

Third **NATIONAL**
NON-MOTORIZED TRANSPORT
Conference



Developing Cycling Cities



environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA



transport
Department:
Transport
REPUBLIC OF SOUTH AFRICA



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In Association with: **SEE Sustainability**
Mobilized **Transport Futures**

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Conference Programme

1 Introduction

The South African Government, represented by the Department of Environment Forestry and Fisheries (previously Department of Environmental Affairs) and with the National Department of Transport, and in partnership with the Federal Government of Germany, represented by KfW Development bank, hosted the 3rd National Non-Motorized Transport Conference on 05 and 06 of November 2019 at the Premier Hotel, Kempton Park.

The aim of the Conference was to provide delegates with the opportunity to debate, reflect and share experiences, challenges and best practice on the policy imperatives, strategy requirements and collaborative approaches needed to promote cycling as a safe, and preferred mode of effective transport with the intention to encourage uptake towards more inclusive and efficient transport systems.

The three main thematic areas which guided the discussions were inclusive of:

- Creating an Enabling Environment
- Advocacy and Outreach
- New, Emerging and Disruptive Technologies

Conference stakeholders included representatives from all three spheres of government's departments of Transport and Environmental Affairs and Cities' transport planners/officials, cycling organisation representatives and academia. The Conference was held over one and half days and comprised of both plenary and breakaway sessions.

Overall, the 3rd NMT Conference was well attended. The outcome of the conference survey indicated that majority of the delegates, within their respective fields of expertise, were pleased with the content of the presentations and noted that the conference programme was regarded as relevant and meaningful.

This document provides a summary of the conference content as presented by the speakers and panellists, highlights key lessons and pointers and concludes with way forward recommendations.

1.1 Background

In support of the extensive needs for NMT improvements, the Federal Republic of Germany in partnership with the South African Government through the Department of Environment, Forestry and Fisheries has contracted with three municipalities to

expand their infrastructure for non-motorized transport and to help increase the uptake of cycling through a range of promotional, advocacy and implementation measures, as key beneficiaries of the Programme.

Despite the progress being made in the expansion and improvement of public transport and non-motorized transport infrastructure in recent years, safe cycling facilities and adequate prioritisation of and provision for pedestrians, are still limited. Bicycle use as a mode of transport constitutes a minimal proportion of daily travel in South Africa.

This Conference forms part of a series of planned outreach initiatives, within the NMT Phase 2 programme, which is specifically aimed at raising awareness inclusive of policy gaps, infrastructure needs and education across the country.

1.2 Objectives of the Conference

The main objectives of the Conference were:

- To encourage enthusiasm and excitement around cycling as a relevant and vital means of transport in South African Cities going forward.
- To demonstrate how cycling constitutes a great opportunity to deliver socioeconomic benefits for communities.
- To share contextually relevant and specific global case studies of cycling growth and best practices that have important lessons for South Africa (preferably from developing countries).
- To share South African case studies which demonstrate potential and provide a basis to build from (successes & failures).
- To provide an update on the DEA NMT Phase 2 Legislative By-Laws developed.
- To showcase innovative approaches in cycling development and for growing cycling.
- To consider the trends and effects of disruptive technologies and new societal trends, on urban mobility and non-motorised transport.
- Through showcasing and interaction, facilitate a “catapult” of localized programmes and demonstration projects towards further and second stage implementation.

1.3 Partner Organizations

The key partner organisations in r the Phase 2 NMT project responsible for the NMT conference are:

Department of Environment, Forestry and Fisheries

The Draft Climate Change Bill of 2018 identifies transport as one of the key carbon emitting sectors. The implementation and successful completion of the Non-Motorized Transport programme begins to address both the mitigation and adaptation agenda in response to climate change.

Department of Transport

The Non-Motorised Transport Policy is one of the Department of Transport's interventions towards reversing challenges of accessibility and mobility. The Department is making strides to formalize NMT within the country's integrated transport systems.

Federal Republic of Germany

The Republic of South Africa has a standing Binational Agreement with the Federal Republic of Germany. The environment has been identified as a key area of support with specific reference to climate change mitigation and adaptation. The promotion of the NMT agenda supports both mitigation and adaptation. KfW finance and support projects on behalf of the German Federal Government and are their representatives on this project.

2 Conference Overview

2.1 Day 1: Official opening of Conference

An official opening was delivered by **Mr Zaheer Fakir**, Chief Policy Advisor: International Governance and Resource Mobilization from the Department of Environment, Forestry and Fisheries. He also introduced the KfW funded NMT programme. He provided scene-setting remarks, noting the need to change the way humans live and do things, and noted that whilst there have been shifts towards a low carbon economy, there are conflicting mandates between existing policies. He mentioned that, for change to happen, actions must go beyond policy and more emphasis should be placed on the implementation of policies. In closing, Mr Fakir mentioned that it is each persons' responsibility to be ambassadors for NMT and to spread the message on the benefits of using NMT as a mode of transport.

Mr Chris Hlabisa, Deputy Director-General from the Department of Transport provided a background on the DoT's policies and guidelines to set the scene. He mentioned that the NMT guidelines have been submitted for approval.

Mr Christian Grün, Head of Cooperation from the Embassy of the Federal Republic of Germany noted that choosing NMT as a mode of transport is one of a small, but significant contribution to addressing the transport-related impacts driving climate change. Furthermore, he provided a background on the partnership between South Africa and Germany. He indicated by way of example, that, in Germany, numbers of people owning bicycles has been growing and to date nine out of 10 people own a bicycle manufactured in Germany.

Dr Njogu Morgan from the University of the Witwatersrand delivered the keynote address in which he provided a brief background on how the City of Johannesburg was once a cycling City and could once again become one. Dr Morgan noted that currently the City of Johannesburg municipality's cycle lanes do not form complete networks as part of an interconnected system of cycling paths which makes cycling safe, comfortable and convenient. Dr Morgan also observed deficits in their design and maintenance, which would limit interest and would not create a conducive environment for cycling. Amongst many other examples, he further illustrated how Louis Botha Avenue was mainly used by residents from Alexandra township to travel to and from work during the days of Apartheid, highlighting the possibilities of cycling becoming a mode of choice.

Dr Morgan commented that bicycle lanes are only one of the necessary elements for a vibrant commuter cycling culture. He recommended that attention should be placed on political, social and economic barriers to utility cycling, such as high levels of inequality and crime in the City of Johannesburg, to facilitate its growth.

2.2 Day 1: Plenary session

The Plenary session focused on Inclusive Cities and the Importance of Cycling.

Mr Anthony Fitzhenry from Qhubeka delivered a presentation on how bicycles can change lives in South Africa. The Qhubeka programme came about from the realisation that sectors of the South African population's biggest challenge was a lack of transport and the associated impact the long walks had on learners' academic performance (noting that close to two million learners walk long distances every day, which means they arrive more tired at school).

Mr Fitzhenry mentioned that Qhubeka aims to help alleviate this challenge through local manufacturing of bicycles in the rural areas. Furthermore, Qhubeka facilitates the provision of bicycles to deserving school children. He mentioned that before they provided school children with bicycles, the pass rate in the impacted schools was very low (63 out of 100 children failed school) and absenteeism was very high due to children living far from schools. In schools where bicycles were introduced widely, academic performances have soared. Bicycle provision also assists in reducing other social problems such as crime, especially where community members participate in the community policing forum patrols on bicycles.

In his concluding remarks Mr Fitzhenry indicated that due to the desire to create a durable bicycle that can last at least five years or 50,000kms at an affordable price, Qhubeka decided to manufacture their own bicycles and make a great impact in the lives of disadvantaged South Africans. Qhubeka has manufactured 12,000 bicycles to date and are ramping up to manufacture 30 000 in the year 2020, with their vision being to scale up industrially to enable 200,000 bicycles per year to be distributed over 10 years.

Ms Gail Jennings, a research consultant presented her findings on completing her postgraduate doctoral degree (PhD) research. She is registered for doctoral research with the Centre for Transport Studies, Department of Civil Engineering, University of Cape Town, where she is pursuing her interest in behaviour change and investigating the shifting ideas and ideologies that affect utility cycling behaviour in South Africa. It includes a pilot study focusing on individuals who own cars, but prefer to cycle.

Ms Jennings explored the reasons for this preference. The overarching conclusion was that they already had a propensity to cycle and generally love cycling, for example, individuals started cycling in school, have experienced cycling or use public transport while travelling abroad, they cycle as a sport or have experienced/seen others cycling in their area which influenced them to try it out themselves. She covered the dominant influences that result in changing long term mobility habits, such as life events and making the connection between cycle training and commuting which assist with the required shifts towards cycling. It highlights the importance of exposing children to cycling, bike busses etc. Other aspects that may increase cycling uptake include providing a reliable back-up option e.g. being able to take the bicycle on public transport, and carpooling access. Sport cyclists are considered easier to convince to also include utility cycling activities in their day and it seems the message

of cycling to improve health and fitness will be more successful than promoting its environmental benefits, which did not appear to be top of mind with study participants.

Prof Marianne Vanderschuren from the University of Cape Town highlighted in her presentation that there is an urgent need for a systemic change in South Africa to meet the targets under the Sustainable Development Goals. She mainly focussed on mobility needs, road safety, access needs, long-term planning and life-cycle costing. In her presentation she highlighted that 23% of individuals walk to work and that it is quite disappointing that 50% of vehicle accidents involve pedestrians. She further mentioned that all spheres of government have an important role to play. Government's role is to develop, update, implement and enforce legislation, plans and guidelines. These laws, guidelines and plans should be pedestrian centric and must be enforced and transport planning practice should evolve from only looking at short term outputs to long term outcomes. Planning should be more evidence based with investment decisions moving away from traditional transport economics methods towards a consideration of the comprehensive benefits of cycling such as health, environment and economics. She concluded that whilst creating sustainable transport systems is difficult, complex and challenging we have no option but to embrace it.

Mr Martin Lov Simonsen is a Cycling Mobility Planner in the City of Aarhus in Denmark. He presented the Danish experience from the City of Aarhus in Denmark. He mentioned that cycling is a widely accepted mode of transport in Denmark and the City of Aarhus has seen a significant growth in the mode share of cycling in the city over 18 years. In Aarhus, cycling has the following mode shares:

- All trips - 17%;
- Trips less than 5km – 28%; and
- Work trips – 30%

The plan was updated in 2017 with the aim to grow cycling's mode share by 20% by 2021, Aarhus's success is based on the plan developed in 2007 with the key considerations being:

- A coherent network of bicycle routes – including cycling greenways and cycling superhighways;
- Accessibility;
- Safety;
- Bicycle parking;
- Integrated travel solutions combining modes including Park 'n Rides;
- Operations and maintenance; and
- Information and dialogue to support and enable behaviour change.

He mentioned that in order for policies to become effective, policies need to have action plans and support for local interventions.

Mr Jens Dyring Christensen from the International Labour Organisation delivered a presentation on the Pro Velo Switzerland cycling promotion programs. He mentioned that he has been cycling to and from school since grade 4 in normal and extreme weather conditions. Cycling needs to be turned into a commuting activity. Jens Dyring Christensen mentioned that there can be incentives offered at work by employers to encourage cycling. These incentives should include initiatives such as an employer to employer bike-to-work competition which will encourage employees to cycle to work every day. Jens also argued that incentives can also be offered at schools and higher education institutions through similar initiatives to entice the cycling culture into the communities.

2.3 Day 1: Parallel Panel Discussions

The Conference programme consisted of breakaway sessions divided into three panel discussions, focused on the following three themes:

1. Creating an enabling environment;
2. Advocacy and outreach; and
3. New, emerging and disruptive technologies/Innovations

The themes are briefly described below.

Theme 1: Creating an enabling environment

Exploring the South African policy, regulatory and institutional environment in relation to the growth and development of utility cycling. As key context setting, an assessment of the current situation locally, was shared and discussed. Selected case study cities and countries where major advances for cycling and NMT have taken place, following pro-cycling policy, institutional and regulatory reforms were presented.

Theme 2: Advocacy and outreach

Advocacy and promotion are key components in creating a sustained uptake of cycling as an acceptable and preferred mode of transport. Promotional activities can range from simply providing information on cycling routes and associated infrastructure, to running campaigns that aim to achieve an attitudinal shift towards cycling. Behaviour changes need to be facilitated through targeted campaigns and promotions. The session provided a platform for engagement with initiatives aimed at promoting NMT.

Theme 3: New, emerging and disruptive technologies / innovations

Emerging and disruptive technologies and innovations have significant potential to change the transport, mobility planning and development agendas in cities across the world. Within these, the adoption of low carbon-pathways and strategies are critical leverage points to grow utility cycling. The uptake of new and emerging technologies provides significant potential to help address traffic congestion and deteriorating air quality, thus positively impact the environment and the country's economy due to an increase in productivity.

2.3.1 Session A: Creating an enabling environment

Parallel session 1A:

Facilitator: Ms Lisa Seftel, an independent consultant

The discussion was initiated through a set of questions posed to the panellists. The session aimed to explore the South African policy and regulatory framework and the institutional environment, as it relates to the growth and development of everyday cycling. As key context setting, an assessment of the current situation locally, was shared and discussed. Also, selected case study cities and countries, were presented by different speakers where major advances for NMT have taken place, following pro-cycling policy and institutional reforms.

The panellists for the session were Ms Marleen Goudkamp, Deputy Director: Non-motorised Transport Integration, Design, Standards and Guidelines from the Department of Transport, Ms Alta Swanepoel, NMT Phase 2 legal service provider, from Alta Swanepoel & Associates and Ms Gail Jennings, an independent research consultant.

In her speech Ms Marleen Goudkamp highlighted the required changes and measures needed to be pursued through the national strategy, funding and institutional resourcing to make the shifts for cycling. Ms Alta Swanepoel reflected on the importance of the development of NMT bylaws and how such a process can assist municipalities. The final panellist, Ms Gail Jennings provided views on the need for policy frameworks to facilitate significant growth in cycling.

Summary of session

To enable cycling, a complete system of interventions is needed, and of key importance is to design for people not for modes - harnessing social power – given high unemployment and the high cost of transport, policy should concentrate on empowering youth and specifically women.

The National Department of Transport (NDoT) now has an NMT policy chapter (in the Draft Roads Policy), which once adopted will require the development of strategies, plans and, most importantly, dedicated funding to implement projects that will increase the uptake of Cycling in South Africa. However, it should go beyond transport to also be visible in its potential to contribute to social (health and well-

being), economic (small business developments) and environmental objectives. Therefore, the promotion and uptake of NMT across society is supported.

Key input provided by the Cities as part of the development of the by-laws included the following: (1) There is a need for more funding to create networks of connected, safe routes (rather than beautifully urban designed fragmented sections of infrastructure not meaningfully linking origins and destinations); (2) Municipalities should be encouraged to spend their funding optimally according to an agreed technical rationale that can ensure fair distribution of already limited funding allocations; (3) The need to address gaps in legislation, to enable municipalities to adapt meaningful and appropriate by-laws is supported; (4) There is a need to include planning for and regulation of trolley-pushers and animal drawn transport in urban and rural areas respectively; (5) Local authorities require dedicated personnel who focus exclusively on NMT-related functions rather than spreading duties over many departments/officials.

One of the points of view discussed in order to create an enabling environment, was the use of private motor vehicle usage. One of the panellists was of the strong view that private motor vehicle usage should not be seen as the priority (e.g. it should be made more unacceptable socially / culturally due to its negative environmental impact compared to that of cycling) and more investments should be focussed on sustainable transport and less on increasing road capacity for private cars.

Political will is the critical enabler, and the need to align and prioritise policies across departments and organisations, in accordance with a longer term strategic plan is key to implementing appropriate projects and enabling the cycling environment.

Panel Discussion highlights:

The following input was provided by participants whom identified themselves as cycling regularly:

- There is a school of thought that cyclists and cycle routes should ideally follow traffic calmed roads. However, in a city such as Johannesburg, the most direct and therefore most desirable routes to link major origins and destinations are the larger arterials. Therefore appropriately designed infrastructure interventions on these roads will be most successful in enabling cycling as a mode of transport.
- Cycling can be made safer if roads are provided with shoulders (even more important than having a cycle lane), speed control, maintenance to prevent punctures and potholes (which can be lethal to cyclists) as well as safe passing (>1.5m) (*the 1.5m regulation is proposed in the draft NDoT regulation*).
- Although dedicated cycle lanes and facilities are considered the ideal, a lack of facilities often does not stop regular cyclists. There is a risk that some advocates want authorities to implement only the ideal situation, which often results in nothing being implemented (with the ideal which is more expensive, not being funded).

- An enabling land use, housing and education planning national policy is essential to create a more walkable and cycling conducive environment – the new Department of Education policy to increase schools' feeder area radii from 5km to 30 km will cause major transport challenges, adding many more vehicle trips and reducing the possibility of many children to walk or cycle to school.

Parallel session 2A:

Facilitator: Dr Crispian Olver is the founder and CEO of Linkd Environmental Services, a Johannesburg based public policy and Research Company.

The panellists for the session were Ms Esther Schmidt of the Johannesburg Roads Agency (JRA), Ms Provia Mtimkulu of the City of Tshwane and Mr Rocky Herrmann of the eThekweni Transport Authority.

Ms Esther Schmidt spoke on the City of Johannesburg (CoJ) addressing the challenges in the transport sector affecting skills, capacity, decision making, funding and implementation.

The JRA has been most successful when playing an active role to assist in translating the guideline documents to practical implementation, taking realities on the ground into account and has developed a framework for changes and practical best fit solutions. The JRA acknowledges the need to spend more time with communities and engineers. They commit to influence better design and undertake skills transfer (to designers) throughout the design process, rather than just approving and/or rejecting designs at the end of the process. JRA requires that NMT should be integrated with every type of infrastructure project.

Ms Schmidt feels that the tipping point (getting it right) will be when the City officials can start to deliver on long term, full life cycle cost plans that are not subject to the short-term priorities of politicians.

Ms Provia Mtimkulu, reflected on the City of Tshwane's experience with implementing the University of Pretoria pilot bike share system and capacity developed to roll out future bicycle promotion schemes.

The City of Tshwane bikeshare scheme provided valuable lessons in testing the e-bike technology. Routes/desire lines were tracked for the 168 unique users which provided valuable insights in its use. Demand increased after the R5.00 fee per use was scrapped and on average there were two trips per bike per day.

The pilot project relied on the Extended Public Works Programme (EPWP) staff. One of the lessons learnt is that since the staff were only paid a stipend, they were not fully committed to the programme. This resulted in many coming late to work or missing work altogether. To mitigate this and enhance the success of a future scheme, it is recommended to use paid staff, dedicated full time to the project.

Mr Rocky Herrmann shared views on how current transport systems can be reviewed to ensure integration with the NMT network. He highlighted that eThekweni aims for an integrated transport system (going beyond only transport), where community involvement is highly emphasised, and will continue to win the trust of the community, to ensure they support and take ownership of the infrastructure and services provided.

He emphasised that for political will to implement NMT infrastructure to be created, it must be shown as a cost effective pro-poor developmental solution to real transport needs, rather than a middle class recreational activity. He feels until this is successfully done, projects will remain at pilot stage.

Panel Discussion highlights:

In the discussion following, the participants raised the following key issues:

- Developers of cycling infrastructure projects need to cycle and use public transport themselves to be able to fully understand the key design criteria.
- Lobbyists must correctly position NMT in long term planning to overcome short term political thinking.
- Well-designed Universal Access (UA) features designed for from the start, can make a significant difference and should not have a notable impact on costs (percentage-wise of overall infrastructure costs). However, it is difficult and becomes costly (if even possible) to do it retrospectively, underscoring the need to educate implementing agencies and design engineers on how to do it right, from the start.
- Tshwane has a community outreach programme and believes in active intergovernmental relationship-building, citing the 9km widening of the K69 (provincial road) which will include high quality NMT facilities on both sides of the road as a good example. The project demonstrates that the challenges of intergovernmental silos can be overcome with better communication. More of this type of integration (across Departments, Government spheres, private-public domains) is required to facilitate successful implementation.

2.3.2 Session B: Advocacy and Outreach

Parallel session 1B

Facilitator: Mr Jens Dyring Christensen is the senior enterprise development specialist at the Decent Work Team (DWT) in the ILO Pretoria office from where he heads up the International Labour Organisation's sustainable enterprise development portfolio in Eastern and Southern Africa.

The purpose of this session was to provide a platform for engagement with initiatives aimed at promoting cycling as an acceptable and preferred mode of transport. Mr Dyring Christensen commenced the session with a short survey using *Slido* (an online

survey tool). The poll indicated that most delegates travelled from home to the conference using a car and public transport. 83% of delegates owned bicycles, while only 33% of delegates used their bicycles on a daily basis. When delegates travel to work, 50% of them use a car while 26% cycle to work.

The factors which delegates cited as the biggest obstacles for NMT in South Africa, were 63% lack of infrastructure, followed by 58% of respondents who cited safety concerns,

The panellists for the session were Mr Robert Vogel who is the Chief Executive Officer of Pedal Power Association (PPA), Tim Mosdell who is the General Manager of Bicycle Empowerment Network (BEN) and Ms Tennille Taylor of Green Corridors.

Mr Vogel spoke on the use of campaigns as best practice to grow cycling, which can easily be replicated with the following key considerations. Such as it is important to consider if one wants to live in a society where one's children are driven to school or one where one can trust that they can get themselves to school.

He indicated that the uptake of cycling is entirely dependent on affordable access to bicycles. Bicycle mobility requires unlimited access to bicycles whilst bicycle activities only require limited access. Although a lack of suitable infrastructure and safety when cycling are seen as the top blockages to the uptake of cycling in reality political will and access to bicycles are more important.

Mr Mosdell's presentation focused on how South Africa can succeed in providing lower income communities with access to bikes through major bicycle distribution initiatives. He highlighted that when developing any cycling initiative, local communities should be involved from the start, building relationships that extend through the project life-cycle. It is important to take the lessons from other interventions to ensure the aims of the initiative is clear to all role-players. In his view, it is critical to ensure that there is organisational capacity to tailor the solutions to the resources that are available and should make use of partnerships within the communities.

Linked to this is the need to consider the impacts of the programme and to design the monitoring and evaluation (M&E) so that lessons can be learned, and self-correction is enabled.

In his view, factors that underpin successful distributions include access to quality bicycles, 'earnship' models whereby beneficiaries contribute towards the cost of the bicycle even if "in kind" i.e. must have some "skin in the game", safe cycling training to ensure the ability to ride safely and responsibly, follow up and ongoing support including M&E and maintenance/mechanical support post distribution is essential, distributions should be concentrated and achieve a critical mass, and agility and flexibility to meet local circumstances and contexts.

Ms Taylor shared some of the experiences of the Cycling Academy project under the Go!Durban Green Corridor Cycling collaboration. She focussed on the work done to change mind-sets to support the uptake of NMT through advocacy and outreach

programmes. She introduced the three pillars of the Green Corridor System: (1) Education, (2) Active Mobility, and (3) Edutainment.

She outlined that in their experience the keys to success included:

- focusing on the youth which provides numerous knock-on effects such as parents (particularly women) wanting to learn to ride, employing people with passion from the local communities, creating role-models and break stereotypes, e.g. the girl child not being encouraged to cycle or the either/or between sport and transport, and
- taking a holistic approach, this encompasses active mobility, education, life skills and employability.

Panel Discussion highlights:

- To overcome the social stigma associated with riding a bicycle and where the car is seen as aspirational, requires cycling role models.
- It is more likely to gain government support if evidence-based returns from projects are highlighted, when packaging projects for funding.
- In South Africa, there is an intense focus on infrastructure, leaving the advocacy aspects of growing cycling to NGOs.
- Planning based on existing travel patterns will not facilitate the growth of cycling.
- Rather than lobbying government to develop cycling, some cycling organisations are focusing on getting people to cycle through activities such as training to ride and bike busses.
- It is important to reduce bicycle acquisition costs as they are generally beyond the means of most low-income households.
- Focusing on the youth is essential, as they are the majority of our population and can help grow a cycling culture in the community.

Parallel session 2B

Facilitator: Ms Tsatsi Phaweni is the Executive Director of Qhubeka

The panellists for the session were Ms Rebecca Campbell who is the Acting Managing Director of Open Streets, Ms Lebogang Mokwena who is the Bicycle Mayor of Cape Town and Mr Robert Vogel who is the Chief Executive Officer of Pedal Power Association (PPA).

Ms Rebecca Campbell spoke on the impact of Open Streets and targeted outreach campaigns, their successes and limitations.

Open Streets is based on the Ciclovía Model from Colombia where streets are closed to vehicles on Sundays and public holidays to allow citizens free use of the streets.

Ms Lebogang Mokwena spoke on how champions for NMT can make an impact on the ground. She learnt to cycle when she moved to New York and took lessons with Bike New York. When she moved to Cape Town in 2017 she started a programme to teach women to cycle. A key learning curve from the experience gained when working with adult learners was to facilitate privacy to an extent until the adult cyclist has gained confidence.

One success story is of a lady who attended a short lesson and now commutes 12km each way between Masiphumele and Muizenberg daily, saving time and money. *Learn to Cycle* has expanded to other parts of Cape Town and into Johannesburg. The initiative is also creating new and diverse voices for cycling.

Mr Vogel was asked what would be the magic wand required for promoting the uptake of cycling. In his opinion, it would be to fill the room with non-cycling government officials who would then enable and support the uptake of cycling. It requires stakeholders from all spheres of government to participate in the NMT conference and in promotion of cycling as a mode of transport. In his opinion when it comes to safety for cyclists the question should be turned around from “What should cyclists do to stay safe?” to rather asking “What should drivers who are travelling in the safety of a steel cage do to ensure the safety of cyclists?” The law enforcement and the criminal justice system should ensure compliance of drivers.

He cited the example of the Cape Town cycling strategy and recommended that a cycling strategy for the country should be developed and used. The aim should be that government support should extend beyond just the provision of infrastructure. Cities / authorities / organisations should aim and ask for an entire network of cycling facilities – this is cheaper, more equitable and environmentally friendly than providing for cars.

Mr Sipho Mona spoke on the successes and limitations in the establishment of cycling academies and pump-tracks.

Velokhaya means “Cycling Home”. The purpose of the Academy is to take children off the streets and build champions both on and off the bike. Stories from participants in the *Velokhaya* academy programme indicate that it is a life changing experience for some participants – some individuals have discontinued substance abuse, and regard *Velokhaya* as a new home and give back to others.

The programmes include academics, running, Road Cycling and Mountain Biking as well as Safe Cycling. Limitations include the ability to sustain operations and ongoing funding – an example is the recent donation of bicycles without any support programme of maintenance. Promotion is done by word of mouth, the academy cyclists being “moving billboards” and the development of champions like Nick Dlamini who now rides on the pro circuit.

Summary of session

1. To advocate for NMT and cycling, safe environments are needed and events such as open streets help shift the communities towards accepting cycling as an effective means of travel.
2. The image of the cyclist needs to be diversified beyond sports cyclists in cycling attire so that everyone can relate. The current image excludes certain communities while there is a need to mobilise more diverse groups of communities who can advocate for NMT.
3. Mobilisation of political principals – the criminal justice system does not protect the cyclist; it is too lenient towards the motorist and if they are responsible for an accident with a cyclist there are no consequences. It is critical that the attitude of motorists is changed. There is a need for government to provide more than a cycling lane/more than a 1m on the shoulder of a road. The question is how do stakeholders lobby government officials?
4. There is an opportunity to bring manufacturing back to SA and make bicycles more affordable to reach critical mass. Even though there are a wide range of challenges to successfully expand the uptake of cycling for everyday travel purposes, people having access to a bicycle is essential.
5. The narrative should change beyond pro-cycling and include job creation, development of mechanics, training, health and many other socio-economic and environmental benefits of cycling.

2.3.3 Session C: New, Emerging and Disruptive Technologies/Innovations

Parallel session 1C

Facilitator: Ms Ashanti Mogosetsi, Technical & Media Outreach Project Associate for the United Nations Industrial Development Organization in South Africa.

The session focussed on emerging and disruptive technologies and innovations which have huge potential in influencing our environment. These new and emerging technologies are sometimes referred to as disruptive technologies. Strategies, innovations, and technologies are changing the transport, mobility planning and development agenda's in cities across the world. As such, the adoption of low carbon-based pathways and strategies are critical as leverage points to grow everyday cycling. The uptake of new and emerging technologies have the potential to address traffic congestion, deteriorating air quality; and the unintended consequence of which is positive impact on the country's economic development due to a decrease in the loss of productivity.

The panellists for the session were Stephen Narsoo who is the founder of Kite Capital, Mr Anthony Fitzhenry who is the founder of Qhubeka and Real Bicycle Co. and Mr Ivan Reutener of RHDVH Consulting Engineers.

Mr Stephen Narsoo in his presentation highlighted on how new technologies support economic development and explained that Kite Capital is a digital innovation agency that specialises in software development and digital skills training for smart city development. He stressed the opportunity NMT provides in stitching together the historic apartheid planned South African cities which provides South Africa with a unique disposition. He also mentioned that during his involvement in the Joburg 2040 Growth and Development Strategy (an aspirational strategy), the need for eco-mobility and a push for NMT combined with sustainable modes of transport, featured strong on the agenda.

He highlighted the importance of data analytics and Geographical Information Systems and the role it plays and may play in improving the planning process, in the medium to long term. To enable this, there is a need to upskill on data analytics, design processes that use data to produce solutions that are fit for the context.

It was recommended that city officials should keep the pulse on technology innovation, and apply it in city context, recommending that they attend other industry events. This will ensure we tap into the innovation and bring it back to our city government. Officials should commit to open cities for innovation and embrace emerging technologies. An example would be innovation boards to bring in outside expertise into cities and sourcing innovative thinking from the communities.

Mr Anthony Fitzhenry spoke on the support required in bicycle manufacturing to promote the uptake of disruptive technologies to prepare for the fourth industrial revolution.

Qhubeka's work with schools highlighted the need to produce quality bikes and that they could not secure enough bicycles fast enough to supply the current demand. The quality of the imported bicycles used in the bicycle distribution programmes was a major challenge since these bicycles only last around 5,000km while school children cycle for 10,000km per annum (50,000km over 5 years of high school). To meet the high demand for bicycles, it became clear that it would be a challenge to meet the demands of volume and scale with existing manufacturing processes. Currently only 200,000 bikes are manufactured per year which is not nearly enough to serve the growing population and plans to extend the distribution programme to healthcare workers and micro-business owners. Although approximately 5 million bikes are imported from China and India into the African continent, indicating significant demand across the continent.

To achieve this, the Real Bicycle Company (RBC) was established as a subsidiary of Qhubeka to design and manufacture bikes locally that are lighter and can travel at least 50,000km without failure (which is needed to get one child through high school and reduce the impact of discarded bicycles on the environment). To make this possible, a prototype had to be built for testing, but prototype development is extremely costly. RBC used fourth industrial revolution and three-dimensional printing

techniques which was made possible through a grant from Mercedes-Benz, South Africa. He emphasised the need for government to consider grants that provide initial funding for manufacturing start-ups and innovation in this space.

The bike manufacturing and assembly business offers substantial job creation and skills development in cutting-edge manufacturing techniques and innovative product design. Hubs should be developed to incubate transformational factories for small parts, alongside the auto industry (e.g. Tshwane Automotive City) to link with the world-class expertise and skills South Africa has in this industry.

The commencement of a successful bicycle manufacturing industry may realise several social and economic benefits, however, this would require further support from government, such as stabilising the SA steel industry (cited as one of the best worldwide), trade agreements and export tariffs to other African countries to ensure South Africa can compete with other African countries, China and India and government-to-government agreements in support of programmes such as Shova Kalula.

Mr Reutener spoke on creating enabling environments equipped to manage technology innovation and shared a case study of work done in rural Botswana of technology enabled solutions. This covered infra-red detection at priority signal crossings for donkey carts, and a mobile app (to an extent a Movement as a Service (MaaS), solution, improving access for rural areas by enabling a network of shared donkey carts). To enable this, Botswana is rolling out mobile broadband throughout the country.

Summary of session

For Cities to explore developmental opportunities enabled by technology, the necessary experts should be employed in Cities with skills development in the technology environment. The importance of pilot projects to reduce the risk of failed projects and ensure context specific inclusive solutions was highlighted.

Enabling the manufacturing of more bicycles in South Africa, may provide a real opportunity to open-up industry to smaller organisations that may invariably lead to job creation and specialist skills development. If the South African bicycle manufacturing industry can be geared to up to meet the local demand and produce robust bicycles at a lower cost, it can may provide South African bicycle manufacturers a competitive advantage over India and China, on the African continent.

Parallel session 2C

Facilitator: Prof Marianne Vanderschuren of the University of Cape Town: Centre for Transport Studies

The aim of the session was to provide a snapshot of low carbon-approaches and strategies, innovations, and technologies that are changing the transport, mobility planning and development agendas in cities, globally and the potential subsequent impact on the country's economic development.

The panellists for the session were Dr Hubrecht Ribbens who is an independent consultant, Professor Christo Venter from the University of Pretoria, Mr Ofentse Mokwena from the North West University and Mr Gerhard Hitge who is an independent consultant.

Dr Ribbens spoke on the role of research and innovation to support the uptake of NMT and reasoned that the bicycle (and its latest innovations) can be considered as a disruptive technology in the sense that it can alter the modal split in cities to move towards reducing the dominance of the car and increasing the modal share of cycling, e.g. e-bikes, bike share, cargo bikes, family bicycles, etc.

He referred to the NMT Index in the UN Environment Programme (UNEP), of September 2016 (Global Outlook on Walking and Cycling, 2016) which indicated that South Africa was Strong on policy and planning but weak on performance and implementation. This is a stark contrast with European countries such as Denmark, Germany and the Netherlands that are strong on performance and implementation but weaker on policy. A shift in addressing the gaps in policy for an enabling environment is required. He pointed out through international case studies, that policy reforms should be underpinned by a systems approach to discourage private vehicle use.

He mentioned a variety of technology initiatives such as the smart bicycle, bike sharing schemes (as per case studies in cities around the world and the TUKS bicycle share pilot study/demonstration project), electric cargo bikes, rain sensors and bicycle detection at traffic signals to extend green time for cyclists, cycle friendly intersection layouts to cycling campaigns in German cities.

He concluded with the need for relevant stakeholders within the policy and implementation space for NMT to understand how we can create a sustainable bicycle culture in South Africa and what the impediments are that hinder the uptake of cycling in South African cities.

Professor Venter spoke on applicable approaches / innovations and technologies in a developing country context and presented various outcomes from the University of Pretoria's bikeshare pilot study for university students. The study was based on 20 GPS tracked bicycles (half of which were electric) with detailed tracking of the bicycles, prior to and post conducted with the results indicated users a significant demand for cycling in students and the youth. The mode shift came mainly from walkers, although 15% of users shifted from driving. An unexpected creative use of these bikes were revealed in using bikes for micro-deliveries.

The results of the surveys indicated that traffic safety was not of huge concern as initially anticipated; i.e. bike lanes and traffic safety are not necessarily barriers. The bicycle tracking provided interesting insight into the origin-destination patterns of the users. It has further led to the community becoming more vocal advocates for change. The pilot study served an unmet demand which supported the assumption on how data may assist in better planning of facilities and infrastructure.

The operation needed a 75% subsidy to operate, only 25% of operational costs were covered from user fees. Therefore, this made the initiative commercially inviable. However, the study revealed significantly wider benefits than the access to bicycles.

Invariably, the benefits of first developing a pilot study with strong monitoring was highlighted to reap the benefits of understanding the performance under local conditions prior to full demonstration and potential scale-up.

Mr Ofentse Mokwena provided a perspective on the role of Research & Development and subsequent untapped opportunities.

Mr Mokwena provided an alternative view on the opportunities associated with NMT users and the physiological needs of cyclists. He elaborated on the need for appropriate clothing, footwear and headgear, considering that NMT users are highly exposed to the weather elements, conflict points and activity points. He highlighted a few innovative examples in this such as: Pavegen, a technology which generates electricity from kinetic energy and may be applied on sidewalks; Hexr, a custom-built helmet with 26% safer honeycomb structures; and Hovding, a bicycle helmet which follows the user's movement patterns to detect an accident or impact at a 0.1 second inflation rate for the world's first airbag helmet.

Over and above the key focus points elaborated upon by the panellists, carbon financing through off-set schemes was described as a new direction for the future of funding sustainable mobility. Therefore, between balancing the physical characteristics of what NMT users need, there is also a future for new types of technology which takes advantage of the inherent characteristics of NMT users to provide energy, industrial opportunities related to manufacturing of new products), and financing. (<https://hlulani.com/2019/11/16/181-disruptive-technology-and-emerging-futures-for-non-motorised-transport/>)

Mr Gerhard Hitge presented on research requirements and support needed to promote the uptake of disruptive technologies.

Mr Hitge highlighted the large amount of discrepancies in population income vs the generic approach and the use of averages as a useful measure due to the context specific nature of various precincts.

He proposed that projects should start in small precincts, which would enable cities to plan in a differential manner and based on a thorough understanding of the potential customer for NMT. Detailed understanding of the origins (the people, their age, mobility culture and spatial characteristics of where the trip is generated from as well as the destinations are required. For destinations, the need to explore the corridors traversed to reach a specific location to provide appropriate user-centric end-facilities and secondary facilities along the way are equally significant. By starting in smaller precincts, the complexity of providing for cycling can help build critical mass in a single node. Once again, the need for appropriate and adequate data collection and drawing conclusions post analysis can assist in better and informed planning for NMT.

He highlighted the benefits of using available technology such as GIS data, aerial photography and geo-tera mapping to help understand the nodes and application of agent-based modelling techniques. The need for government to fund such detailed studies that will enable a more nuanced approach to NMT planning was stressed.

Summary of session

The way cities are planned could have an important input to developing Cycling Cities. Densification of cities along transport corridors and Transit Orientated Development (TOD) is an underused concept in South African cities. Many international best practices can be found in North and South America (Curitiba, Bogota, etc where in NMT is promoted as a feeder to these public transport corridors).

The promotion of NMT towards establishing a cycle culture using cycle campaigns which gives a new meaning to NMT, the need for increased government awareness on the need for facilities and infrastructure and customer centricity in the transport planning and implementation process, are required.

2.4 Day 2

Day two of the conference was facilitated by Mr Muhammed Suleman. The plenary session commenced with a focus on the Developing Country Perspective on Cycling.

Dr Tonny Omwansa from the Transformative Urban Mobility Initiative (TUMI), in Kenya, shared his perspective on current technology development approaches which are available in Kenya. These technology solutions aim to address current drivers of urban mobility challenges, namely:

- Urbanization increasing transport demand,
- Increasing digitization: smart phones, social media,
- High rates of motorisation, and
- Climate change, i.e. GHG emissions from air pollution.

Dr Omwansa provided several examples of start-ups who used data connectivity and shared technology to respond to the mobility challenges in Kenya. These included:

- Auto-Truck E.A. Ltd, a company that assembles battery powered 3-wheeled cargo trollies),
- An Nisa Taxi, a female-owned taxi e-hailing service by women for women,
- twende, (a car-pool application using data for route optimization,
- ubabi, a van-pooling app for luxury public transport that attract affluent users
- safari express executive shuttle services, and

- Last-mile delivery applications such as: Getboda, an app for motorbike deliveries, and Obaigo, an on-the-way delivery service for last mile logistics.
- Myride, a social network for private vehicle commuters providing a communication platform, and
- The University of Nairobi (UoN) bike share programme, which was launched to make cycling a more attractive alternative for commuters and encourage health and physical exercise at UoN and surrounds.

He shared the view that the technical support TUMI provides to start-up companies that develop innovative and shared technology solutions in Kenya, can go a long way towards solving the urban mobility challenges faced in African Cities similar to Nairobi, in terms of densification, traffic congestion and inadequate, reliable public transport systems.

Mr Mike Bradley (General Manager: Cycling South Africa) and Mr Sindile Mavundla (Kalthsa Cycles) provided cycling perspectives in South Africa and discussed several problems being faced by cyclists. In addition, grassroots initiatives which promote cycling, were highlighted. These included commuting, school and social bike busses in Cape Town and the Learn2cycle classes teaching people of all ages on how to ride bicycles safely.

A select member of presenters from the panel discussions were requested to share their insightful presentations from the previous day, these included Mr Rocky Herrmann (eThekweni Transport Authority), Mr Ivan Reutener (RHDHV) and Mr Anthony Fitzhenry (Qhubeka).

3 Summary of key lessons / pointers

Ms Marleen Goudkamp (Department of Transport) in collaboration with Mr Andrew Wheeldon (Bicycle Cities) provided a summary of the proceedings and some proposals for a way forward. These, and further key points and lessons arising from the Conference sessions and discussions are summarised below.

Behavioural Change - Awareness Raising / Communication / Knowledge Sharing

- Behaviour changes to accept cycling as a form of transport need to be addressed through the promotion of cycling and advocating for immediate and appropriate initiatives with relevant stakeholders.
- Programmes that enable cycling should be encouraged, these include bike busses, youth cycling, women and adult cycling, but should consider that adult cycling learners requires one-on-one tuition so that they do not feel embarrassed about their inability to ride a bicycle.
- Out of the box thinking is needed to effectively advocate for and promote NMT. Practitioners from other disciplines, such as health benefits and social sciences

can contribute to change the way of thinking as they are able to approach challenges from a different perspective.

- Innovation through new communication platforms and applications (apps) can contribute towards NMT being recognized as a viable mode of transport. South Africa should learn from international examples and embrace best practices if and where applicable in this sector. An integrated knowledge sharing platform can contribute to all stakeholders and practitioners (planners, NGOs and government officials) being informed on developments in the NMT sector and to share research, local and international case studies as well as project experiences and lessons learnt.

Funding

- Transport funding should include a dedicated portion for NMT infrastructure (for development and maintenance), requiring funding for broad supporting programmes.
- More support to be directed to bicycle manufacturing in South Africa to ensure it is globally competitive by means such as tariffs and/or trade agreements.
- Access to bicycles is essential for growing cycling, thus distribution of bicycles should be considered as part of any cycling development programme.
- Transport funding decisions and allocations should be guided by the wider benefits of cycling rather than just considering the direct costs. Benefits of cycling (including social, economic and environmental) are extensive and are often significantly understated. Cost-benefit analysis for projects that invest in cycling infrastructure can deliver a seven to eight-fold return on investment, the highest among all transport forms when considering the full life-cycle.

Policy, Planning, Implementation and Monitoring & Evaluation

- Systemic change is required in all planning approaches (including transport) in support of the Sustainable Development Goals (SDGs). Thus, whilst creating sustainable transport systems is difficult, complex and challenging, there is a need to persist and ensure dedicated, wide-spread and collaborative efforts in support of this agenda.
- Transport policies need to reflect modal share targets for sustainable transport systems supported by appropriate systems and services that are essential and are accepted and in existence in other countries. Policy initiatives such as the current wide-spread promotion of Transit oriented developments (TOD) in cities and Integrated (Rapid) Public Transport Systems (ITPS) must consider all modes of transport and NMT should be at the core of such programmes.
- Unless national and local legislation, frameworks and guidelines are upheld or enforced, a shift towards cycling as a key mode of transport in its own right is unlikely to materialise.

- Planning for the NMT sector should change to a long-term focus, informed by an evidence-based methodology and take a comprehensive life-cycle cost-benefit approach.
- South Africa needs to implement the NMT sector plans it develops and obtain local government required funding to fulfil and implement their NMT plans.

A successful cycling plan should encompass:

- ✓ A coherent network of bicycle routes – including cycling greenways and cycling superhighways;
- ✓ Accessibility;
- ✓ Safety;
- ✓ Bicycle parking;
- ✓ Integrated travel solutions combining modes, including Park 'n Rides;
- ✓ Operations and maintenance;
- ✓ Information and dialogue to support and enable behaviour change.

This should be a checklist of every NMT plan.

- Community engagement and site visits by the client and consultants should be compulsory in all transport projects to ensure responsible planning approaches and solutions.
- When design engineers are appointed, authorities should ensure that the team has the requisite NMT design skills and should include everyday cyclists.
- Planning approaches need be more innovative to ensure viable solutions. Seeking perfect solutions (such as extensive, fully segregate cycleways) hinders the development of cycling, and innovative, but safe alternatives should be developed.
- Pilot schemes/demonstration projects should be used to facilitate learnings and ensure more innovative and context sensitive solutions.
- All NMT projects should include well designed M&E to enable learning and self-correction.
- Adequate and appropriate organizational capacity within all tiers of government to understand and meet local circumstances and contexts with agility and flexibility is essential.

- E-bikes need to be provided for, since the current policy landscape does not fully embrace this type of vehicle. Agile policy amendments to accommodate for new and emerging technologies and innovation are required.
- South Africa should learn from international technology advances and should keep abreast of advances in information technologies and communication networks, both in terms of new platforms and apps as well as mobility solutions or products (such as e-bikes), to ensure policy and legislation does not lag.
- Policies should focus on empowering all to cycle and place an added focus on youth and women to cycle.
- Bicycle distribution programs should be maintained and expanded. It was found that the academic performance in schools had significantly improved where learners who had to walk long distances were provided with bicycles. Such programs not only deliver short term benefits, but research shows that people that have previously cycled either as a sport or at school will more easily become utility cyclists when grown up, which is a long term benefit. Therefore there are long term and short term benefits to supporting, maintaining and expanding bicycle distribution programs.

4 Way forward recommendations

Arising from the Conference the following recommendations:

- Significant progress is still required in South Africa before cycling will be recognised and funded as a key mode of transport. This requires a collaborated effort between all sectors of government, NGOs and the general public.
- The funding mechanisms for NMT infrastructure and systems, bicycles and awareness campaigns need to be significantly increased and ring fenced at all levels of government. Unless NMT and specifically cycling is provided with dedicated funding based on full benefit analyses and which consider the through full life-cycle costs both of systems and behaviour change programmes the uptake of cycling will not significantly increase;
- To meet commitments and long-term goals, political and government officials will be required to evolve from planning to sustainable delivery. Pilot projects with M&E that consider outcomes should be initiated and used as a means of learning for local contexts. Implementation needs to be based on complete routes that enable and encourage movement safely rather than ad hoc and interrupted linkages;
- DoT-facilitated and coordinated working committees can help build on the key findings/outcomes around NMT pilot projects and develop a way forward as to how local authorities can benefit from and contribute to these pilot projects;

- DoT to consider and develop appropriate mechanisms of funding bicycles and behaviour change initiatives as part of the National Cycling Strategy, including user subsidy options or bicycle commuter tax benefits; and
- Each local authority should fully embrace cycling as a key mode of transport in its own right by ensuring the required institutional structures are in place.

5 Closing of the Conference

To close the conference, Ms Leanne Richards thanked KfW for funding the initiative and highlighted the value of the partnership between the South African and German Government for creating programmes such as this. She thanked all the role-players who made the Conference a success, as well as everyone present and urged everyone to continue the dialogue on NM

