operating model of petrol forecourts. There is a need to unpack the skills in extended and connected value chains in the value chains which have critical implications on current jobs, new occupations and skills for the sectors of the economy. The transition presents unique economic opportunities necessitating the need for South Africa to build a skills roadmap that addresses the Just Energy Transition. South Africa's JET-IP Implementation Plan provides a roadmap to enable South Africa to take targeted and aligned strides towards the country's decarbonisation goals including NEVs and skills as one of the six portfolios of the implementation plan. Thus, the following interventions were identified: reskilling and upskilling of adult workers, skills anticipatory systems and processes that support future labour force needs and supporting foundational skills development.

7 CONCLUSION

The policy direction and certainty by the government for the adoption of NEV and EV infrastructure in South Africa will unlock this market. The provision of broad policy incentives that include capital and operational costs is necessary in South Africa.⁷⁴ The DTIC published an Automotive Green Paper as far back as 2021, further, the <u>Electric Vehicles White Paper</u> was approved by cabinet in November 2023. The White Paper is critical to the local automotive industry as it outlines a comprehensive EV roadmap and supports investments in the development of new and expansion of existing manufacturing plans to incentivise the production of EVs in the country.

The energy transition is steering the industry to produce zero-emission vehicles that will either be powered by renewable electricity or green hydrogen. The energy transition does not only present

⁸ National Business Initiative. 2021. Decarbonising the South African mining sector. [Online] Available from: <u>https://www.nbi.org.za/wp-content/uploads/2021/10/NBI-Chapter-4-Decarbonising-the-South-African-Mining-Sector.pdf</u> [Accessed 2023-12-07]

⁹ National Business Initiative. 2021. Decarbonising South Africa's petrochemicals and chemicals sector. [Online] Available from: <u>https://www.nbi.org.za/wp-content/uploads/2021/10/NBI-Chapter-2-Decarbonising-South-Africas-Petrochemicals-and-Chemicals-Sector.pdf</u> [Accessed 2023-12-07]

challenges, but it also presents us with opportunities we can utilise in pursuit of a Just Transition and transformation of this sector.