

Sustainability Week Transport Seminar Report

7 June 2018

09:00-15:30

CSIR International Convention Centre- Emerald Room

Transportation is one of the most significant contributors to climate change, accounting to 28 percent of global greenhouse gas (GHG) emissions. It is becoming the fastest growing source of CO₂ emissions and has increased at a faster rate than any other energy end-use sector. Much of this growth will in future come from transport demand per capita in developing and emerging economies, which is expected to increase at a much faster rate in the next decades due to rising incomes and development of infrastructure. Africa is undergoing a mobility revolution. This revolution is characterized by an unprecedented motorization spurred by high rates of urbanization and economic growth.

The Transport Seminar was held on 7 June 2018 at the CSIR International Convention Centre. The Seminar brought together stakeholders from all spheres of Government responsible for transport and energy, as well as the private sector to discuss transport challenges and highlight solutions, as well as showcase South Africa's progress in developing sustainable transport solutions. The theme of the Seminar was titled "*Paving the Road to Sustainable Urban Mobility in Africa*".

In a day and age where rapid urbanization and technological developments are shaping present and future mobility choices, it is important to ensure that transport legislation is implemented in a sustainable and inclusive manner. National policies and strategies exist to reflect national commitments and guide local and private stakeholders in the implementation choices best suited for Africa's unique mobility challenges and needs. Technology has empowered organisations to create and operate more efficiently. These advancements have seen a rise in the interest and uptake of alternative energy sources for mobility, putting emission reduction, flexibility, affordability and improved access at the forefront of implementing suitable mobility technologies in urban environments. Mobility practices that are considered to be sustainable also have a correlation with better social cohesion and economic development. The Transport Seminar was officially opened by the City of Tshwane MMC for Transport, Cllr Sheila Lynn Senkubuge. The MMC highlighted that the City of Tshwane is committed to taking strides in green transport advancements with a growing fleet of CNG Bus Rapid Transit Buses. Such interventions are paving the way for the City of Tshwane to invest in Cleaner energy sources for mobility in the City.

The Transport Seminar had three main sessions.

1. Key Strategies for transforming urban mobility
2. Showcasing Sustainability in South African Transport

3. Smart and Sustainable Future Mobility for Africa

Session 1: Key Strategies for transforming urban mobility

Moderator: Ms. Ashanti Mogosetsi – Low-Carbon Transport Project, UNIDO

The Department of Transport made a presentation on the Green Transport Strategy (GTS). The presentation highlighted some of the challenges we are faced with in the transport sector. In South Africa, the transport sector accounts for 10.8 percent of the country's total GHG emissions, with road transport being responsible for 91.2 percent of these GHG emissions. The GTS promises to address challenges of climate change and increased GHG emissions in the country. This Strategy is the first in South Africa to inform the environmental directive of the transport sector going. Emphasis is placed on a number of developmental priorities national government has to consider in addition to developing policies focusing on the reduction of transport GHG emissions.

The interventions and initiatives of the strategy include the aligning of climate change norms across all spheres of government, green roads, the improvement of rail transport technologies for the transportation of both freight and passengers, the use of alternative energy for transport modes such as low carbon fuels and electric vehicle technologies, and the timely implementation of green fuel economy standards. A crucial quick win solution to improve the competitiveness of public transport was presented as a single ticketing system which would improve the seamlessness of multi-modal and shared travel, to assist motorists to detach from their automobiles and consider using public transport. Infrastructure investment on Non-Motorised Transport (NMT) and electric vehicle charging infrastructure are included in the strategy to contribute towards sustainable development. No car zoning and congestion charging in cities are also identified as interventions suggested for implementation in the new future. It is recognised by the Department that not all suggested interventions are implementable immediately and that there needs to be strong focus on supporting government to create a conducive regulatory environment for some of these actions to be implementable.

The challenges experienced during the development of the GTS paved the way for the panel engagement. The inclusive classification of varying transport fuels (e.g. CNG) is not recognised as a transport fuel. The Petroleum Act, currently only recognises petrol and diesel as transport fuels. The highly taxation on electric vehicles, the implementation of the carbon emission tax without further disadvantaging the poor as well as change management and public awareness creation were the key challenges highlighted.

The panel discussion focused on the broader policy and regulatory challenges on the national and local level that are currently stifling sustainable transport development in South Africa and also touched on some of the progress made by varying stakeholders in achieving sustainable mobility that is inclusive. The Panel consisted of Ms. Bopang Khutsoane (National Department

of Transport), Ms. Chelina Bodhie (Gautrain Management Agency), Mr. Phillip Ninela (The Department of Trade and industry) and Mr. Mehboob Babamia (City of Tshwane Metropolitan Municipality).

The Department of Trade and Industry conducted a green transport policy gap analysis in 2016 to address views of the green transport policy being fragmented and non-inclusive of a number of green transport interventions.

The following questions and comments were addressed to the panel and shaped the discussion that unfolded:

1. Three Metropolitan Municipalities are currently using/piloting varying energy sources to propel their bus fleets- CoJ (dual buses), City of Cape Town (electric buses) and the City of Tshwane (CNG buses). Is the investment in different solutions a wise direction for the country? How can data be shared and decisions centralized to ensure that the most efficient energy source is invested in by all urban municipalities trying to achieve sustainable urban mobility?
2. The GTS is well aligned with both international and local climate change directives. The concern is that South Africa may not make any of the set targets if the country does not move fast enough to electrify mobility. We need to move away from developing strategies and start to develop projects and initiatives to test the most efficient energy and mobility solutions.
3. How do cities implement good transport models, are electric buses recognised by policy makers as a contributor to the ideal sustainable transport model?
4. Is the national department ready to make quantifiable targets to assist cities in motivating for the procurement of a zero emission bus that currently cost approximately 5 times as much as a diesel bus? If not, what can be done to overcome such challenges?
5. Is there a strategic approach to involve the private public transport sector in the process of developing and implementing the GTS?
6. Does the Strategy have a drive for legislative reform to ensure that cities are encouraged in making better environmental procurement choices despite the cost of these more environmentally friendly technologies?
7. Is there opportunity for the country to explore tram systems as a solution for urban mobility? The notion that industry is ready for local manufacturing and operating of electric vehicles is concerning if the regulatory environment is perceived as the current barrier. How can we create opportunities for industry to engage with government more closely outside of such seminars and workshops?
8. If the world is moving away from internal combustion engines, who will we export the vehicles we assemble to? It is suggested that in the short term, import duties on electric vehicles be reduced to grow the number of EVs on the road which can lead to improved market opportunities for local manufacturing.

9. There needs to be a focus on sustainable change management and quality capacity building to ensure quality results and a positive impact on the interventions implemented.

In summary, it was observed that the national government has not committed to single mobility technology over any other alternatives to allow municipalities and other implementation partners the liberty to choose the energy source that is best applicable to meet the efficiency needs of the implementer. While this position presents a freedom of choice, it has been identified that the decision to not make a commitment to what is likely to be the most efficient technology option may lead to misalignment and challenges with monitoring the impact of varying technologies on a national scale.

The national green procurement guidelines make environmental provisions for procurement made with fiscal funds. Cities should also need to start engaging one another to collaborate and centralize requests for more funding for similar projects in order to qualify for larger amounts of money that can enable the procurement of zero emission fleets that cost more. It is believed that it is still worthwhile to promote e-buses because the cost of this technology is expected to reduce over the years, producing even more efficiencies for this choice.

In closing this dialogue, the panel expressed that policy makers need to be convinced of the fact the world is moving towards electrifying mobility and that this will affect the existing exporting markets for South Africa. It is the responsibility of all stakeholders to get involved in the consultation processes led by government to build capacity amongst officials and to closely motivate for policy directives that speak to some of the predictions of what mobility will look like in decades to come. It is acknowledged that the changes are rapidly coming and will affect African cities that are not preparing for energy and mobility transitions.

Session 2: Showcasing Sustainability in South African Transport

Moderator: Mr. Conrad Kassier Energy Efficiency Programme, UNIDO

The session consisted of two presentations. Ms. Maletlabo Handel (UNIDO Low-Carbon Transport Project) presented on *Showcasing Low-Carbon Transport in South Africa* and Ms. Louise Naudé(WWF South Africa) presented on *Demand Driven and sustainable Public Transportation*.

UNIDO's Low-Carbon Transport Project in South Africa is a GEF funded initiative co-implemented by the South African National Energy Development Institute (SANEDI). The Project aims to support policy enhancement in the transport sector and demonstrate sustainable mobility in South African cities. One of the key initiatives mentioned during this presentation is the Macroeconomic study on the socio-economic impacts of the adoption of electric vehicles in South Africa. The aim of the study is to investigate potential big ticket impacts associated with the rollout of EVs in South Africa, focusing on road transport and to

make the case for supporting EVs in South Africa. This study is commissioned by the Department of Trade and Industry and is envisaged to provide the data required for policy makers to justify the need to open up the legislative environment for electric vehicle technologies to establish local manufacturing and operating markets in South Africa, giving the country the opportunity to lead the rest of Africa into the transition. The presentation also highlighted some of the initiatives currently being undertaken by various stakeholders in the country. A few examples were mentioned, including the adoption of electric vehicles into provincial fleet of Northwest Province, the work currently done by the City of Cape Town and the Western Province in changing the face of transport sector in the Western Cape. The Project is looking into supporting, together with relevant stakeholders, cities to adopt sustainable transport solutions, such as electrified buses as part of the public transport strategy. There is also interest in developing a cycling strategy to support NMT city initiatives.

WWF is heavily invested in sustainable transport research to inform all stakeholders of developments and the status quo in South Africa. The Low carbon Frameworks Transport Project explores possibilities and implications of GHG emission reduction strategies in the South African Transport Sector, such that a flourishing economy and human wellbeing are fostered. The views shared during this presentation included:

Mobility poverty: Enabling people to have access to facilities and bettering access to markets through efficient and effective cargo transport is crucial to economic and social development. Solving such problems must also be done in an environmentally sustainable way. One of the impacts of people experiencing mobility poverty is the impact of insufficient access to healthcare facilities. Mortality rates are associated with people not being able to get children and birthing mothers to hospitals on time or even at all for example.

Time poverty: Long distance commuting has stolen a lot of time from the traveler to engage in other activities and with their families. This applies to both men and women but because women experience multi-stop trips due to the household responsibilities they have, women can be seen to travel for longer times than men do. Safety also becomes an issue in such circumstances.

The affordability of transport: The Household Travel Survey illustrates how low income earners spend the bulk of their earnings on transportation. The reduced need for travel can help the poorer in making their low income go further.

In conclusion, it was suggested that integration across all departments is crucial to achieving sustainability and that cities ought to focus on 'development orientated transit' and not 'transit orientated development'. The latter approach is currently being implemented. It was also recommended that next year's Transport Seminar has a focus on Gender related issues in transport and perhaps, land ownership to address the underlying social ills affecting urban mobility behaviour in African cities.

The audience dialogue followed shortly after the presentations. This an opportunity for the audience to share initiatives being implemented to combat the effects of Climate Change, urbanization and urban population growth. The audience was also challenged to think about whether Africa is ready to leapfrog into sustainable, energy efficient and clean mobility.

The following views were shared:

E-hailing is an example of a disrupter that is bringing about change in cities, there are currently challenges in making people aware of the benefits of such technologies. Shared mobility has a positive impact in the reduction of the number of cars on the roads.

Ride sharing, however, will not have a larger positive social and environmental impact if the mentioned disrupters are still based on internal combustion engine cars chauffeuring single occupants. Planning should perhaps not focus entirely on this market of individuals but rather masses of people willing to move together. The electrification of high occupancy vehicles will result in greater efficiencies towards achieving sustainable transport for growing urban populations.

It is important for cities to decide on the meaning of 'smart' and recognise that what is considered as smart today will not be considered as 'smart' tomorrow. Currently, mobility is efficient because there is a greater amount of displaced energy than the energy used to move vehicles. The opposite is true with e-mobility.

It is important to remember that people existed before cities and systems were built. It is for this reason that cities should be built to serve people. In South Africa there is currently an average of 1.4 people per vehicle, leading to congestion and greater pollution because of these vehicles being powered by diesel and petrol. Examples can be learned from cities such as Denmark that have implemented incremental car-free zoning to reclaim city spaces back to people.

Labour related organisations such as Cosatu and Nedlac are having conversations about bringing together governments and businesses to address the transition losses and benefits the country will experience, particularly when it comes to jobs and the inherent impact on the poor. It was broadly agreed upon that Africa is ready to leap frog into the existing energy efficient solutions for sustainable mobility in cities. It is acknowledged that investments in legislative reform and infrastructure development is not taking place at a fast enough to bring localisation and training opportunities to fruition.

Session 3: Smart and sustainable future mobility for Africa

Sustainable mobility experts in South Africa are piloting ideas and implementing solutions to contribute towards the vision to create smart and sustainable mobility for cities across Africa. They offer lessons learned and a wealth of data required to shape the necessary conversations and inform decisions to achieve sustainable mobility in what is being described as the near or immediate future. Four insightful presentations based on the session theme were shared with delegates in attendance. Four presentations were made by Justin Coetzee (Go Metro) presenting on *“Mobility as a Transport Service”*, Carel Snyman, an independent consultant, presented on *“The Vision of a Future African Smart City”*, Hiten Parmar (uYilo) presented on *“Looking at the Benefits of Electrifying Mobility”* and Winstone Jordaan (GridCars) made his presentation on *“How can strategic transportation policies help create connected and sustainable mobility?”* The following key notes were received from each of the expert presentations:

The presentation on *Mobility as a Transport Service* highlighted that Mobility as an asset is a 1950s paradigm that we have come to accept, which means people buy cars and are disadvantaged financially. Mobility as a service on the other hand is mobility that is not owned by the individual but is rather requested when needed and is generally shared with other members of society and businesses. Flexible transportation is a better solution to providing practical and competitive public/shared transportation rather than integration, which may be ineffective at this point because of the possibility of integrating inefficient transport systems. Currently varying transport service providers have different information, payment systems and communication paths. Technology can be used to provide centralization for these services in order to improve the flexibility. Future transport systems are going to consist of drone quadcopters to transport people from roof to roof. Sticking to basics however, can help us in making the most of what we already have instead of chasing every new technology. A flexibility strategy can potentially solve this problem. It is important for African countries to have a framework to evaluate technologies and the impact of their application before committing to implement new technologies in the transport sector. This approach will prevent possible mistake and the waste of natural resources. A South African created employee ride sharing platform has been launched to assist people in transitioning from having mobility as an asset to the usage of mobility as a service.

Such systems have been proven to save people money and improve the quality of life of those using the platform. There is an explosion of such mobility services that will hit cities. A proactive regulatory framework from either National, Provincial and Local government is needed to enable cities to be prepared for the change. The current challenge for mobility innovators launching these platforms are licensing and regulations

The presentation on *the vision of a future African smart city* emphasised that Congestion is not necessarily the problem in cities, the motor car is. Roads are built and extended to accommodate cars and not the sustainable movement of people and freight. As much as Africa is likely to be one of the most populated continents in the world, the positive side to this is that

Africa will also be one of the most developmental of continents in the future. The objective is not just to advocate for the adoption of electric cars, but most importantly- electric public transport or smaller vehicles providing opportunities for numerous people to share a ride. Using electricity from the grid to power mobility is still cleaner than petrol and diesel vehicles, however powering electric mobility using renewable energy is the ideal. An electric vehicle has far less components compared to internal combustion engines. These vehicles can be manufactured and assembled locally. Diesel vehicles are being banned from European cities from the year 2025, alternative ways to transport road freight are being explored. An example of a technology from Siemens and Scania was shared to demonstrate an idea of aero emission road freight transport for even greater efficiencies. An encouraging South African manufacturing success story is the development of the ZEBRA electric battery, developed at the CSIR campus to power e-buses in various cities globally. This technology now has to be imported to pilot e-buses in South African cities. Another right of way is a South African created suspended monorail transport system with a low footprint on land space. This service can work for people, freight and emergency transportation. It is predicted that in the next 13 years people will not have the need to buy and own a car but will rather use mobility as a service. The audience in the room were made to realise that they would most likely be alive in that time. This brought about a reflective opportunity to for people to realise that the sustainable choices made today do not only affect future generations but will also affect the decision makers themselves. This is mainly due to the rapid pace of technological advancements and the growth rate of cities in developing countries. Comparing the cost of e-buses with that of diesel buses where procurement is concerned is not comparing apples with apples. The cost of batteries is decreasing and the maintenance cost of an electric bus over the life of the vehicle is far less costly than operating a diesel bus over the vehicle's life. It has been proven that the higher capital cost of an electric vehicle is dispelled by the fact that drivers and cities (buses) can break even sooner because of the energy savings potential of electric mobility.

The presentation on *looking at the benefits of electrifying mobility* highlighted the fact that there is a change in mobility environment. There is an increase in foreign direct investment coming into Africa. A large growth in African mega cities will be experienced by 2025. This means that investments in infrastructure for these changes must be priorities. The city of Johannesburg is currently ranked 13th in a global list the poorest air quality. It was reiterated that road transport accounts for 91.2% of emissions in the transport sector. Projections are illustrating a tripling increased growth in the motor cars in Africa by 2040 if transport planning continues in the traditional way. The "avoid, shift and reduce" approaches to transport planning should be practiced to achieve sustainability goals for the future African city. Motor sport, marine transport, warehouse transit, and aviation sectors are exploring and switching to electric mobility. There are existing opportunities for road transport to undergo the same transition. Technology has addressed the varying charging needs of different EVs- Electric vehicles provide opportunistic charging (people can charge at home during the evening and at places of work in the day). Sri Lanka was mentioned as having 5000 EVs on the roads without

any public charging infrastructure. Electric vehicles can also be used to transmit energy to power households and appliances. uYilo successfully demonstrated this V2X technology at the 2017 Sustainability week expo. uYilo has vehicle testing programmes with BMW and Nissan, who are currently the two electric vehicle suppliers to South Africa. The programmes track monitor EV performance and capture data on performance to proof the technology's efficiencies locally. Africa's opportunities include the usage of African mined minerals and resources for EV manufacturing and powering. African resources are predominantly exported to international markets while these can be used within Africa for Africa.

The presentation on *"How can strategic transportation policies help create connected and sustainable mobility?"* illustrated that A strategy for sustainable transport should look into setting a specific direction through policy targets and should focus on providing mobility to all segments of the population. The four areas that should be considered are: support for economic growth, limited environmental impact, promoting social development and maximizing safety. To reduce the environmental impact- transport systems should be electrified. Vehicles and batteries should also be recycled. South Africa has become a buying nation, manufacturing has decreased while importing has decreased exponentially. The culture to create and manufacture needs to be revived because the capacity is available and can be strengthened through private and public sector collaborations and sharing of data and lessons. Policy should be enhanced to create the necessary behavioural change needed to catalyse the transition to electrifying mobility. While waiting for legislation to change, the opportunity to capture and drive the EV manufacturing industry will pass South Africa by. It must be decided whether we will be drivers or passengers of the industry. Being indecisive about the national position on electric mobility is making a decision to be a passenger. It is also important to look at making sustainable mobility decisions through multi-generational lenses. Currently political decisions are motivated by the duration of term in office. This approach results in reactive responses to global trends. Africa stands to be a vehicle dumping ground if we remain promoting internal combustion engines. The world is electrifying mobility and will look to dumping vehicles in African economies that will accept these vehicles to deviate from the inherent costs of destroying the vehicles. African nations are empowered with success stories from countries already investing in these clean mobility technologies. The future is likely to have a high degree of sharing. Mobility will be smart, meaning technology will have a large role in sustainable advancements, this does mean it will be elitist because these technologies have benefits that will cascade down to benefit all population groups. Solar charging infrastructure must be invested in to prepare for the anticipated peak in electric mobility. City policies should include support for infrastructure and incentivizing delivery and passenger vehicles for being electric.

In conclusion, Cllr Elmarie Linde reiterated that as much as there are a number of barriers to the change the mobility industry is currently undergoing, there is also a lot taking place from both government and industry to address these issues. Government also acknowledges that it cannot solve all the mobility challenges as a single stakeholder in the process. Collaborations

need to cut across all spheres of government and industries. The involvement of taxi associations is crucial to recognise and involve in such dialogues, the taxi industry transports 62% of public transport of the City of Tshwane population. It is suggested that the taxi industry be included in next year's Sustainability Week proceedings, particularly to engage with other stakeholders participating in the transport seminar. Public officials should also use public transport as leaders in the industry. The facilitators, speakers, participators and City of Tshwane human resources were thanked for their involvement throughout the week and at the Transport Seminar.