

Special Report

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SADC e-Mobility Scenarios: Pathways Beyond the ICE Age

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African perspectives
Global insights

Executive summary

This report is the result of a diverse range of stakeholders' using 'futures thinking' tools and methods to examine the complexities of introducing electric vehicles (EVs) to Southern Africa and the tensions that might arise in creating more desired regional e-mobility futures. The SAIIA Futures project brought together a number of industry experts, government representatives, academics and thinkers using a scenario-building methodology to explore the implications of the roll-out of EVs in the SADC region. The exercise looked at the key certainties and uncertainties that the region faces in adopting EVs and developing supportive infrastructure. The resultant scenarios provide insights into plausible, probable futures taking current development trajectories into account. More importantly, they offer pathways to preferable e-mobility futures for the SADC region.

Abbreviations & acronyms

EV	electric vehicle
FDI	foreign direct investment
GDP	gross domestic product
ICE	internal combustion engine
IPP	independent power producer
PV	photovoltaic
RE	renewable energy
SADC	Southern African Development Community
SDG	Sustainable Development Goal

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About SAIIA

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SAIIA'S special reports are fairly lengthy analytical papers, usually reflecting on and analysing the findings of field research.

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CHAPTER 1

Co-creating SADC e-mobility scenarios

The SALLA Futures project brought together industry experts, government representatives, academics and thinkers using a scenario-building methodology to explore the implications of the roll-out of electric vehicles (EVs) in the SADC region. The exercise examined the key certainties and uncertainties that the region faces in adopting EVs and developing the enabling supportive infrastructure. The scenarios provide insights into plausible, probable futures, taking current development trajectories into account. Crucially, they also offer pathways to preferable EV futures for the SADC region.

Several critical certainties and uncertainties were identified that served as frameworks for generating rapid two-by-two matrix scenarios depicting plausible alternative futures in four sets of four mini-narratives. The rapid scenarios two-by-two matrix development is a simple technique used to uncover (and challenge) the assumptions and aspirations of stakeholders regarding the future.

Using this 'futures thinking' tool and method, participants analysed the complexities of introducing EVs to Southern Africa and the tensions that might arise between different stakeholders in creating a more desired future. They also made recommendations to SADC policymakers.

The plausible alternative futures help to explore systemic patterns to identify which of the scenarios are fit for purpose, how emerging trends can shape the future, and what visionary action is needed to collectively move towards viable e-mobility futures. They draw attention to the current narratives dominating the mobility landscape and provide evidence on plausible futures flowing from how EVs and e-mobility are shaping the future now.

This report identifies the key certainties and uncertainties that act as the driving forces of the transition to SADC e-mobility and the impact of large-scale adoption of EVs. From the identified certainties and uncertainties four scenarios shaping the future of SADC e-mobility were developed. Each scenario unpacks the tensions between an inclusive and exclusive transition and the extent to which governments will be proactive or reactive to the e-mobility revolution for a five- to 15-year period, and whether there will be complementary technologies to support the possibility of a just Southern African e-mobility transition. The report concludes with insights that emerged from the scenario-building exercise and possible policy implications for the region.

Driving forces underlying SADC e-mobility

Driving forces are those underlying and impacting factors that set the pattern of events and determine outcomes – the forces that make things happen. They shape the parameters within which SADC operates and how its future could unfold. They also constitute various phenomena: the state of the economy, political and/or policy decisions, global events and trends, legal precedents, technological drivers, the outcomes of regional negotiations, etc. Driving forces can be either certain or uncertain, as long as they are key drivers. The key certainties and uncertainties form the basis of the scenarios. When plotting a two-by-two scenario, the vertical and horizontal axes present two key uncertainties that have been identified as major drivers within a topic area. In other words, the scenarios need to be based on two driving forces that are ‘highly unpredictable as well as highly relevant to the focal issue’.¹

Key certainties in the SADC e-mobility landscape

Key certainties are factors that are more known and predictable, ie, agreed long-term trends and givens. They can be descriptive (the nature of the institution/environment in which it operates), normative (ethically and governance-oriented) or aspirational (the rules needed to be successful). These key certainties can change over time, and include the following.

- Southern Africa is rapidly urbanising – not only large metropolises but also secondary cities are developing.² Africa’s urban population is expected to more than triple over 40 years, from 395 million in 2010 to 1.339 billion in 2050, corresponding to 21% of the world’s projected urban population. Currently, the continent has seven megacities, ie, cities with populations of over 10 million: Cairo, Kinshasa, Lagos, Accra, Johannesburg–Pretoria, Khartoum and Nairobi. In 15 years, Luanda and Dar es Salaam will be added to this list.
- There has been a rapid decline in solar and wind energy costs. Between 2010 and 2020 the global weighted average cost of electricity from utility-scale solar photovoltaic (PV) plants fell 69%, from \$0.36/kWh to \$0.11/kWh. Projections are that this could drop even further, to \$0.03/kWh in 2019.³ At the same time the cost of coal and nuclear-generated power seems to be rising rapidly.

1 Jay Ogilvy and Peter Schwartz, *Plotting Your Scenarios* (Emeryville: Global Business Network, 2004), http://www.meadowlark.co/plotting_your_scenarios.pdf.

2 Burak Guneralp et al., “Urbanization in Africa: Challenges and Opportunities for Conservation”, *Environmental Research Letters* 13, no. 1 (2017).

3 International Renewable Energy Agency, “Renewable Power: Sharply Falling Generation Costs” (IRENA, New York, November 2017), https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2017/Nov/%20IRENA_Sharply_falling_costs_2017.pdf.

- There is increasing adoption of EV technology throughout the world, with Europe, California and China leading the field.
- Climate change is accelerating, and climate vulnerability is growing. In Southern Africa, Botswana, Namibia and South Africa have been hit by severe droughts, and a general continuous decline in rainfall is expected to range near 10% per year. The drought experienced in the Western Cape has had a significant negative impact on agricultural production, employment opportunities and the tourism sector.⁴

BOX 1 THE THREATS AND OPPORTUNITIES OF RAPID TECHNOLOGICAL CHANGE

'Technology is changing our world at an astonishing pace. In the span of a few short years, the Internet, mobile devices, and social media have transformed how we communicate and get information about the world. This has opened up new vectors for the spread of information, real and fake, and added new voices to society's collective discourse.

'The colonisation of the physical world by the Internet, with billions of devices coming online and joining the "Internet of Things", similarly has created new opportunities for productivity and entertainment, as well as new vectors for attack against cyber-physical systems.

'Even as we adapt to a world that is more interconnected and transparent than ever before, we also must anticipate changes that technology may bring. Rapid advances in artificial intelligence foreshadow a world in which purpose-built machines can accomplish a wide range of human tasks, displacing some forms of human labour. The result could be tremendous gains in productivity, but also major economic and societal disruption. Improvements in genomics and synthetic biology hold the promise of even more radical transformations, with advances in human performance, the eradication of diseases, and even human life extension.'

Source: Paul Scharre, "Making Sense of Rapid Technological Change", Center for a New American Security, July 19, 2017, <https://www.cnas.org/publications/commentary/making-sense-of-rapid-technological-change>

A number of key uncertainties were identified that could serve as frameworks for generating rapid scenarios depicting plausible alternative futures in the four sets of four mini-narratives.

⁴ Mark New, "What Latest Assessment on Global Warming Means for Southern Africa", News24, October 10, 2018, <https://www.news24.com/Africa/News/what-latest-assessment-on-global-warming-means-for-southern-africa-20181010>.

Key uncertainties in the SADC e-mobility landscape

Key uncertainties are the 'known unknowns' and include wild cards (low probability/high impact events), risks (and opportunities) and possible trend breaks. They are the key factors that might emerge and shape the future, but the directions of change are unknown. What is important, however, is their impact and the lack of knowledge that humanity/society has about them. These uncertainties drive the identification of the two-by-two matrix of possible scenarios. Issues of fundamental disagreement among stakeholders and experts are also treated as uncertainties. Key uncertainties identified were the following.

- In the past consumer trends in the automobile sector have been inelastic, making it difficult to predict when and by what margin EVs will be adopted in Southern Africa.
- Will the youth of Southern Africa proceed straight to auto-sharing models rather than buying personal vehicles?
- South Africa's traditional protection of its auto-manufacturing sector is a given, but it is unclear to what lengths it will go to protect the traditional automotive sector rather than encouraging a shift towards EVs.
- Successful EV adoption will require strong cross-departmental collaboration at all levels within the region, but whether SADC has effective platforms to facilitate this collaboration remains uncertain.
- The availability of the necessary infrastructure is a key uncertainty. Will EV owners be able to recharge at strategic points throughout the region or will technology first have to develop to a point of battery exchangeability for EVs to truly take off locally?
- Can EVs be introduced in the region in an inclusive manner or will they remain the domain of the well-off?

CHAPTER 3

Four scenarios shaping the futures of SADC e-mobility

The first scenario set, 'From ICE Age to Happy Days', examined how uncertainty over whether governments in SADC would be pro- or reactive would play out in a world where EV adoption was inclusive or exclusive. The second scenario set, 'From Dumping Ground to Bright Spark', examined how governments in SADC being pro- or reactive would play out over the shorter vs. longer term. The third set, 'From Stranded in Dirty Coal to the Musk Express', looked at how the future would change with the presence or absence of complementary/synergistic technologies over the shorter vs. longer term. Finally, the last scenario set, 'From Business as Usual to Exponential', looked at how complementary/synergistic technologies' being in place or not would interact with the inclusive or exclusive adoption of EVs in the region.

Scenario One: From ICE Age to Citizen’s Progress for All

TRANSITION INCLUSIVE			
GOVERNMENT IS REACTIVE	Citizen’s Progress for All	Happy Days	GOVERNMENT IS PROACTIVE
	<ul style="list-style-type: none"> • Strong pressure groups rather than government drive policy • Social cohesion • Government revenue loss driven by reduction in fuel levies • Similar to cell phone uptake a few decades ago, a large segment of the market cannot adopt smart phones and a small segment uses smart phones for financial gain • Loss of manufacturing market share 	<ul style="list-style-type: none"> • EVs ubiquitous • Social cohesion fostered by enabling opportunities around EVs and EV infrastructure (lower Gini coefficient) • Workforce reskilled/redeployed • Trust in government • Regional leadership & cooperation • Government income is protected • EV integration with renewable energy (RE) 	
GOVERNMENT IS REACTIVE	Ice Age	Lucky Few	GOVERNMENT IS PROACTIVE
	<ul style="list-style-type: none"> • Small & limited uptake of EV (only wealthy) • Loss of manufacturing and consequent unemployment • High costs of EVs • Higher inequalities/social unrest • Brain drain of brightest engineers • Dumping ground for old technology and internal combustion engine (ICE) vehicles • Missed carbon targets/SDGs 	<ul style="list-style-type: none"> • Government supports the rich who can afford EVs • Social unrest • Growing unemployment in the ICE sector: no retraining • Only a focus on easy and quick wins (eg, urban infrastructure) • Neutral government revenue 	
TRANSITION EXCLUDING			

Citizen’s Progress for All

Although this scenario is possibly less plausible than others, in this future the private sector increasingly takes over the government’s role in promoting the adoption of EVs. It also creates an enabling environment within which it makes sense to advocate for the broad adoption of EVs, to ensure that both rich and poor benefit and that the transition to EVs is complete with almost no ICE cars remaining. In this scenario, government revenue declines as fewer car owners buy petroleum products and so avoid paying fuel taxes. The government tries to recuperate funds in other ways, through car licencing and/or toll roads. The auto-manufacturing sector goes into steep decline and is almost lost in South Africa, as the international market for South African-assembled vehicles disappear and the local market is segmented into old, second-hand ICE cars or new EVs.

A few decades ago, a large segment of the market could not adopt smart phones and so gain access to the Internet. In a similar phenomenon only a small segment of the Southern African population is able to buy EVs and benefit from the cost savings. On the whole, in

this scenario most people in SADC can only afford second-hand ICE cars that are expensive to run and maintain.

Happy Days

South Africa encourages all SADC member states to become early adopters of EVs and to actively encourage complementary infrastructure. From being an oil- and coal-dependent region, SADC races to develop its independent power producer (IPP) sector, allowing region-wide renewable energy charging stations to mushroom. The government priority is developing an EV value chain in the region by reskilling ICE assembly workers and the services industry, enabling SADC's population to make use of the development and economic opportunities that the EV offers as a platform. These opportunities include EVs' boosting the grid's energy availability as cars push surplus energy back into the grid when not in use. In addition, charging stations make energy available to communities not connected to the national grid. Schools and clinics are built next to charging stations to benefit from their energy-generating capacities. The region becomes more integrated and prosperous as it builds, distributes and services EVs from domestic sources. Entrepreneurship blossoms around this pro-active, forward-thinking region.

ICE Age

South Africa and the rest of the region try to hold on to their ICE manufacturing sector for as long as possible, blindly trying to protect the job opportunities the sector used to offer. The region follows a policy whereby governments actively encourage cheap imports of the world's old ICE vehicles, which initially seems to boost mobility in the region while creating a services sector around the ICE industry. However, the technology rapidly becomes redundant with no new innovation globally or locally. The region's brightest engineers start leaving for better prospects in China, India, Europe and the US, leading to a rapid brain drain of forward-thinking, innovative, technologically minded and skilled individuals. Along every major road in the region rusted wrecks bear silent testimony to the fact that the region has failed to reach its Sustainable Development Goal (SDG) targets and make progress in curtailing carbon emissions.

Lucky Few

Government subsidies aimed at the broad adoption of EVs end up supporting the rich to buy new cars, and most of the EV-supportive infrastructure is located in urban centres. There is unequal adoption in the region, where South Africa and Mauritius move ahead in introducing and subsidising EVs while the rest of the region remains firmly within the ICE market. While numerous programmes are developed to help reskill workers in ICE plants, these are not implemented early enough – nor are they effective. They are also not supported by broader educational endeavours in preparing SADC's work force, especially youth, for the innovative and entrepreneurial opportunities that the introduction of EVs could bring. Many of those workers are now destitute. Massive social unrest defines the region, there are no jobs and the sectors that used to employ low-skilled workers, such as petrol attendants, shrink.

Scenario Two: From Dumping Ground to Bright Spark

GOVERNMENT IS PROACTIVE			
5 YEARS	G-Wiz	Bright Spark	15 YEARS
	<ul style="list-style-type: none"> • Attracts EV manufacturing/incentives put in place to do so • Gradually reduces import tariffs on EVs • Growing sales and ownership of EVs in the region • e-taxi promotion/production • Chance of social unrest owing to job losses 	<ul style="list-style-type: none"> • Increasingly large role in EV global value chains • Elimination of import tariffs on EVs • Increased foreign direct investment (FDI) • Increased production and ownership of e-taxis • Service skills transitory programme • Electricity industry deregulation 	
	Status Quo	Dumping Ground	
	<ul style="list-style-type: none"> • Discourages EV adoption via increasing tariffs • Promotes and protects existing ICE industry • Full potential of RE IPPs not explored • Stronger unions protect a declining industry 	<ul style="list-style-type: none"> • Declining local ICE industry and related employment • Decline in FDI • Falls further behind global technology • Brain drain of engineers/technicians • Missed SDGs/Paris Agreement targets • SADC becomes disjointed/incoherent policies 	
GOVERNMENT IS REACTIVE			

G-Whiz

Riding on the coat-tails of ‘Ramaphoria’, the region collectively decides to actively and rapidly accept broad-based technological change, including the adoption of EVs and a rapid scale-down in support to ICE manufacturers. Import tariffs that inhibit the production of new technologies are removed. Through President Cyril Ramaphosa’s initiatives to attract investment to the region, FDI finds a new lucrative market in the manufacturing of e-transport, including EVs, e-bikes and e-buses. The region develops an e-taxi that finds a huge market and is not only designed and built in SADC, across five member states, but also exported in large volumes to the rest of Africa and Asia. Initially, social unrest and protest increase as the transition period translates into job losses and manufacturing plant closures in old technology sectors. After the transition period, there is an upturn in overall employment figures.

Bright Spark

Close regional collaboration and planning takes a number of years, but governments eventually start to bring down tariffs on EVs and to support their local production and assembly. The region attracts increased FDI into the automotive sector and sectors supporting RE development. The deregulation of the energy sector allows small and medium-sized enterprises to play an increasingly important role in generating and

distributing power across the region. Reskilling takes place on an ongoing basis with workers transferred to new opportunities as they arise. With good planning and regular futures-orientated policy-planning exercises, the region develops sustainable value chains that support both the energy and the EV sector. Old ICE cars present a recycling opportunity as new technology is developed to efficiently re-use parts and materials for other technologies.

Status Quo

Although SADC governments are acutely aware of the rapid rise in the use of EVs globally, there is no real regional cooperation or planning for its arrival. The limited regional value chains that feed into South Africa's ICE auto industry are protected at all costs and for as long as possible. Tariffs on EVs remain. Although IPPs are reintroduced in South Africa they are not actively encouraged to reach their full potential. Unions use increasingly aggressive tactics to protect jobs while job shedding continues unabated as one major automotive company after the other withdraws from the region.

Dumping Ground

SADC remains stuck in an era of ICE. As the rest of the world rapidly adopts EVs and gets rid of old ICE cars, the region eagerly accepts low-cost or second-hand ICE cars. These have a short shelf life and soon car graveyards dot the SADC landscape. No regional discussion takes place on how to shift over to EV technology and the region falls increasingly behind as EVs become platforms in the Internet of Things and the Fourth Industrial Revolution the world over. SADC misses its SDG and Paris Agreement targets and soon resembles the waste planet foreseen in the movie *WALL-E*.

Scenario Three: From Stranded in Dirty Oil to the Musk Express

COMPLEMENTARY TECHNOLOGY IN PLACE			
5 YEARS	All Aboard the Musk Express <ul style="list-style-type: none"> • Government protects ICE manufacturing industry • Contest over energy resources • Private company initiatives enabled • Integration of technology and innovation • Government plays catch-up with innovation • Re-evaluating government policies enabling green energy roll-out • Building foundations for future success 	Slowly Does It <ul style="list-style-type: none"> • Solar/charging stations established • Increase in gross domestic product (GDP) • Sharing vehicles • Cheaper/efficient uptake of EVs • Incentivised mobility/mobility is cheaper – potentially less traffic • South Africa is a tech leader & development player • Replacing government revenue streams • Autonomous vehicles • Taxi/Uber industry relationship to this process may be complicated • Further question over having the infrastructure in place to support this new technology 	15 YEARS
	Waiting for Godot <ul style="list-style-type: none"> • Status quo – consumer dissatisfaction drives costs up • If driven by private sector, conflict with government and unions • Government potentially loses face 	Stranded in Dirty Oil <ul style="list-style-type: none"> • Conflict/disturbance • Competition over old resources • Frustrated population • Mobility is still exclusive – for the wealthy • Slow uptake of EVs • GDP down owing to loss of export markets • Unemployment grows, as does inequality • Dumping ground for old ICE vehicles and possibly used EVs 	
GOVERNMENT IS REACTIVE			

All Aboard the Musk Express

In this scenario the private sector realises that governments will lag behind as they try to protect jobs in sectors associated with the ICE automotive value chain. Despite an initial lag in the availability of RE sources, the private sector takes the lead in introducing new technologies and innovation. As soon as the EV market begins to show significant uptake and profit, governments re-evaluate their positions and adopt policies that enable greater uptake of green energy. Together they build a strong foundation for future success.

Slowly Does It

Although SADC governments do not promote a rapid changeover to EVs, a slow and considerate approach with frequent engagements with the private sector and civil society

eventually leads to a sound foundation from where SADC can adopt EVs with limited disruption to jobs in the automotive sector and industry. First, decentralised RE charging stations (smart grids) are rolled out throughout the region, doubling as cell phone towers and charging points. This spurs innovation and access to electricity and services, resulting in an increase in GDP figures for the region. There is also a slow but definite increase in sharing vehicles, which has an interesting positive impact on traffic congestion. With a solid foundation the region emerges as a tech developer and leader, especially in finding solutions for the rural use of EVs, and enhancing inclusion and access to various e-services such as Internet cafes, e-learning, e-banking, etc. Problems, however, remain between the traditional taxi industry and the development of e-transport services that enjoy government support. These problems manifest as taxi wars and social unrest. Uptake of new technology remains dampened owing to an incomplete charging network in the region, which hampers, in particular, sales of e-trucks in the logistics sector.

Waiting for Godot

Although SADC governments are acutely aware of the rapid rise in the use of EVs globally, there is no real regional cooperation or planning for its arrival. The limited regional value chains that feed into South Africa's ICE auto industry are protected at all costs and for as long as possible. Tariffs on EVs remain. Although IPPs are reintroduced in South Africa they are not actively encouraged to reach their potential. This stagnation in the status quo starts to drive up prices of ICE cars as the international market moves into the EV space, making auto parts and components more expensive. The private sector initiates the move towards EVs by investing in the necessary infrastructure. Once uptake is evident, the government attempts to come on board, in principle to recuperate lost incomes owing to a decline in petrol sales.

Stranded in Dirty Oil

SADC governments do not engage with new technologies at all and keep on pushing the global use of oil and the production of ICE cars. A conflict emerges between regions of the world where EVs dominate versus those stuck in the past. As the developed world no longer invests in dirty energy, Southern Africa starts to feel the pinch in terms of not having enough old component parts to maintain ICE cars, resulting in a frustrated population. Many old ICE cars are dumped at car graveyards. Only the very rich can afford either well-maintained ICE cars or new EVs that they charge at home. As access to vehicles is seen as the main barrier to mobility, governments accept all old ICE cars from around the world, failing to recognise that there is no longer enough capacity to keep them running.

Scenario Four: From Business as Usual to Exponential

TRANSITION IS INCLUSIVE			
COMPLEMENTARY TECH ABSENT	Peanuts and Raisins	Exponential	COMPLEMENTARY TECH IN PLACE
	<ul style="list-style-type: none"> • Incremental/ fragmented change • EVs become a symbol of division • Only the rich can afford new technologies • Poor stuck in old and dirty ways of living • Only incremental EV adoption without e-mobility revolution • Stuck in mono-modal transport 	<ul style="list-style-type: none"> • Cheaper mobility and energy • Energy efficiency and access • Capital efficiency • Time efficiency • Improved access • Decentralised infrastructure development 	
	Business as Usual	Wedge Grows	
	<ul style="list-style-type: none"> • Society continues on divided pathways • EVs do not change the underlying transport poverty • Stuck in outdated neoliberal economic models • Preserving of vested interests to the detriment of the many 	<ul style="list-style-type: none"> • No access for most of the population • Increase in electricity for grid users • Dumping ground • Job losses, maintenance value chain is lost/reduced 	
TRANSITION IS EXCLUSIVE			

Peanuts and Raisins

One of the key concerns expressed during the scenario-planning process was that the adoption of EVs could easily become another divisive factor in Southern African society, with the rich being able to afford new technologies and the poor stuck with old, dirty ways of living. In this scenario the inclusivity of new technologies is balanced with the complementary technology necessary for EV roll-out. This scenario is simply called ‘Peanuts and Raisins’ – meaning that there is incremental but fragmented change. This scenario leaves the shift to e-mobility open to international market forces, meaning that EVs are incrementally driven in big cities because they are cheaper in terms of total cost of ownership, but inaccessible to the many owing to high upfront costs. Although EVs become available, the e-mobility revolution takes place in a unjust and fragmented fashion; with only small pockets of alternative and inclusive innovations facilitated by some parts in the private sector, but mainly driven by non-governmental organisations. Governments in this scenario are missing in action on the policy front because e-mobility is increasingly associated with the rich, while in fact the shift from mono-modal to multi-modal mobility has the potential for systemic equity in the transport sector.

Business as Usual

This refers to SADC’s already divided societies and implies that the introduction of EVs will not change this dynamic. Despite various regional integration and cooperation

commitments, few regional policies such as the SADC Regional Indicative Strategic Development Plan (RISDP) 2020-30 and the SADC Green Economy Strategy and Action Plan are implemented in member states. This is because of narrow national interests and protectionist approaches to economic development rather than what benefits the region as a whole. Instead of finding innovative regional solutions to e-mobility, governments are bogged down by other pressing concerns, eg, the COVID-19 pandemic and economic recovery, and discount the potential catalytic effect of e-mobility and the accompanying opening up of pathways to regional green recovery. Fundamentally, 'business as usual' means a lack of openness and awareness of alternative possible futures, ie, a failure to shift old mental models to new paradigms. However, when complementary technologies are in place, the scenarios become more dynamic.

Wedge Grows

In this scenario, SADC remains a disjointed and unequal region and most of its citizens do not have access to EVs, although they might benefit to some extent from charging stations that double as mobile phone towers and phone-charging stations. The exit of wealthy customers from the ICE value chain results in a general decline in the purchase of ICE cars, especially luxury, high-end models. This loss leads to a contraction in the auto-manufacturing industry with resultant job losses.

Exponential

Having complementary technologies in place results in lower energy costs, which lead to cheaper mobility costs. Governments pay close attention to how poorer communities can and should benefit from this trend by ensuring energy efficiency and access. Governments further focus on efforts to get infrastructure to rural communities by developing roads and charging stations. The sharing of EVs also brings poorer communities closer to job opportunities, schools and clinics.

Towards preferable SADC e-mobility futures

The scenario-building exercise conducted by SALLA brought together a number of industry experts, government representatives, academics and thinkers. In imagining a world where EVs become the norm rather than the exception, the following insights emerged.

- South and Southern Africa are lagging behind the rest of the world in terms of encouraging EV uptake. This is because there is a strong belief that jobs in the ICE automotive industry need to be protected for as long as possible.
- EVs are still not seen as serious contenders in the car consumer industry; instead they are regarded as the purview of mavericks.
- There is a real danger that the adoption of EVs will result in more pronounced differences between the rich and poor. It is likely that we will see more affluent consumers making the switch to EVs as the purchasing price drops and it becomes clearer that a higher purchasing price will be recuperated over a 10-year period through lower maintenance costs. The poorer segment of the market will only be able to afford older, second-hand ICE cars. It is likely that their price will fall sharper than that of EVs as the global market sees a glut in second-hand ICE cars.
- With South Africa only leading reluctantly on EVs, the rest of the SADC region is left far behind. Only Mauritius has invested in the roll-out of the necessary infrastructure and is offering incentives for EV adoption. The question arises whether South Africa could make a full transition to EVs without its attendant adoption by the region.
- The efficiency of rolling out charging stations while the EV market is still small remains questionable, but at some point EV producers will invest in charging stations in order to attract customers, or an increase in customers will result in a general push for more charging stations.
- It is unclear if there will be a serious organising of the mining industry in the immediate future towards growing the low-carbon mineral and metals segment. SADC member states should embrace the opportunity to grow the large regional endowment of EV minerals and metals and create beneficiation structures for regional battery value chains that slot into the global battery value chain.
- It is clear that Southern Africa's energy mix will have to move in the direction of more renewable sources, both to satisfy current demand and to facilitate the adoption of EV technology.



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