TRADE & INDUSTRIAL POLICY STRATEGIES

POLICY BRIEF: 20/2020

The petroleum-based transport value chain: A just transition approach

OVERVIEW

This policy briefs aims to provide an overview of the characteristics of the vulnerable groups in the petroleum-based transport value chain; an understanding of the dimensions of the impact and expected timeframes for the transition; and an overview of the proposed resilience plans. It first looks at the characteristics of those who are employed in the value chain, or are involved in business. It then explores the dimensions of the impact and the timeframes as they are currently available.

INTRODUCTION

The Intergovernmental Panel on Climate Change special report, *Global Warming of 1.5°C,* notes that *"human influence on climate has been the dominant cause of observed warming since the mid-20th century",* and warned in 2018 that countries have 12 years to keep global warming to a maximum of 1.5°C (Allen, et al., 2018). Many regions across the world are already experiencing the impact of the climate crisis, the result of which has been increased droughts and floods, loss of biodiversity and sea level rise. Those most affected around the world are vulnerable groups in developing countries that already bear the brunt of inequality, and often lack the financial means to migrate to less impacted regions. Letta and Tol (2016) suggest that a hundred of the world's poorest countries will be approximately 5% worse-off by the end of the century than they would have otherwise been without the climate crisis.

To limit the extent of temperature rises, governments and businesses are developing policies meant to curb the reliance on fossil fuels. For the petroleum-based transport value chain, this requires a transition from the internal combustion engine (ICE) to hybrid, and eventually to full electric vehicles. The transition will impact South Africa in various ways, including the loss of export markets for locally made ICE vehicles and components, loss of employment and negative impact on small, medium and micro enterprises (SMMEs). The extent of the impact will be influenced by the time required to fully shift the global vehicle market to electric vehicles. Current timeframes for the transition range from five to 20 years.

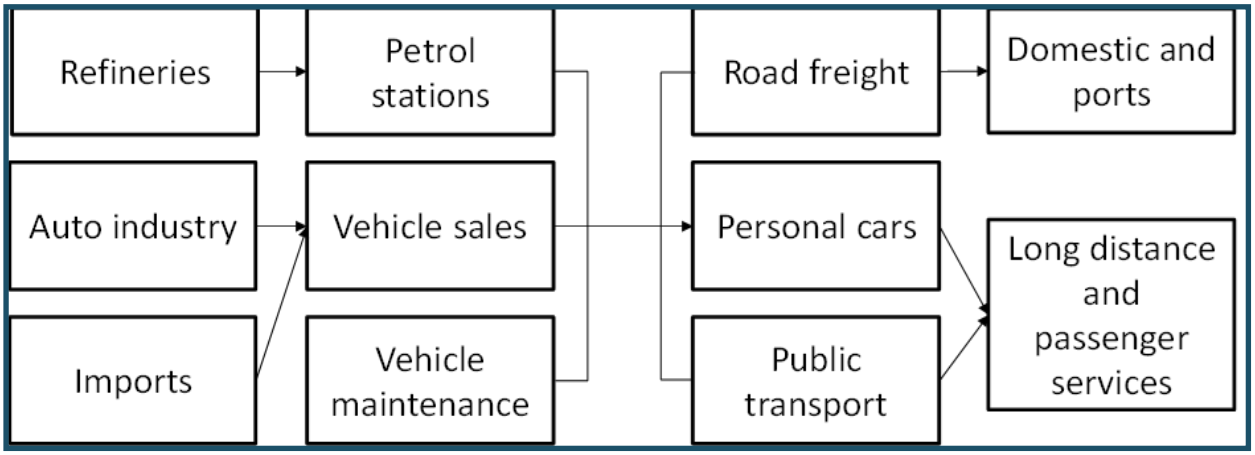
In 2017, the South African petroleum-based transport value chain employed about 1.2 million people spread across industries such as manufacturing and inputs, vehicle sales and repairs, as well as petrol stations. This does not account for the value chain's multiplier effects. Given the size of the value chain, it is necessary to understand the impact of the transition, bearing in mind who the vulnerable groups are, where they are located, and what resources they have to mitigate that impact. In essence, this must be a just transition. According to the European Bank for Reconstruction and Development (EBRD, 2020), a just transition must *"ensure that the substantial benefits of a green economy transition are shared widely, while also supporting those who stand to lose economically…"* (EBRD, 2020).

In many ways, the COVID-19 pandemic has provided a trial run for the kind of impact foreseen and unforeseen events might have on the value chain. With lockdowns implemented to slow the spread of COVID-19, automotive manufacturing and sales were stopped. In March 2020, Moody's estimated a 14% (roughly 13.5 million passenger cars) decline in global automotive sales (Moody's, 2020). Locally, the pandemic led to a 26.3% decline in vehicle sales in the year to August 2020, while exports saw a 46.9% decline (Motoring South Africa, 2020). Overall, by August, 120 960 fewer vehicles were sold locally compared to August 2019. Prolonged decreased demand for vehicles will have a domino effect on the value chain, likely resulting in lower production and cuts in employment.

info@tips.org.za
+27 12 433 9340
www.tips.org.za

Policy Brief by
Nokwanda Maseko
TIPS Economist

Figure 1: Petroleum-based transport value chain



Source: Maseko, et al. 2020

UNDERSTANDING THE VULNERABLE GROUPS

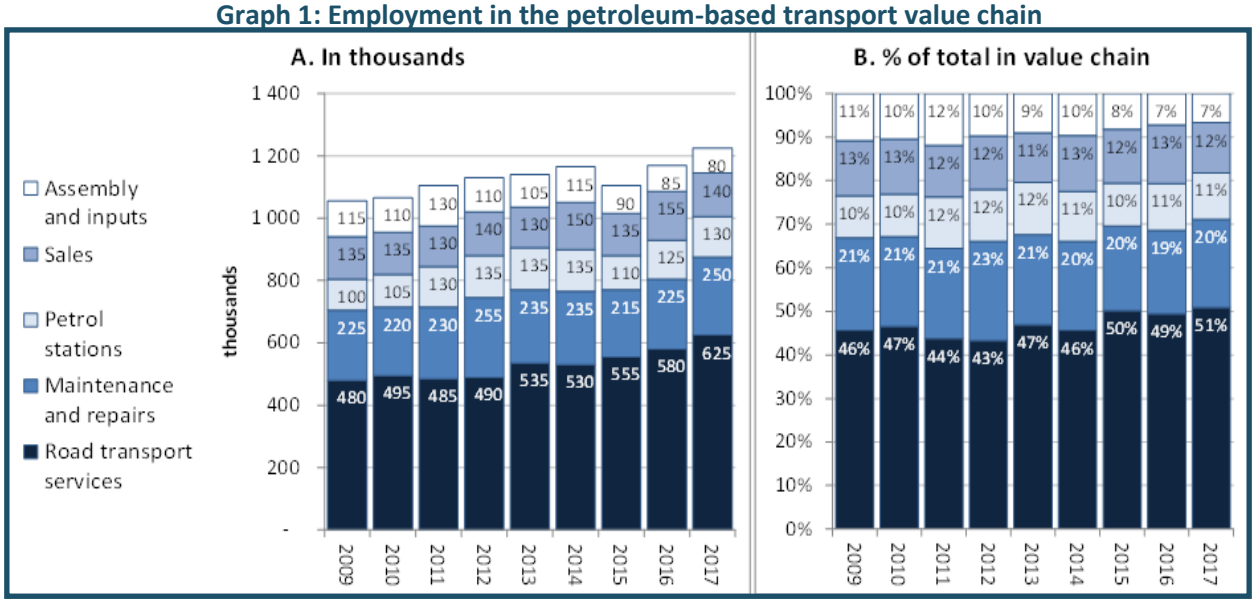
The local petroleum-based transport value chain encompasses, but is not limited to, vehicle and component manufacturing, vehicle sales, road freight, public transportation, and petrol stations. Global responses to the climate crisis will impact households and businesses differently. The impact will manifest through job losses, and in some cases will be through the loss of certain segments of the value chain. Figure 1 illustrates the various segments of the petroleum-based transport value chain.

Employment in the petroleum-based transport value chain fluctuated between 7% and 8% of total local employment in the past decade, rising to 1.2 million in 2017 from one million in 2008. Over this period, transport services accounted for half of employment within the value chain, followed by maintenance and repairs with around a fifth, and petrol stations with over a tenth. With the exception of automotive assembly and inputs, which saw employment decline from 115 000 in 2009 to 80 000 in 2017, the other segments of the value chain had employment growth over the decade (see Graph 1).

The location of each segment of the value chain is important when gauging the magnitude of the impact of the transition to electric vehicles. Certain segments of the value chain are localised within certain areas, such that the negative impact of an improperly planned transition would be felt more forcefully in those areas. For instance, automotive production is concentrated in a limited number of municipalities in three provinces (Gauteng, KwaZulu-Natal and Eastern Cape), compared to transport services, which is spread out along population lines.

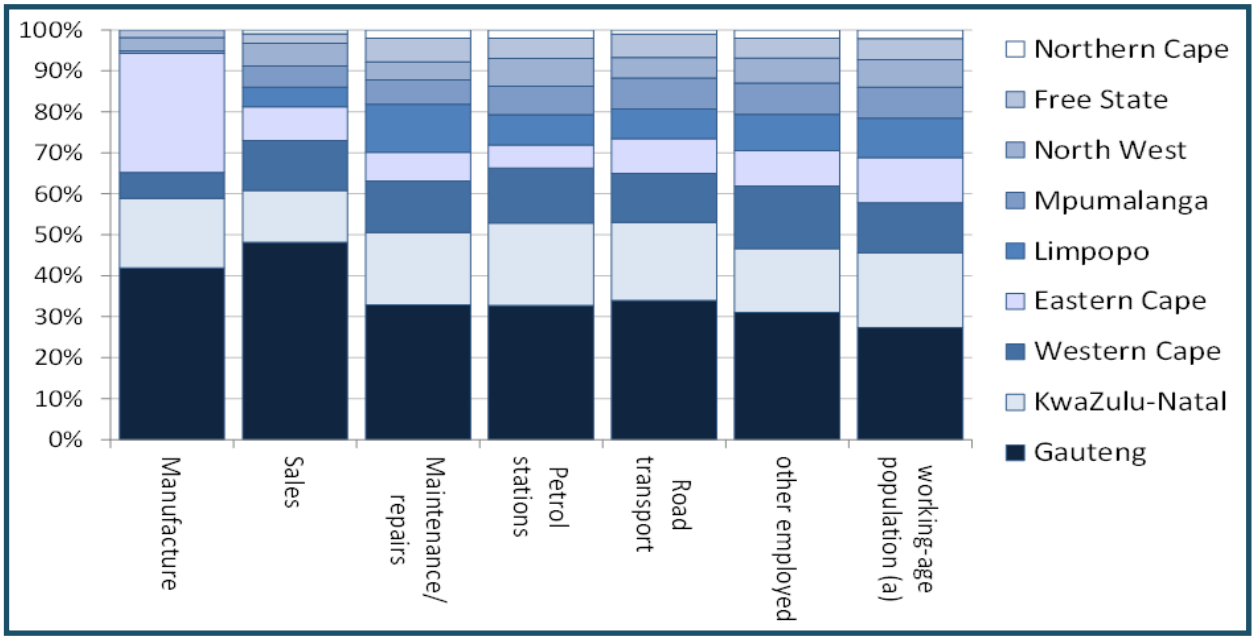
Graph 2 (see page 3) shows the proportion of employment for each segment of the value chain by province. Gauteng dominates in the size of employment for all segments of the value chain, followed by KwaZulu-Natal, Western Cape and Eastern Cape. Further, Eastern Cape, where there is substantial automotive production, has minimal

Graph 1: Employment in the petroleum-based transport value chain



Source: Calculated from Statistics South Africa. Labour Market Dynamics Survey 2017. Electronic database. Downloaded from Nesstar facility at www.statssa.gov.za in December 2018.

Graph 2: Employment in the road transport value chain by province, 2017



Source: Maseko, et al. 2020. Note: (a) Aged 18 to 64.

employment in maintenance and repairs as well as petrol stations compared to Gauteng and KwaZulu-Natal. Eastern Cape serves more as a manufacturing hub than a consumption hub.

Education levels within the value chain are below the national level, with the exception of automotive manufacturing where a similar proportion of employees have at least a tertiary qualification. This limits what jobs these workers can do, making them more vulnerable in the event of a job loss. This is particularly pronounced in maintenance an repairs and road transport, where the bulk (57% and 54% respectively) of the workers have below a matric. Manufacturing, sales and petrol stations have a slightly more educated workforce, with more than 50% of the workers in each segment having matric.

Outside of employment, the value chain also has a significant share of small businesses (including self-employment), which is driven by a large informal sector in transport services. Employers and self-employment within maintenance accounted for more than a third of 2017 total employment, while transport services accounted for close to a quarter of total employment. Further, there are almost as many people working as public transport drivers in the informal sector as there are people employed as freight drivers and handlers and public transport drivers in the formal sector.

By its nature, employment in the informal economy is precarious. That, along with the lack of social benefits such as those available to formal sector workers, increases the vulnerability of informal sector workers. For instance, Fobosi (2018, p15) notes that employees in the taxi industry do not have employment contracts, and drivers mainly work on a commission basis.

DIMENSIONS OF THE IMPACT AND THE EXPECTED TIMEFRAMES

Efforts to reduce greenhouse gas (GHG) emissions have four main elements: promotion of public transport; a move from road to rail transport; cleaner fuels; and a transition to electric vehicles. South Africa is behind in the use of cleaner fuels and electric vehicles. According to uYilo (cited by Kuhudzai, 2020), there were 1 119 fully-electric vehicles in South Africa at the end of 2019, against a vehicle population of 12.7 million. In the period between 2010 and 2019 about 6 043 electric vehicles were sold in South Africa (Montmasson-Clair, et al., 2020).

Although the transition to electric vehicles will aid the global effort to reduce the impact of the climate crisis, without a properly planned just transition, it would have socio-economic impacts for people working in the value chain. This will include people in automotive and component manufacturing, vehicle sales, maintenance and repairs, and petrol stations. Even if South Africa does not increase uptake and begin manufacturing electric vehicles, the international transition will shift demand from locally manufactured ICE vehicles, thus impacting local manufacturing and exports. The following subsection briefly explains the impact of a transition to electric vehicles, along with the expected timeframes.

Electric vehicles

The International Energy Agency (IEA, 2020) reports that the global electric vehicle population grew to 7.2 million, following a 2.1 million increase in 2019. While this number pales in proportion to the total global vehicle population, governments across the world are putting in place policies to mitigate a worsening of the climate crisis, forcing consumers and businesses to adapt.

A just transition must "ensure that the substantial benefits of a green economy transition are shared widely, while also supporting those who stand to lose economically…" – European Bank for Reconstruction and Development (2020)

Electric vehicles are part of this adaptation, leading producers to change and expand production lines to increase their production of electric vehicles. European countries such as the United Kingdom (UK) and France, along with India, have already set targets for a ban of ICE vehicles. The UK is aiming for 2050, France for 2040 and India for 2030 (Petrolff, 2017). Michael Coren (2018) notes that some of the targets are aspirational, and India has, for instance, already stated that plans for the ban will depend on the cost of electric vehicles declining enough to make it economical.

Germany, South Africa's largest automotive and components trading partner, has indicated intentions to ban ICE vehicles *"sooner rather than later",* and the European Union has set a 2050 target, noting that all countries and industries must reach net zero by 2050 (Rankin, 2020). If the timeframes are met, local producers stand to lose a significant market for locally manufactured ICE vehicles and components. In 2017, exports of passenger vehicles accounted for 69% of locally produced vehicles, while light commercial vehicles (LCVs) accounted for 44% of locally produced LCVs (Maseko, 2018).

Although some countries have indicated that ICE vehicle bans would not affect the sale of hybrid vehicles, given that only Mercedes-Benz manufactures a hybrid vehicle locally, this would not be enough to save local production. The ICE vehicle ban would limit South Africa's ICE vehicles exports, including within the continent. Currently, regional exports amounted to R29.7 billion in 2017, or 18% of total automotive exports for the year (Maseko, 2018).

Increased local uptake of electric vehicles will mean a decrease in car sales because electric vehicles last longer, a decline in demand for maintenance and repair because electric vehicles are serviced about once every five years, and decreased demand for petrol and diesel. The result would be substantial loss of employment in those segments, potential closures of businesses – especially informal SMMEs in maintenance and repairs – as well as closures of petrol stations.

Although petrol stations can be altered to include refuelling for fuel cell electric vehicles, and charging infrastructure for electric vehicles, as Shell SA announced it intends to do (Cokayne, 2019), no other petrol stations have made such announcements. Further, in the absence of alternative uses, petrol stations would not survive if they served only as convenience stores. Last, a decline in petrol demand would impact workers in petroleum refineries, which do not, however, directly employ a significant number people. This would also affect the viability of Transnet's pipelines, which are a small share of Transnet's business.

PROPOSED RESILIENCE PLANS

The dominance of foreign-owned original equipment manufacturers in local vehicle production is such that policy development and planning for a just transition cannot be done by government alone. This should include stakeholders that are deeply embedded in the value chain, and which will be impacted by the transition. Proposals for a just transition to electric vehicles are two-fold: a) support for technological adjustments for producers and consumers; and b) active labour market policies to support workers and business owners in the value chain.

Technological adjustments require active measures to accelerate the uptake of electric vehicles. This can include an adjustment to current automotive incentives to cater for electric vehicle production; working with existing industry bodies to install charging infrastructure, especially along long distance routes; and, given the high cost of an electric vehicle, putting in place measures to incentivise consumer shifts to electric vehicles.

China, for instance, introduced measures for both consumers and producers. For consumers, the country introduced consumer subsidies aimed at shifting demand to new energy vehicles (these include battery electric vehicles, plug-in hybrid electric vehicles and fuel-cell electric vehicles). The subsidies are linked to performance indicators, such as mileage range per charge for instance, in order to incentivise continued technological advancement while keeping the price of the vehicles low (Pan, 2020). These subsidies, which were meant to end in 2020, have been extended to 2021 due to the COVID-19 pandemic. For producers, the country introduced a carbon-credit programme under which manufacturers earn credits based on numerous metrics such as mileage per single charge, with credits earned on produced or imported vehicles. Producers are allowed to sell surplus credits to other manufacturers (Mazzocco, 2020).

For public transport, the state can use the current taxi recapitalisation programme to help taxi owners refabricate taxis for dual petrol and natural gas use (see Maseko, et al., 2020). With proper planning and use of existing resources, the state can support local production and use of electric vehicles with minimal need for additional financial resources from the public purse, and also ensure that any negative impact on workers within the value chain is contained.

Active labour market policies would help transition workers and business owners whose work within the

value chain will be lost, to other economic opportunities. For instance, as an electric vehicle has fewer moving parts and needs service roughly once every five years, most of those working in repairs and maintenance will lose their jobs. Further, because workers in repairs and maintenance have low education levels, they cannot easily shift to other jobs. As such, active labour market policies would require identifying in-demand skills related to the competencies of mechanics, and retraining those mechanics for the new skills. Mechanics can also use existing measures like recognition of prior learning to improve their qualifications.

CONCLUSION

The climate crisis and the responses to it will impact the global economy, South Africa included. The extent of the impact on the local economy will depend on how well South Africa is prepared for a just transition. Although there are no clear timeframes as yet for when automotive manufacturers will begin manufacturing electric vehicles locally, South Africa needs to prepare for the transition. The transition will require financial resources, but by tapping into existing programmes, the state can support the shift to electric vehicles and protect workers and SMME owners.

REFERENCES

Allen, M.R., Dube, O.P., Solecki, W., Aragón-Durand, F., Cramer, W., Humphreys, S., Kainuma, M., Kala, J., Mahowald, N., Mulugetta, Y., Perez, R., Wairiu, M. and Zickfeld, K. (2018). Framing and Context. In *Global Warming of 1.5°C*. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.

Cokayne, R. (2019). Shell to launch charging stations for electric vehicles in SA. IOL Industry News. 11 February 2019. Available at: https://www.iol.co.za/motoring/industry-news/shell-to-launch-charging-stations-for-electric-vehicles-in-sa-19235648. (Accessed 1 August 2019).

Coren, M. J. (2018). Nine countries say they'll ban internal combustion engines. So far, it's just words. Quartz. 7 August 2018. Available at: https://qz.com/1341155/nine-countries-say-they-will-ban-internal-combustion-engines-none-have-a-law-to-do-so/. (Accessed 1 August 2019).

EBRD. (n.d.). What is a just transition? European Bank for Reconstruction and Development. Available at: https://www.ebrd.com/what-we-do/just-transition. (Accessed 25 September 2020).

Fobosi, S. (2018). Minibus taxi industry in South Africa. Presentation at the Competition Commission public passenger transport market inquiry. Port Elizabeth: University of Johannesburg.

IEA. (2020). Global EV Outlook 2020: Entering the decade of electric drive? International Energy Agency. Technology Report June 2020. Available at: https://www.iea.org/reports/global-ev-outlook-2020#the-global-electric-vehicle-fleet-expanded-significantly-over-the-last-decade-underpinned-by-supportive-policies-and-technology-advances (Accessed 13 October 2020).

Kuhudzai, R.J. 2020. Electric Vehicles In South Africa: Where Are We Now? Clean Technica. 10 April 2020. Available at: https://cleantechnica.com/2020/04/10/electric-vehicles-in-south-africa-where-are-we-now/. (Accessed 11 September 2020).

Letta, M. and Tol, R. (2016). Weather, climate and total factor productivity. Working Paper series. Sussex: University of Sussex.

Maseko, N. (2018). South Africa's automotive value chain. Unpublished, Pretoria: Trade & Industrial Policy Strategies.

Maseko, N., Makgetla, N., Montmasson-Clair, G. and Patel, M. (2020). Sector Jobs Resilience Plans: Petroleum-based transport value chain. Pretoria: Trade & Industrial Policy Strategies.

Mazzocco, I. (2020). Electrifying: How China built an EV industry in a decade. Macro Polo. 8 July 2020. Available at: https://macropolo.org/analysis/china-electric-vehicle-ev-industry/. (Accessed 13 October 2020).

Montmasson-Clair, G., Dane, A. and Moshikaro, L. (2020). Harnessing electric vehicles for industrial development in South Africa, Pretoria: Trade & Industrial Policy Strategies.

Moody's, 2020. Global automakers' sales forecast dropped again as coronavirus impact deepens. 27 March 2020. Available at: https://www.moodys.com/research/Moodys-Global-automakers-sales-forecast-dropped-again-as-coronavirus-impact--PBC_1221271?amp;WT.mc_id=AM~UmV1dGVyc05ld3NfQU1QU19OWTZfU0JfTlJfQ1ZfUmF0aW5nX05ld3NfQWxs~20200327_PBC_1221271 (Accessed 11 September 2020).

Motoring South Africa. (2020). Naamsa: 26.3% year-on-year August decline despite Level 2 vehicle sales. The South African. 2 September 2020. Available at: https://www.thesouthafrican.com/motoring/naamsa-august-2020-new-vehicle-sales/.(Accessed 13 October 2020).

Pan, F. (2020). How China's Electric Vehicle (EV) Policies have shaped the EV market. Sustainalytics. 31 July 2020. Available at: https://www.sustainalytics.com/esg-blog/how-chinas-electric-vehicle-policies-have-shaped-the-ev-market/ (Accessed 13 October 2020).

Petroff, A. 2017. These countries want to ditch gas and diesel cars. CNN Business. 26 July 2017. Available at: https://money.cnn.com/2017/07/26/autos/countries-that-are-banning-gas-cars-for-electric/index.html. (Accessed 1 August 2019).

Rankin, J. (2020). EU commission accused of 'cheating' on net-zero emissions accounting. The Guardian. 14 September 2020. Available at: https://www.theguardian.com/environment/2020/sep/14/eu-commission-accused-of-cheating-on-net-zero-emissions-accounting. (Accessed 13 October 2020).