TRADE & INDUSTRIAL POLICY STRATEGIES

SECTOR JOBS RESILIENCE PLAN: PETROLEUM-BASED TRANSPORT VALUE CHAIN

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Trade & Industrial Policy Strategies (TIPS) is a research organisation that facilitates policy development and dialogue across three focus areas: trade and industrial policy, inequality and economic inclusion, and sustainable growth

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FOREWORD

The National Climate Change Response White Paper requires the development of Sector Jobs Resilience Plans (SJRPs). These plans aim to protect vulnerable groups that may lose their jobs or livelihoods as a result of climate change impacts, related either to physical effects or to the transition to alternatives.

The proposals for the SJRPs, and the evidence supporting them, are presented as a suite of related documents. These are *The SJRP toolbox: Summary for Policy Makers* and proposals for five value chains that seem particularly likely to be affected: coal, metals, petroleum-based transport, agriculture and tourism. The research for this project was conducted by Trade & Industrial Policy Strategies (TIPS) for the Department of Environment, Forestry and Fisheries, and funded by GIZ.

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ABBREVIATIONS

CNG	Compressed Natural Gas
DHET	Department of Higher Education and Training
dti (the)	Department of Trade and Industry
DoT	Department of Transport
OEMs	Original Equipment Manufacturers
RPL	Recognition of Prior Learning
SEIAS	Socio-Economic Impact Assessment System
UIF	Unemployment Insurance Fund

EXECUTIVE SUMMARY

Efforts to reduce greenhouse gas (GHG) emissions from transport will most likely affect employment through a shift away from internal combustion engine (ICE) vehicles to electric and hybrid vehicles. The effects on employment will depend in part on the time required to move to electric vehicles in South Africa and abroad. There is little certainty about time frames, in part because the change depends on government support and incentives. In this context, government measures to promote electric vehicle assembly in South Africa and to assist taxi drivers to procure electric or hybrid minibuses will affect the extent of job losses.

There are more than 1.2 million people employed across the petroleum-based transport value chain as indicated in the table below.

Table 1. Employment in petroleum-based transport

Stage of the value chain	Employment (number of jobs)
Road transport services	650 000
Auto maintenance and repairs	250 000
Petrol stations, automotive sales and assembly	300 000

Further, the share of small business – employers and self-employed – within the value chain is relatively high, mostly because of the relatively large informal sector in transport services and maintenance.

The extent to which people within the value chain are vulnerable to job losses is influenced by the time frames for the transition to new automotive technologies, which remain highly uncertain. This study therefore focused on identifying the potential impacts of the shift on employment and livelihoods. On that basis, it reviewed the assets, incomes and skills of the vulnerable groups. These groups include mechanics, who are vulnerable partly as a result of their location in the informal sector, their median age, and a general lack of formal qualifications; workers in the auto industry; and taxi owners and drivers.

The proposals, which are detailed in Section 2, are as follows:

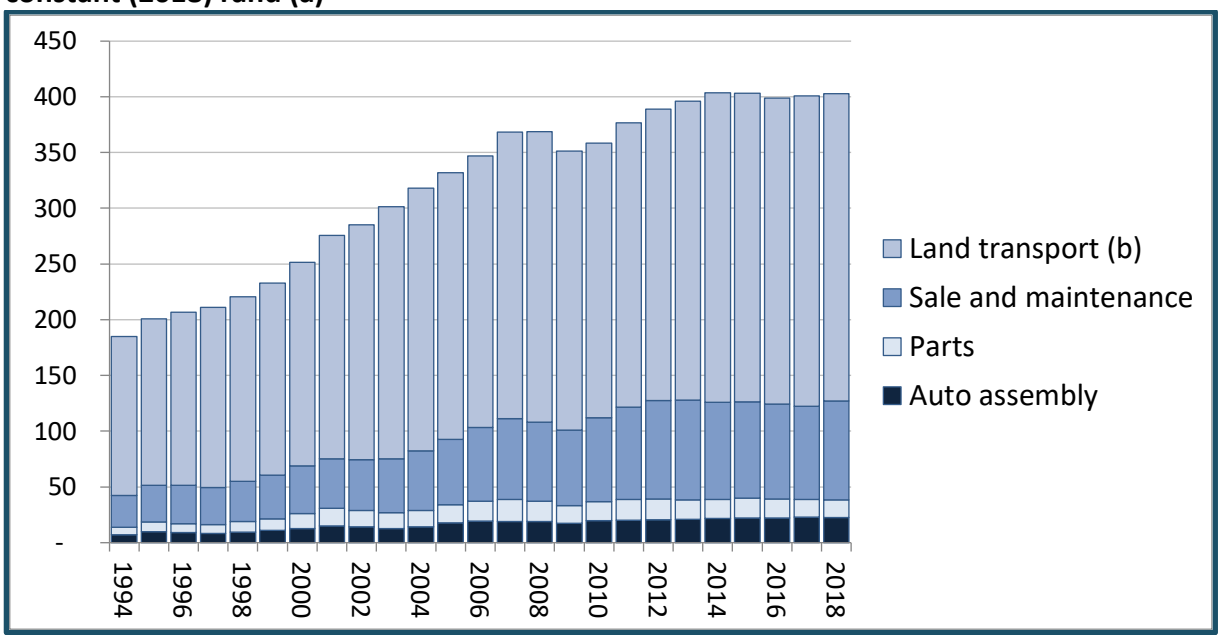
1. Acceleration of measures to incentivise the adoption of electric and hybrid vehicles.
2. A programme to enable taxi owners to adopt dual-fuel technologies to reduce emissions and their carbon tax costs, and ultimately to shift to electric vehicles.
3. Active labour market policies, especially retraining, to assist auto mechanics to transition to new occupations if necessary.

1 KEY DYNAMICS

1.1 Production, exports and location

The transport value chain covers the auto industry, transport services, petrol retail, repairs and service as well as car sales. It contributed between 8% and 9% of gross value added in the late 2010s. As a whole, the value chain grew rapidly through 2014, although it suffered a sharp fall during the 2008/9 global financial crisis. Its value added as a whole levelled out after 2014, as the economy as a whole entered a long-term slowdown.

Graph 1. Gross value added in the road transport value chain, 1994 to 2018, in billions of constant (2018) rand (a)



Notes: (a) Reflated using GDP deflator, calculated using figures for gross value added in constant and current rand and rebased to 2018. (b) Includes rail, which provided around 27% of land transport, by value, in 2017, according to the Statistics South Africa Land Transport Survey. Also includes pipelines. Source: Calculated from Quantec. EasyData. Interactive database. Downloaded from www.quantec.co.za in May 2019.

Although it remained relatively small in terms of value add, auto assembly was the fastest growing phase of the value chain from 1994 to 2018. Except in the past four years, the auto industry expanded more rapidly than the economy as a whole in constant rand. In contrast, production of parts declined, mostly because it was dominated by catalytic converters, which saw falling production and value from the mid-2010s.

The auto industry was also the only manufacturing industry outside of the mining value chain to generate substantial exports. In the late 2010s, export of assembled vehicles ranked consistently in South Africa's top five exports, earning R142 billion in 2018 – more than 10% of all exports. The other four top products were coal, platinum, gold and iron ore.

Transport services as well as auto repairs and maintenance were fairly evenly spread across the country. In contrast, the auto industry was located entirely in Nelson Mandela Bay, eThekwini, Gauteng and Buffalo City. It was important but not central for eThekwini and Gauteng, but it was a core industry for the Eastern Cape metros.

1.2 Impacts

National and international efforts to reduce emissions from liquid fuels have seen four main thrusts: efforts to promote public transport, cleaner fuels, and ultimately electric and hybrid vehicles, and to move freight from road to rail. These efforts have begun to reshape the value chain globally, although South Africa lags behind, especially in promoting cleaner fuels and electric vehicles.

In South Africa, the main incentive to shift to new technologies is the carbon tax. Although current levels are relatively low, it is expected that it will increase consistently in later phases. That in turn would increase operating costs for transport services as well as individual car owners, in itself incentivising a shift to electric vehicles.

The carbon tax by itself is unlikely to lead to significant loss of employment and livelihoods in the transport value chain. In contrast, the anticipated transition to electric and hybrid vehicles is far more disruptive than any of the other measures. It will qualitatively change the technology used in road transport, and consequently employment in manufacturing, petrol stations, maintenance and repairs.

The timeframe for the transition is, however, very unclear. In Europe and Asia, a number of countries have committed to strong measures to phase in electric vehicles in the next 10 to 15 years. In South Africa, the business associations in production and sales expect limited progress through 2030 unless government provides strong incentives. Government has now committed to developing a framework to accelerate the process.

The impacts of a transition to hybrid and electric vehicles will reverberate down the value chain.

In terms of manufacturing, the local industry depends on exports, so international as well as national trends will affect the decision to start producing electric vehicles. Exports of passenger cars accounted for about 69% of locally produced passenger cars, and about 44% of locally produced light commercial vehicles in 2017 (NAACAM 2018). South Africa does not currently assemble electric vehicles, although Mercedes-Benz manufactures hybrid C-class vehicles in East London (Venter 2018). If demand shifts strongly to electric vehicles in Europe and the US – currently the local industry's biggest export market – producers in South Africa will have to make the transition or face losing markets.

The foreign brands that own the South African auto assembly plants have not indicated if, and when, they will start production of electric vehicles here on a larger scale. Government could encourage a faster move, protecting the country's auto exports, by facilitating greater local production and modifying existing (and extensive) incentives provided to the auto industry.

While the timing is uncertain, if the rest of the world shifts to electric vehicles, then South Africa will ultimately have to follow. That would impact on virtually every stage of the value chain.

- The manufacture of electric vehicles requires fewer workers, so employment in the industry could drop.
- Electric vehicles require much less maintenance than petrol cars. The maintenance industry is one of the largest sources of employment in the value chain.

- Taxis and other small transport service provides will ultimately face pressure to transition to hybrid or electric cars, which would only be possible in most cases with some kind of state support.
- Petrol stations that are not on long-distance routes will lose their main attraction for customers, since most electric vehicle owners prefer to charge their cars at home.

1.3 Vulnerable groups

Employment in the transport value chain grew from one million to 1.2 million between 2008 and 2017, and equals between 8% and 9% of total employment. Half of employment in the value chain is in transport services, which includes both passenger transport and freight transport, with another 20% in maintenance, followed by automotive sales at 12%, and 11% in petrol stations, as well as 7% in auto assembly and inputs. There are around 100 000 auto workers, 250 000 auto mechanics and around 250 000 taxi owners and drivers. The value chain has a relatively high share of small business, mainly as a result of a large informal sector in transport services and maintenance.

Relatively few workers in the value chain are women, who constitute only 3% of taxi drivers, 14% of other transport workers, 8% of mechanics, and between 22% and 33% of transport equipment manufacturing and petrol retail. In contrast, they make up 46% of formal and informal workers in other industries.

The main vulnerable groups in the value chain are employees and small businesspeople in repairs and maintenance, taxi drivers and auto workers. In addition, downsizing in the auto industry would have a devastating effect on the metros of the Eastern Cape.

Auto mechanics' resources varied substantially depending on whether they were employed in the formal or informal sector, and whether they worked for a wage or as a small businessman. Around 125 000 were formal employees, and almost 20 000 more were employers in the formal sector. In the informal sector, under 30 000 were wage workers, but 50 000 were self-employed and 25 000 were employers.

Pay aligned closely with these categories. Formally employed mechanics had a median wage of R4 400 a month in 2017, essentially equal to median pay for all formal men workers. Informally employed mechanics, however, earned only R3 250 a month. Mechanics who were employers or self-employed earned substantially more, especially in the formal sector. In the formal sector, their monthly pay came to R12 000 a month; in the informal sector, where most business owners worked alone, it was R5 000.

In 2018, only half of all waged auto mechanics in the formal sector had a retirement fund, and virtually none of those in the informal sector. For other formal employees and agriculture, the figure was 60%. The data do not say what kind of retirement fund employers and self-employed mechanics had.

Mechanics are considered skilled production workers, but it appears that relatively few of them have completed formal artisanships. As a group, they have low levels of schooling, particularly in the informal sector. In theory, an artisanship would be recorded in the Labour Force Survey as a post-secondary diploma, but in practice very few auto mechanics report having one. Either artisanships are not fully recorded in the survey, or most auto mechanics have only received uncertified training on the job. The relatively large share of mechanics who did not complete secondary school suggests that the latter is more likely. This was very different for mechanics who were formal employers, however. In 2017, a third had a diploma

after matric, presumably an artisanship, while 10% had a university degree. Another quarter had only matric, and almost a third had less.

The relatively large share of auto mechanics who were employers or self-employed meant that they had some capital equipment. Even in the informal sector, they would have at least some tools and often access to workspace. If demand for mechanics' services declines overall, however, the value of these assets would also fall. There is, however, no data about the quality or value of mechanics' assets. In the formal sector, enterprises are relatively large, which suggests they are likely worth substantial amounts. Virtually all formal enterprises in the industry had more than five employees, and almost two thirds had more than 10. In contrast, in the informal sector almost half of mechanics' businesses report no waged employees at all, and almost all of the rest have fewer than four.

Virtually no self-employed mechanic in the informal sector belongs to a business association. That contrasts with 36% of employers and self-employed mechanics in the formal sector. In the rest of the formal sector, the 47% of business owners belong to an association.

Similarly, only 1% of waged mechanics in the informal sector said they were union members in 2017. For formal employees, the figure rose to 19% – still far lower than the 35% for formal employees in other industries.

Auto mechanics' median age is 48, more than a decade older than the median for other workers. Arguably that makes it more difficult for them to find new opportunities, but means that they likely have stronger social networks and experience.

Small transport businesses employed 270 000 people as employees or entrepreneurs. Of these, 85 000 were self-employed and six out of seven were in the informal sector. Figures for the number of taxis alone range from 135 000 registered officially in 2018 to 250 000 estimated by finance suppliers in 2019. The finance suppliers also estimated that there were 150 000 taxi owners in 2019, and cited Gauteng Department of Transport findings that each taxi employed 1.8 people (SA Taxi 2018). In contrast, Statistics South Africa's labour force surveys found 125 000 waged minibus taxi drivers (defined as non-metered taxi drivers) in 2017, but that did not reflect total employment in the taxi industry.

Incomes for small business owners and employees in formal road transport were generally lower than in other formal industries. In contrast, in informal road transport, earnings were typically higher than in the rest of the informal sector.

Estimates suggest that around 80% of taxi owners have one vehicle, while another 20% have two or more (estimated from SA Taxi 2018:48). The value of each vehicle varied substantially, however, since they ranged from new to well over 12 years old. In theory, owners would get a licence to operate on a given route only if they had a roadworthy certificate, which may explain the high estimates for unregistered vehicles (at least a third of the total). The median earnings for small business owners in the transport industry appeared too small to cover a new vehicle without government assistance.

The median age of a small business owner in the road transport business was 48 years, compared to 41 years in other industries. Their employees, in contrast, were relatively young, at 33 years old compared to 40 in other small businesses. Most small business owners in road transport had been in the business for over a decade, twice as long as those in other industries.

Education levels in small business for both employers and workers were generally lower than in larger enterprises. Around a third of employers and two thirds of employees in very small road transport enterprises did not have matric, and almost none had proceeded beyond secondary school.

In 2017, 60% of small business owners in the road transport industry belonged to a business association, compared to 20% in the rest of the economy. The discrepancy arose from the central role of taxi associations in providing a licence to operate for taxi owners. In contrast, few taxi employees were organised. In 2017, 3.6% of employees in very small road transport companies belonged to a union.

Working hours in the taxi industry were extraordinarily long, pointing to a degree of vulnerability for both owners and workers. In 2017, the median weekly hours of work for owners came to 50 hours and 60 hours for employees. The figure for employees was around 25% above the norm in other small businesses. These long hours in themselves would make it difficult for workers to develop networks off the job.

Auto workers would be affected if the local assembly industry does not introduce electric vehicles in time to maintain exports as the global industry makes the transition. That said, they had relatively stable, formal and well-paid work. The median employee earned R7 200 a month. Four out of five belonged to a retirement fund, and more than nine in 10 to the Unemployment Insurance Fund (UIF). A relatively large number had matric, although fewer auto workers had post-secondary education than in other industries. The industry had a tradition of recognising skills, with a fifth of its employees counting as skilled production workers compared to a tenth in the rest of manufacturing. Half of workers in auto were union members, with the attendant respect for their legal rights.

2 PROPOSALS

This section presents proposals on promoting the shift to electric vehicles in order to sustain the local auto industry in the long run; enabling taxi owners to adopt dual-fuel systems and ultimately electric vehicles; and assisting auto mechanics to develop formal qualifications that will enable them to find new occupations.

Implementing the SJRP will require coordination across a range of state agencies in all the spheres of the state. For most proposals, success also depends on the ability to mobilise stakeholders in the value chain. For this reason, it is important to be clear about the overall responsibility for implementing the SJRP as well as the roles of the various public and private stakeholders. Because of the uncertainty and relatively long time frames for the transition to electric vehicles, the national Presidential Climate Change Coordinating Council (PCCCC) should take responsibility for implementing the proposals made in this study, rather than setting up separate capacity for the value chain.

Each proposal is followed by tables that provide a brief impact analysis and a description of the theory of change that underpins the proposal.

The impact assessment uses the Socio-Economic Impact Assessment System (SEIAS) methodology, which centres on evaluating costs, benefits and risks for different stakeholders, using detailed description when meaningful quantification is not possible. In this case, the aim is primarily to identify potential costs and risks as well as benefits, without attempting an in-depth discussion.

The theory of change lays out each step from the initiation of the proposal to the achievement of the desired socio-economic impact. For these steps, it identifies the requirements for success and the main risks. The aim is to enable both a better understanding of the internal logic of the proposal itself, and to indicate where risk mitigation is required.

2.1 Technological adjustment

1. Accelerate measures to incentivise the adoption of electric and hybrid vehicles

Proposals:

1. Revise existing (extensive) subsidies for the auto industry to promote local production of electric/hybrid vehicles.
2. Work with Sanral, provinces and other relevant organisations to establish rapid charging infrastructure on long-distance routes, with electricity generators to ensure adequate supply of (renewables-based) electricity for large-scale take up of electric/hybrid vehicles.
3. Consider subsidies for buyers of electric/hybrid vehicles (for instance, a reduced sales tax on smaller electric vehicles and clarity on the trajectory of the carbon tax).

To incentivise Original Equipment Manufacturers (OEMs) to produce electric vehicles in South Africa, which is necessary to sustain the local industry in the long run as well as to reduce emissions, the Department of Trade and Industry (the dti) can begin reviewing existing incentives and tailor them to incentivise local production of electric vehicles. A review of the Automotive Production and Development Programme in this context would not necessarily mean adding to the incentives, but rather restructuring them. This review would align with the Green Transport Strategy's cabinet approved directive for collaboration between the Department of Transport (DoT), National Treasury and the dti to offer manufacturing incentives to produce and sell affordable electric vehicles locally and for export.

A second element is to install the infrastructure required for increased use of electric vehicles in South Africa. To date charging stations have thus far largely been installed by the auto companies. The priorities are along long-distance routes and areas with high vehicle density. In addition, it is important that the electricity supply keep up with the transition.

Lastly, electric vehicles are expensive. The Nissan Leaf for instance costs R504 975 (Prior 2019). In contrast, Business Tech (2019) reported the average cost of a new vehicle financed by WesBank at R321 700 and a used vehicle at R215 850. The government should explore measures to incentivise consumers to buy electric vehicles, for instance an increase in the carbon tax and/or a reduction in VAT or import tariffs on small electric cars (engines below 1.4 or 1.6 litres).

The PCCCC can request the dti to drive these initiatives in its on-going engagements with the auto industry.

Table 2. Impact assessment (Note: taxi owners are discussed separately in next section)

Stakeholder	Benefits	Costs	Risks
Auto workers	Maintain strong industry in South Africa and consequently employment and incomes for most	Fewer moving parts in an electric vehicle could mean fewer people are needed for production	Government measures fail to encourage electric vehicle assembly in South Africa, leading to long-run decline in industry
Eastern Cape metros (small business and residents)	Maintain auto industry, which is central to local economy Stable demand for small business that supplies workforce as well as industry	Some component producers would be made obsolete Lower employment levels could lead to higher local joblessness	Government measures fail to encourage electric vehicle assembly in South Africa, leading to long-run decline in industry
OEMs	Access to incentives Continue to benefit from South Africa as a relatively low-cost, high quality production site	Investment and retraining required to set up new production lines	Government inaction on infrastructure means South African market remains weak even after transition in much of the rest of the world, making it difficult to achieve scale
National government	Maintained economic activity along with maintained revenue and employment from the sector Reduced GHG emissions	Cost of measures (additional incentives, if utilised; incentives for consumers; infrastructure)	Government measures are insufficient to maintain industry and ensure electric vehicle use in South Africa keeps up with global trends
High-income consumers (who buy new cars)	Subsidy for electric vehicle purchase Potential to reduce carbon tax Lower maintenance and fuel costs if buy an electric car Access to chargers if have an electric car	Electric vehicles cost more even with subsidy If do not buy an electric vehicle, pay more for carbon tax	Loadshedding would disrupt personal transport

Stakeholder	Benefits	Costs	Risks
Low-income consumers (who commute)	More sustainable auto industry is critical for overall economic prosperity, given its importance for exports and technological development	Taxi drivers raise prices to cover carbon tax or new vehicle costs	Government measures are insufficient to maintain industry

Table 3: Phasing and risks

Action	Requirements	Risks
Phase 1: PCCCC and the dti agree on measures to accelerate adoption of electric vehicles	The PCCCC and the dti put in time, capacity and expertise needed to reach meaningful agreement Measures are viable and large enough to bring about a significant acceleration in electric-vehicle production and use in South Africa	The PCCCC does not have the capacity or expertise to engage with the dti on the auto industry The dti is unwilling to prioritise accelerated production and use of electric vehicles Evaluation of measures shows they would be ineffective or unaffordable
Phase 2: PCCCC and the dti agree on measures with other relevant departments and agencies (National Treasury, auto industry stakeholders, Sanral, Department of Mineral Resources and Energy	The parties are able to reach agreement on the measures, including the cost and responsibilities for implementation	The parties are unable/unwilling to reach agreement on the measures, costs and responsibilities for implementation No funds are made available, or the state is unable to source funds for the measures

Action	Requirements	Risks
Phase 3: The measures are implemented	The relevant parties implement their responsibilities The PCCCC assists by monitoring progress and impacts, unblocking and promoting alignment when required, and identifying areas where course corrections are needed	The parties do not prioritise implementation or do not have the resources, capacity or expertise to carry out the expected actions The PCCCC does not have capacity, expertise or resources to monitor, support and unblock implementation
Phase 4: The measures accelerate local production of electric vehicles	Measures incentivise OEMs to invest in new production lines More South African consumers use electric vehicles Demand for electric vehicles in Europe, Asia and America expands as expected	OEMs perceive that measures do not adequately offset costs and risks of innovation Auto consumers find electric vehicles are still too expensive and that charging is too inconvenient given distance between South African cities Demand for electric vehicles internationally plateaus
Phase 5: The local industry becomes more sustainable, limiting job losses and sustaining overall economic growth and job creation	Local and export sales remain relatively robust Other factors do not lead to a slowdown or substantial job losses in the auto industry (for instance, through the introduction of robots) Job losses from shift to electric vehicles are relatively small in the auto industry, and the impact on other workers are minimised through the SJRP	South Africa and/or the global economy goes into a slowdown More workers than expected lose jobs due to the shift to electric workers Mechanics and taxi owners lose livelihoods on a large scale and find it difficult to transition to new income-earning opportunities

2. Enable taxi owners to shift to new technologies (initially gas and ultimately electric/hybrid vehicles)

Proposal: PCCCC to engage with the DoT, the dti and other stakeholders on ways to reconfigure the taxi recapitalisation scheme to promote the adoption of more sustainable vehicles, initially dual-fuel systems using gas (which would reduce emissions and liability for carbon taxes) and ultimately electric or hybrid vehicles. The process would have to take into account that there are currently no electric or hybrid minibuses in production, so the first step would have to be a shift to gas, which is comparatively inexpensive and has been piloted. The

challenge will be to accelerate adoption, which to date has been slow. In addition, efforts could be made to accelerate production of electric or hybrid minibuses.

The taxi industry is a critical part of South Africa's public transport system, particularly for low-income households that – because of apartheid urban planning – live far from work and sometimes school. But the small businesses in the industry often do not earn enough for depreciation, making it difficult for them to replace their vehicles under any circumstances. Introducing electric vehicles would be even more difficult because of the higher up-front cost. Even the relatively cheap introduction of a dual-fuel system, at around R26 000 a vehicle, requires a higher up-front expenditure than most taxi owners can easily afford.

The government introduced the taxi recapitalisation programme in the early 2000s. It aimed to enable and incentivise taxi owners to replace their aging minibuses with newer, safer, less polluting vehicles. The programme has faced difficulties. From 2005 to 2019, it financed the replacement of 72 000 vehicles, about half the initial target. Given a fleet of between 135 000 and 250 000 taxis, that means at most 5% a year were replaced under the programme, which in turn suggests that the average age of vehicles would not have declined at all, although the new taxis are larger and safer (See SA Taxi 2018:16). In 2019, a new phase of the programme was going to target vehicles that were made before 2007, suggesting that the average age remains around 13 years.

Many owners argue that the subsidy, at R120 000 a vehicle in 2019 or about a quarter of the purchase price, was insufficient to warrant the new investment. The monthly instalment on a new vehicle after the initial deposit – often less than 10%, or well below the recapitalisation subsidy level in 2019 – came to almost R15 000 a month over 69 months in 2018, with interest typically running close to 25%. Less than half of applicants were able to access finance from SA Taxi, a dedicated lender (SA Taxi 2018:24).

A further challenge is there is currently no operational electric minibus taxi, although Ford is developing one (Ford Media Center 2019).

In light of the obstacles and uncertainty around the introduction of electric vehicles, DoT aims to convert taxis to dual gas/diesel systems, which reduces emissions. As of early 2019, 1 200 taxis or between 0.5% and 1% of the total had been converted to dual-fuel systems (Frost 2019). As with the taxi recapitalisation, DoT recognises that the shift will have to be financed at least in part by the state (DoT 2018:37).

The cost of modifying the vehicle to run off natural gas is estimated at about R26 000. Moreover, gas is cheaper than other fuels, reducing the operating costs, and the system reduces the carbon tax levied. As a result, estimates suggest that taxi owners would recoup the cost in around seven months (de Lange, 2019). If the state provided 40% of the up-front sum, for instance, the budget for the entire fleet would come to between R1,5 and R2 billion.

The budget for the taxi recapitalisation programme is not readily available. However, given the programmes targets and the cost per taxi, it appears that the budget is in the range of R7.5 billion.

Table 4. Impact assessment

Stakeholders	Benefits	Costs	Risks
Passengers	Lower operating costs for taxis should lead to lower fares in the medium term Reduced emissions and pollution Compressed natural gas (CNG) is safer than other liquid fuels in the event of a spill	Taxi owners might pass up-front capital costs on to passengers	Gas shortage (natural gas is imported from Mozambique)
Taxi owners	Reduced operating costs Government covers part of installation cost CNG is safer than other liquid fuels in the event of a spill In the longer run, able to get a subsidy for a new electric taxi	Has to pay part of the installation cost themselves, and only recoup after several months New taxi could be more expensive even with subsidy	Government does not provide an adequate subsidy for all owners Gas is not available as easily as diesel Government does not incorporate electric vehicles in recap, leading to higher operating costs over time
National government	Reduced GHG emissions from the transport industry In the long run, newer and safer taxis on the road Lower commuter costs are attractive to the public	Subsidy for dual-fuel systems and ultimately for electric taxis Administrative costs of rolling out programme	Gas is not available on adequate scale Electric taxis do not become available, leading to higher costs for the industry

Table 5: Phasing and risks

Intervention	Requirements	Risks
Phase 1: PCCCC and the dti agree on measures to include dual-fuel installation and in the longer run electric taxis in the taxi recapitalisation scheme	The PCCCC and the dti put in time, capacity and expertise needed to reach agreement including on the level of subsidy for the dual-fuel installation Resources provided are adequate for large-scale roll out of dual-fuel systems The PCCCC and the dti analyse the availability of natural gas as well as mechanics and equipment needed to install dual-fuel systems to ensure they are adequate for the proposed roll out	The PCCCC does not have the capacity or expertise to engage with the dti on the auto industry The dti is unwilling to support dual-fuel system out of recapitalisation programme Gas, mechanics and/or equipment are not available for a rapid scaling up of installations
Phase 2: PCCCC and the dti agree on measures with other relevant departments and stakeholders (National Treasury, taxi industry, gas suppliers, DoT)	The parties are able to reach agreement on the measures, including the level of subsidy, how it will be allocated, targets and time frames	The parties are unable to reach agreement on any of the necessary details, including level of subsidy and how it will be allocated Funds are not made available for the subsidies
Phase 3: The measures are implemented	The relevant parties implement their responsibilities The PCCCC assists by monitoring progress and impacts, unblocking and promoting alignment where required, and identifying areas when course corrections are needed	The parties do not prioritise implementation or do not have the resources, capacity or expertise to carry out the expected actions The PCCCC does not have capacity, expertise or resources to monitor, support and unblock implementation

Intervention	Requirements	Risks
Phase 4: The measures reduce use of diesel and operational costs for taxis, and in the longer run provide for electric taxis in the recapitalisation programme	Sufficient inputs and mechanics for installation Adequate gas is available Systems succeed in reducing use of diesel and operating costs the dti and PCCCC continue to work to include taxis in the recapitalisation programme despite longer time frame	Inadequate inputs to achieve installation on targeted scale Gas shortages nationally or in some places Drivers prefer to use diesel and operating costs do not fall Failure to introduce electric vehicles in the longer run
Phase 5: Lower operating costs for taxis sustain employment in the industry and, by reducing commuting costs, make the economy as a whole more efficient	Measures succeed in reducing operating costs Lower costs are passed on to commuters	Natural gas price rises or shortages emerge Taxi owners do not pass on lower costs Poor timing around introduction of electric taxis leads to higher costs in the long run as taxis pay higher carbon tax

2.2 Active labour market policies

Aim: Help auto mechanics to shift into new occupations

Proposal: PCCCC to request MerSETA to identify in-demand skills that are related to auto mechanics' existing competencies, for instance other mechanical repairs. The MerSETA should also develop systems to fast-track and pro-actively encourage mechanics to gain formal recognition of their prior learning in order to make it easier to improve their formal qualifications.

In addition, OEMs should be encouraged and incentivised to place former auto mechanics in their production processes.

Table 6. Impact assessment

Stakeholder	Benefits	Costs	Risks
Auto mechanics	Faster transition to other skilled work if livelihoods lost by auto mechanics due to introduction of electric vehicles Gain formal qualifications if they did not have them before	Need to transition to new occupation Need to acquire new qualifications	Unable to find new positions even with qualifications Unable to gain new qualifications because RPL systems and/or training require more formal academic qualifications
National departments and agencies	Reduced unemployment and higher productivity and incomes in longer run reduces demands on state	May need to support MerSETA in implementation process	Higher unemployment if newly re-trained mechanics are unable to find work even with qualifications
MerSETA	Programme helps meet mandate to support small business and unemployed Opportunity to utilise surplus to meet mandate	Organised business and labour may not want to prioritise mechanics Administrative burden of revising Recognition of Prior Learning (RPL), identifying mechanics' needs, and organising appropriate training	Unable to make RPL systems more accessible Many mechanics do not qualify for existing training programmes because they lack required general education

Table 7. Phasing and risks

Action	Requirements	Risks
Phase 1: PCCCC engages with MerSETA and possibly the Department of Higher Education and Training (DHET) to develop programme for mechanics' redeployment	PCCCC has capacity and time to engage on issue MerSETA and DHET are willing to put resources into mechanics' retraining Parties have expertise, resources and capacity to design effective system	PCCCC lacks capacity and time for meaningful engagement Parties decide that it is too early to start work on programme given uncertainty about timing of transition to electric vehicles Parties do not have the expertise, resources or capacity to revise RPL and training prerequisites to meet mechanics' needs

Action	Requirements	Risks
Phase 2: MerSETA finalises programme and rolls it out	MerSETA has the capacity, resources and expertise to finalise and implement the programme Greater certainty emerges about when the transition to electric cars will occur	MerSETA is unable to finalise the programme or roll it out Certainty about the transition to electric cars is further delayed
Phase 3: Mechanics take advantage of the programme, transitioning to new livelihoods as electric vehicles are introduced on scale	Programme is accessible for mechanics who do not have formal qualifications or matric Mechanics know about the programme Mechanics understand the threat of reduced demand as electric vehicles are introduced	Programme does not provide RPL for purely informal, practical skills, or requires matric Mechanics do not know about the programme and so do not take advantage of it Mechanics do not understand why they should get the training, or the introduction of electric cars on a meaningful scale is delayed by over 10 years

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