



**Master Plan for Sustainable Transport for
Ohangwena, Omusati, Oshana and Oshikoto Regions
June 2017**

Project Summary



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Ohangwena, Omusati, Oshana and Oshikoto Regions
June 2017**

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The responsibility for the project and its implementation lies with
the Ministry of Works and Transport

Consultancy service provided by



in consortium with



and



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Foreword by the Honourable Minister (MP) of Works and Transport



After the success of the "Move Windhoek" project and the Sustainable Urban Transport Master Plan, the next priority in the working field of Sustainable Mobility was to develop a clear direction for transport over the next 20 years at a regional level in Namibia, starting with the four central Northern Regions.

We recognise that the Ohangwena, Omusati, Oshana and Oshikoto regions, as the most populated areas of the country, have more specific transport needs and priorities which should be considered and planned for.

The Ministry choose a participatory planning process for the Sustainable Transport Master Plan to ensure that it meets the needs of the communities in the four regions, within the constraints of our resources and within the environment in Namibia. The planning process began in October 2014, and after extensive consultation with stakeholders throughout 2015, the Scoping Study Report providing a diagnostic of the transport system and its challenges was presented and approved by the steering committee. In 2016, the master plan development has been launched and the work culminated in 2017 with the presentation of the Final Sustainable Transport Master Plan for the Northern Regions at hand.

The Master Plan builds on the work of sub-sectoral plans, in particular the 2008 Road Authority Road Network Development Plan, which was revised and updated for the period 2016-2023. In respect of infrastructure development it has become a core part of this Sustainable Transport Master Plan.

However, the aim of the Master Plan was to go beyond infrastructure planning and in particular includes projects and measures to improve public transport services, traffic management, walking, cycling, transport services in remote rural areas as well as cross border transport, road safety and environmental issues.



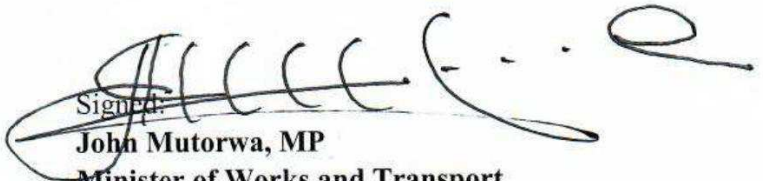
This Sustainable Transport Master Plan for Ohangwena, Omusati, Oshana and Oshikoto regions outlines specific actions to address the unique challenges of the area and includes the measures and projects the stakeholders considered important during consultations. The plan will ensure that the transport system in the four regions is effective in meeting the needs of residents and businesses by responding to the priorities expressed by them, tackling transport challenges, and addressing the expected changes over the next 20 years.

The plan will pursue this vision by developing actions in six key intervention areas: urban areas, peri-urban areas, remote rural areas, travel and transport to and from the regions, cross-cutting issues (road safety, social, environmental) as well as capacity building and training.

The implementation of the Sustainable Transport Master Plan will improve the customer experience for intraregional and inter-regional journeys and for visitors to the region. Infrastructure solutions focused on the region's road network will enable customers and goods to reach their destination more reliably and more safely.

For public transport users, passengers will see service improvements and better connections to key destinations. The plan looks at the importance of planning for the future in the four regions taking into account a forecast growing population, especially in urban areas, and the long distances travelled by those who live in the regions' remote areas to access services and facilities.

I am grateful to everyone who took the time and has participated in the planning process. Like for all good plans, continued consultations will be undertaken to make sure this Sustainable Transport Master Plans remains relevant to the people's needs and continues to strengthen the communities.

Signed: 
John Mutorwa, MP
Minister of Works and Transport

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Acronyms and Abbreviations

CEO	Chief Executive Officer
CRO	Chief Regional Officer
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH
GOPA	Gesellschaft für Organisation, Planung und Ausbildung mbH
GRN	Government of the Republic of Namibia
LA	Local Authorities
MOE	Ministry of Education
MOF	Ministry of Finance
MURD	Ministry of Urban and Rural Development
MVA Fund	Motor Vehicle Accident Fund
MWT	Ministry of Works and Transport
NABTA	Namibian Bus and Taxi Association
NAC	Namibia Airports Company
NamPol	Namibian Police
NaTIS	Namibia Transport Information System
NMT	Non-motorised Transport
NPC	National Planning Commission
NPPTA	Namibia Public Passenger Transport Association
NRSC	Namibia Road Safety Council
NTTU	National Transport and Taxi Union
NUST	Namibia University of Science and Technology
PIU	Project Implementation Unit
PSC	Public Service Contract
RA	Roads Authority
RC	Regional Council
RFA	Road Fund Administration
SADC	Southern Africa Development Community
WBCG	Walvis Bay Corridor Group

Executive Summary

The Master Plan has been divided into two parts:

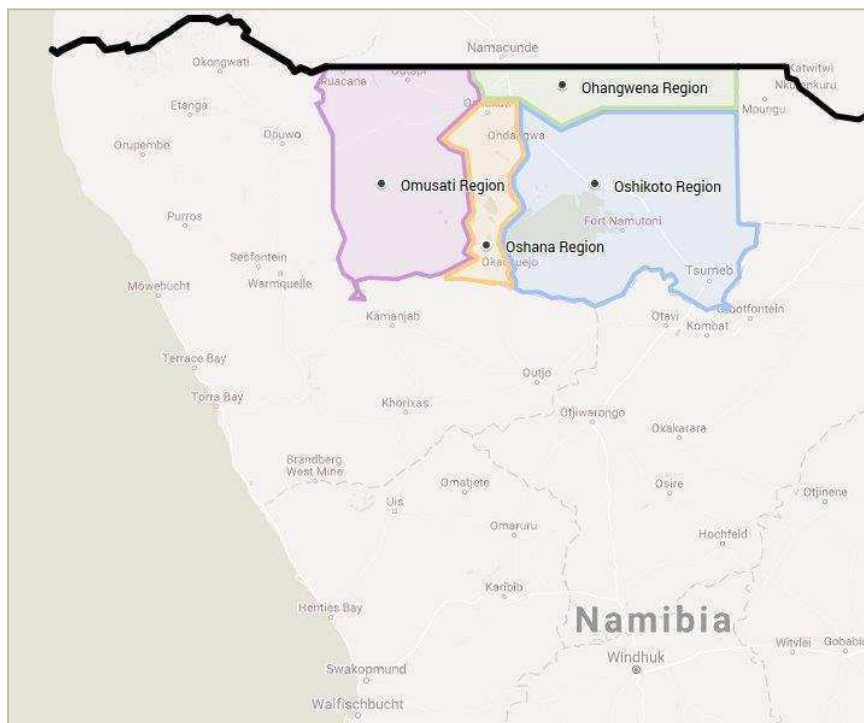
1. a Diagnostic Report; and
2. the Sustainable Transport Master Plan.

The Diagnostic Report

The Ministry of Works and Transport (MWT) and the Ministry of Urban and Rural Development (MURD) joined forces with the concerned Regional Councils (RCs) and Local Authorities (LAs) to roll out a sustainable transport project to the four northern central regions, namely Omu-sati, Ohangwena, Oshana and Oshikoto, thereafter referred to as the Four Regions.

The project has been supported by the German government through the German Federal Ministry for Economic Cooperation and Development and its implementing agency Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

Figure 1: The four northern central regions



Source: Consultant

The Four Regions have strong socio-economic development potential and opportunities that need to be further advanced by improving transport **accessibility, mobility, and connectivity**, which is the purpose of the Sustainable Transport Master Plan.

Accessibility measures the availability of transport to key services at local level, such as stores, education and health care centres or employment centres.

Mobility measures the time and cost required for travel. Mobility is higher when average travel times, variations in travel times, and travel costs are low.

Connectivity is a measure usually applied to longer journeys that access selected, significant destinations; the focus here is on access to particular strategic destinations including regional centres, ports and airports, rail stations, bus stations and major road junctions.

In this context, the Master Plan is to develop a set of strategic interventions or initiatives that assist the MWT, the MURD and the concerned RCs and LAs in delivering improved transportation infrastructure, facilities and services which meet the needs and expectations of users.

This project was devised as a direct result of the government's observation that the planning of service delivery, including transportation, needs to improve if the aims and objectives of Vision 2030 and the National Development Plans are to be achieved. Government has singled out transport as a key sector that enables economic growth and related economic benefits, including poverty eradication.

The Sustainable Transport Master Plan study was carried out in a phased approach, consisting of a diagnostic (scoping) phase in 2014/2015, followed by a master plan phase in 2016/2017.

During an extensive stakeholder consultation programme (16 meetings in 2014/15

and 6 meetings in 2016/17) including local, regional and national stakeholders, the project team captured all necessary data and information required for the planning process.

Various line ministries had an interest in and were involved in the project. The most concerned ministries after the MWT and MURD were the National Planning Commission, the Ministry of Health and Social Services, the Ministry of Safety and Security (NamPol), the Ministry for Education, Arts and Culture, the Ministry of Agriculture, Water and Forestry and the Ministry of Finance. Among the state-owned enterprises, at the national and regional level, the Roads Authority, TransNamib and Namibia Airports Company were key partners to provide guidance and exchange information and data for the elaboration of the Master Plan.

Regional Councils and Local Authorities appointed focal persons for the project and participated actively in the Steering Committee and Technical Committee Meetings.

The National Road Safety Council (NRSC) and the Motor Vehicle Accident (MVA) Fund provided essential inputs to the planning process, in particular regarding road safety issues. For cross-border and trade issues, the Walvis Bay Corridor Group was the main coordinating body.

Important interlocutors of the project in the areas of capacity building and training issues were the University of Namibia (UNAM) and the Namibia University of Science and Technology (NUST). Also the transport (taxi) associations, Namibian Bus and Taxi Association (NABTA), Namibia Public Passenger Transport Association (NPPTA) and National Transport and Taxi Union (NTTU), collaborated intensively

with the project, providing their views and recommendations for the important topics of transport services' provision in both the urban and rural areas of the Four Regions.

Last but not least, numerous bilateral meetings were held with local level key interlocutors, incl. Mayors of the main cities, RC representatives, headmen in remote areas and representatives of special interest groups.

The project developed a designated website and social media accounts to facilitate civil society engagement. The social media were also intensively used by the public to provide ideas for improvement of the transport system in the Four Regions.

Figure 2: Screenshot of the T4P website



Key issues to be addressed

The key issues to be addressed by the Master Plan were identified, based on

- the review of available information and secondary data;
- the issues/concerns and challenges raised by stakeholders during the consultation process; and
- the findings from additional data collection and analysis by the consultant.

Figure 3: Origin-Destination roadside interviews in June 2015



Photo: Consultant

The identified transport issues were very similar throughout the Four Regions and could more easily be structured by spatial areas or transport topics rather than on a region by region basis. An overview of

the key transport issues identified and subsequently addressed by the Master Plan is presented in Table 1 below.

Table 1: Regional characteristics and transport issues by area/transport topic

Regional characteristics	Area/topic	Transport issues
Rapid population growth in main settlements	Urban areas	<ul style="list-style-type: none"> • Insufficient quality and affordability of public transport services • Lack of effective regulation of transport services • Insufficient promotion of the role of NMT in facilitating urban mobility • Lack of integrated planning of urban development and transport • Lack of systematic application of best practice solutions in urban transport infrastructure and traffic management
Unplanned urban development in the vicinity of cities and along main transport corridors	Peri-urban areas and inter-city transport	<ul style="list-style-type: none"> • Insufficient availability and affordability of public transport services • Lack of effective regulation of transport services • Insufficient promotion of the role of NMT in facilitating urban mobility • Cumbersome and expensive travel between major towns in the Four Regions
Increasing gap between living standards in remote rural areas and urban areas	Remote areas	<ul style="list-style-type: none"> • Limited or no access to all year roads • Limited or no access to public transport services • Insufficient promotion of the role of NMT in facilitating rural mobility
High importance of transport infrastructure in supporting Namibia's economic development and the country's role as a regional logistics hub	Travel and transport to and from the regions	<ul style="list-style-type: none"> • Capacity constraints and safety and environmental problems along main road axes • Ineffective passenger and freight transport services between Oshikango and Tsumeb • In spite of important infrastructure improvements insufficient connectivity by air • Time consuming and expensive cross border transport and transit
Awareness of the increasing importance of transport safety, equity and sustainability issues	Cross-cutting issues (road safety, social, environmental)	<ul style="list-style-type: none"> • Lack of a systemic approach in tackling severe road safety problems • Lack of consideration for the transport needs of lower income groups and of people with disabilities and/or special needs • Constant increase of transport related emissions of pollutants and CO2
Limited planning and implementation capacity of concerned entities in a decentralised context	Capacity building and training	<ul style="list-style-type: none"> • Institutional capacity constraints in transport planning and management • Lack of sufficiently qualified professionals in transport and logistics operations • Overlapping and functional 'gaps' in transport management functions

In a sub-sectoral review, in particular the following key issues were identified:

Road infrastructure development

In absolute terms, the road network in the Four Regions is substantially developed as shown in Table 2.

Table 2: The road network in the Four Regions

Region	Bitumen	Earth	Gravel	Proclaimed	Total	% of total
Oshikoto	513.0	396.4	649.3	201.6	1760.3	35.18
Oshana	126.0	123.0	193.1	130.2	572.3	11.44
Omusati	566.9	209.5	518.8	301.5	1596.7	31.91
Ohangwena	282.6	222.1	237.5	331.1	1073.3	21.45
Total	1488.5	951.0	1598.7	964.4	5002.6	100.00

Road maintenance is still a problem in the country and the Four Regions are not immune to the sensitive issue of efficiently balancing investments in construction of new roads and for the maintenance of the existing network.

Based on the results of the road condition surveys of the OOOOK (Oshikoto, Oshana, Omusati, Ohangwena and Kavango Road Network Development Plan), the majority of the RA roads surveyed within the

Ohangwena and Oshikoto regions were classified as good or average, whereas the RA roads in the Omusati and Oshana regions were classified as average, poor or very poor.

The majority of the tracks surveyed in the Four Regions are in either very poor (14%) or poor (49%) conditions.

Figure 4: Overall condition of the RA roads (all types) surveyed in the Four Regions (km)



Source of data: RA-Aurecon OOOOK Road Network Development Plan

Figure 5: Overall condition of the RA tracks surveyed in the Four Regions (km)



Source of data: RA-Aurecon OOOOK Road network plan development Plan

Between now and 2030, there are plans to increase the network of tarred and gravel roads in the Four Regions by 1,426 km or 46% of the road network existing there (see Table 3 below). The GRN is making large efforts to improve the ratio of kilometres of road per inhabitant.

However, with an average of 2 km/1000 inhabitants the density of paved roads is thirty eight percent less in the Four Regions than at the national level where the ratio is around 3.2 km/1000 inhabitants.

Table 3: Major road projects underway and/or planned between 2014 and 2030

Regions	Kilometres	Implementation	Estimated costs (NAD million)
Ohangwena Region	301	2016-2030	424.0
Omusati Region	358	2016-2030	396.5
Oshana Region	149	2016-2030	179.3
Oshikoto Region	378	2016-2030	234.9
<i>Specific relevant interregional projects</i>			
Ongwediva-Ondangwa-Omuthiya*	142	2014-2019	3,486.2
Omafo-Ongenga-Outapi	98	2014-2018	856.5
TOTAL	1,426		5,587.4

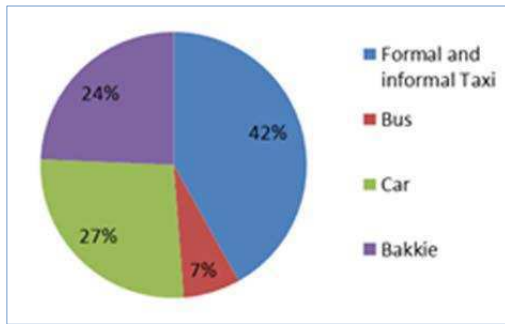
* Extension of these C46 and B1 segments to dual carriage way.

Source: Bank of Namibia and RA

The Roads Authority manages the road network and contracts public and/or private operators for road construction, maintenance and rehabilitation. For de-proclaimed roads, maintenance falls under the jurisdiction of Local Authorities and is funded by the Road Fund Administration (RFA), with grants also being received from the State

Revenues Fund, channeled via the MURD. Despite the large investments in the road network there is currently a low level of vehicle ownership in the Four Regions. For the entire country, there is currently an estimate of 110 vehicles per 1,000 persons compared to only around 14 vehicles per 1,000 persons in the Four Regions.

Figure 7: Passenger modal split taking into account informal taxis



Source: Consultant based on OD survey results, 2015

The RA manages the Namibian Transport Information and Regulatory Service (Na-TIS) through 32 offices countrywide, either directly or, in most cases, through local authorities. The main services provided by these offices are:

- vehicle registration and licensing;
- roadworthiness testing;
- driver testing and licensing; and
- applications for temporary and special permits.

Enforcement is entrusted to the Traffic Police and to the Roads Authority for heavy vehicles of more than 3.5 tons. The important share of informal not registered taxis in urban areas of the Four Regions is a clear indicator that the industry lacks regulation and control. Some individuals apply for multiple permits in order to rent these permits out to owners of unregistered taxis. Social issues resulting from unemployment are another impediment for the needed reform of the taxi industry.

Public transport services in remote areas

Out of the agricultural households interviewed in 2014 by the National Statistics Agency, almost 70% answered that they

were located at less than 2 km distance of “public transport” and 72% at less than 2 kilometres distance of an all-year gravel road. The survey does not detail the situation by region and it could be that the situation in the Four Regions deviates from the national average. However, as 76% of Namibian agricultural households live in the Four Regions, this average clearly indicates progress also for the Four Regions, because otherwise the average would be much lower.

At the same time, many residents still live at more than 2 km of a gravel or tarred road. In the Four Regions, ‘conventional’ transport services (buses, minibuses and taxis) tend to operate only on inter-urban roads, and in urban and peri-urban areas. They seldom operate on the smaller gravel ‘feeder’ roads or the sandy tracks between remote villages and the road network. Overall, residents also have few transport options, because most households do not own any form of motorised transport. The options are: walking and carrying - the default option for most people, cycling for the few people owning bicycles or travelling in someone else’s bakkie.

Although public transport by bakkie (light pickup truck) is legally forbidden, NamPol does not enforce the law in more remote areas, as bakkies often are the only means of transport access for the rural population there. However, bakkies present many problems because they are not operated on schedule and in most cases cannot be relied on. They can also be expensive, particularly if their owners have to be persuaded to make special trips. Passenger fares are typically NAD 10 to 20 per person per trip for distances of, say, 7-20 kilometres. Products and goods are charged in addition.

Figure 8: A bakkie in a rural area



Photo: Paul Starkey

During many discussions with residents of remote areas it became clear that the issue of normal fare prices and comfort of bakkies are not the main concerns of people in remote villages. The more important issues are the uncertainty and unpredictability of bakkie transport.

Rural people would obviously prefer lower fares, with greater comfort and safety, but what they say they really need are transport services that are available and timely.

Non-motorised transport

Non-motorised transport, mainly walking and cycling, have so far been largely neglected in the Four Regions. Few sidewalks are available and are usually only found in the vicinity of shopping centres. Pedestrians mostly walk on the sandy road reserve. Cycling is very limited because using the road is too dangerous and cycling in the sand is inconvenient.

However, in remote areas, some residents use bicycles for short distance trips. There is no public entity yet that systematically addresses NMT policy.

Railway transport

The situation of the railway service between Tsumeb and Oshikango, is critical.

Although the Tsumeb-Omuthiya-Ondangwa-Oshikango railway has been rehabilitated and can support up to 100 km/hour speed, the number of passengers is negligible.

TransNamib operates a daily mixed passenger/freight train in both directions. A main reason for the low occupancy is that the train schedule is not suitable for business travel, as it leaves at around 08.00 and only arrives at around 12.30-13.00 in Ondangwa. Travelling speed is between 60 and 70 kilometres per hour on average and in theory the running time is four hours. However, there are six stops at stations, where the train sometimes has to wait for freight wagons to be added or removed.

Figure 9: The Ondangwa railway station



Photo: Consultant

As part of its large infrastructure projects, TransNamib started the construction of the railway on the Ondangwa-Oshakati route (28 kilometres). The project is expected to be completed by the end of 2018.

Air transport

Air transport to/from Ondangwa Airport is reliable, timely and efficient. Despite the developmental work at the airport, Ondangwa Airport handled 2,477 aircraft movements and 41,429 passengers in 2015. Ondangwa Airport also improves connectivity for southern Angola and additionally serves as a refuelling stop for flights to Central Africa and beyond.

Figure 10: New terminal at Ondangwa airport



Photo: Consultant

The Namibia Airport Company (NAC) has also upgraded/strengthened the runway and airside taxiing, as well as apron facilities. The current rehabilitated runway is sufficient to accommodate planes such as the Airbus 319.

The new airport terminal building at Ondangwa has been opened with customs and immigration facilities to receive international travellers. The new terminal building with its adjacent public parking offers more extensive short and long-stay parking, shops, car rental offices and other amenities. The introduction of cargo and warehouse storage facilities is being planned along with the development of a hotel facility at the airport.

There is now high potential for additional measures to increase the attractiveness of the airport as an international flight destination.

Cross-border transport and transit

The Four Regions also have important cross-border trade flows and traffic at two border posts (Oshikango and Omahenene)

with Angola. Because of the current weak state of transport infrastructure development in Angola, the southern part of Angola is currently better served via the Namibian route from Walvis Bay than through the Benguela port in Angola. The Trans-Cunene corridor amounted to up to 50% of the Walvis Bay Corridor Group (WBCG) trade flows before the recent oil price decline and resulting shortage of hard currency in Angola.

The Trans-Cunene corridor is serviced by Road (the B1) and by Rail (Tsumeb-Oshikango) with a direct connection from Walvis Bay. But to date, Namibia and Angola did not yet make significant progress in the creation of a one-stop border post at Oshikango/Santa Clara. SADC and the 2015 Master Plan for Development of an International Logistics Hub for SADC Countries in the Republic of Namibia identified this border post as a top priority, along with the construction of a railway connection in Angola to Santa Clara and onwards to Oshikango.

The recent decision by Angola to start using the customs management system in use in Namibia ("ASYCUDA", used by the Namibian Customs) in Benguela port and Luanda Airport should increase the potential for harmonisation of customs procedures.

Figure 11: Railway freight station at the border in Oshikango



Photo: Consultant

There are currently also security problems in Oshikango, which are related to cross-border illegal trade, crime as well as alleged human trafficking, and health problems. The preferential regime for commuters, who are living at a short distance from the border and who also do not need passports to enter Namibia, is currently prone to facilitating fake identity documents.

Cross-cutting issues

Finally, cross-cutting issues such as road safety and the environment were given high priority in the development of the Master Plan. Namibia is a country that has very severe road safety problems. According to the MVA Fund's 2016 Road Crash and Claims Report, the fatality rate (fatalities per 100,000 people) increased to 34.0 in 2015 and 34.6 in 2016, which is not only high by international standards but also very significant when seen in relation with the low number of vehicles in the country.

According to the same source that only considers crashes involving injuries and deaths, the leading crash types in Namibia during 2016 were roll-over crashes (29%), followed by collisions (27%), and crashes involving pedestrians (23%). Khomas (Windhoek) and Oshana Regions constitute an exception here in that crashes involving pedestrians are by far the most important group. These accidents amount to 36.8% in Khomas region and to 32.6% in Oshana, which can most likely be attributed to the high importance of urban (pedestrian) traffic in these regions.

Based on discussions with the National Road Safety Council (NRSC) and the Traffic Police in the Four Regions, key reasons for the critical road safety situation are dangerous driving and overspeeding. As an aggravating factor and contrary to the south of the country, there are also many animals on the roads in the Four Regions.

According to the NRSC, head rear-end crashes continue to be the most frequently occurring road accident, while collisions with animals come second because long road sections are not fenced. While there is conflicting data regarding the relevance of animal related crashes as a road safety issue, there have been frequent press reports about deadly crashes with involvement of animals in the Four Regions.

Figure 12: Donkeys on a main road



Photo: Paul Starkey

Consequently, more data need to be obtained and analysed in order to provide a clearer understanding of the nature of the crashes in the study area. Detailed location data of crashes is currently not available, so that only the types of crashes can be analysed. Also, no record is provided of the speed at the time of the incident.

High priority should accordingly be placed on strengthening the Road Safety Information Management System of the National Road Safety Council (NRSC) in close coordination with the Traffic Police and the MVA Fund.

Environmental concerns regarding transport, but for dangerous goods, are not yet worrying but should be given due attention in the medium- and long-term, taking into account the projected traffic increase. The main thrust for the Master Plan will accordingly be to initially promote improvements of public transport services and NMT, while in the longer-term also the use of private passenger vehicles should be more strictly regulated.

The Master Plan

The underlying vision of this Master Plan is to develop a regional and inter-regional transport system which

- connects all residents and places;
- is reliable, effective, efficient, environmentally friendly, sustainable and safe for transport users;
- supports both urban and rural development, mitigating the impact of rural migration on peri-urban areas ;
- is a strong asset for the trade between Namibia and the neighbouring countries; and
- meets the needs of transport users at improving levels of service and cost in a fashion which supports government strategies for economic and social development.

Six areas of intervention were identified and are listed in Table 4 below:

Table 4: Project objectives per intervention area

Intervention area	Objectives
Urban areas	<ul style="list-style-type: none"> • Reduced transport costs • Higher mobility • Competitive public transport industry, based on effective regulation • Integrated urban planning and transport/traffic management • Higher quality of life for urban residents
Peri-urban areas and inter-city transport	<ul style="list-style-type: none"> • Reduced transport costs • Higher mobility • Better connectivity within the Four Regions • Better access to jobs and services • Competitive public transport industry, based on effective regulation • Integrated transport infrastructure • Higher quality of life for residents of peri-urban areas
Remote areas	<ul style="list-style-type: none"> • Reduced transport costs • Better access to jobs and services • More economic and social opportunities for rural residents • Higher quality of life for residents of rural areas
Travel and transport to and from the regions	<ul style="list-style-type: none"> • Reduced transport costs • Better connectivity to and from the Four Regions • Reliable and quick cross-border transport • Enhanced trade within Namibia and internationally
Cross-cutting issues, i.e. (road) safety, social, environmental issues	<ul style="list-style-type: none"> • Safety across all modes of transport, prioritising the safety of vulnerable road users (pedestrians, pupils and cyclists) • Inclusive transport system considering the ability to pay for transport services • Better access to jobs and services, including for people with disabilities • Reduced vehicle emissions
Capacity building and training	<ul style="list-style-type: none"> • Sustainable integrated transport/land-use planning capability at RC/LA level • Sustainable public transport management capability at RC/LA level • Sustainable rural transport project planning and preparation capability at RC/LA level • Pool of qualified professionals in transport and logistics operations • Sustainable transport project cycle management capability at RC/LA level

The Master Plan for the Four Regions will serve as a guiding document for the implementation of measures and projects that influence travel behaviour and increase accessibility, mobility and connectivity over the coming two decades. It will also support a shift to a more sustainable, socially inclusive and resilient transport system in line with the objectives defined in the table above.

Figure 13: A bicycle way in Windhoek



Photo: Consultant

Thirty project interventions and measures to improve regional transport (service) delivery were proposed as a result of the initial scoping study. These projects and measures took into account the issues, concerns and challenges stakeholders raised during the consultation process.

Additional projects were added during Phase 2 and the OOOOK Road Network Development Report and other planned large road infrastructure projects were also integrated in the Master Plan. These important infrastructure projects were not subject to screening and detailed evaluation in the Master Plan as they have already been planned by the RA or can be considered the logical continuation of already ongoing large projects.

The proposed measures were then assessed using a screening methodology, based on the following criteria:

- **Cost-effectiveness:** meaning that the relative costs and outcomes of an identified measure are used to assess the extent to which it provides value for money;
- **Financial sustainability over the longer-term:** the cost to operate and maintain a measure should be fundable from the authorities' annual revenue budget; the benefit of the measure to the community is clearly understood and supported by the Chief Regional Officers (CROs) and the Chief Executive Officers (CEOs) of the concerned regional councils and local authorities;
- **Promotion of equity:** the benefit of measures for lower income groups and people with special needs (e.g. women, elderly people or people with disabilities) can be clearly shown, for instance when measures lead to an increase of mobility, income opportunities or improve the access to social services;
- **Involvement of the communities within the vicinity of the measure;**
- **Public-private partnership potential:** a public-private partnership approach such as a Public Service Contract (PSC) or a concession contract is possible. A long-term commitment between a public authority and a private/public entity has been considered as a kind of PPP.

Figure 14: Situation after implementation of the scheduled bus service



Source: GIZ

On this basis, the following measures and projects in the six interventions areas were prioritised that will be instrumental in reaching the defined objectives:

Urban areas (services)

UA

- introduce scheduled public bus services on routes where there is sufficient traffic (urban and peri-urban areas and inter-city transport)
- contribute to the gradual modernisation of the taxi system at the regional level
- manage the traffic in the busiest towns of the Four Regions (urban areas);
- improve the management of the road reserve in towns (bus stops, parking lanes, NMT facilities) by transferring it to the LAs, based on an agreement with the RA and training of concerned LA staff (urban areas);
- arrange better transport links to and within regional towns, including phased construction of NMT facilities

Peri-urban and inter-city (services)

PU

- introduce scheduled public bus services on routes where there is sufficient traffic
- contribute to the gradual modernisation of the taxi system at the regional level
- make walking and cycling easier and safer, and provide customers with a better choice of transport (service) options when travelling within or to their municipalities
- use the potential of the railway for passenger and freight transport, starting with the separation of freight and passenger trains; in the medium to longer term, passenger railway services should become an effective and economically viable alternative to road transport

Remote areas (services)

RE

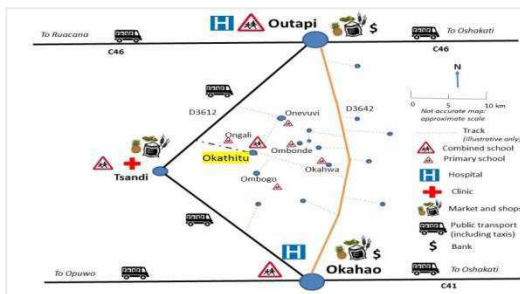
- contribute to the development of the rural areas in order to balance the rural-urban migration trend, by facilitating access to transport services for the population in remote communities, including people with disabilities
- extend the gravel and/or low volume sealed road network in line with the existing and future RA road network development plans, so that the vast majority of residents in the Four Regions live at a distance of less than 2 km from an all-year road
- make walking and cycling easier and safer, and provide customers with a better choice of transport (service) options when travelling within or to their municipalities

Travel and transport to and from the regions

TR/
AV/CB

- maintain and improve the trans-Cunene corridor and the access to the (former) trans-Caprivi corridor to Zambia and DRC
- upgrade the B1 between Tsumeb and Oshikango and the C46 and C45 between Outapi, Ondangwa and Eehnana in accordance with their function as the backbone of the transport system in the Four Regions
- improve border management and security at the Namibian-Angolan border
- study the feasibility of rehabilitating the complete runway of the Ondangwa Airport and promote the Ondangwa Airport as an international destination

Figure 15: Pilot area for rural transport improvements



Source: Consultant

Figure 16: Air Namibia Embraer Regional Jet (ERJ 135) at the airport in Ondangwa



Photo: Consultant

Cross-cutting issues

RS/
ENV

- implement a comprehensive action programme to improve the road safety situation in the Four Regions in an integrated way

Capacity building and training

CBT

- support the implementation of the Master Plan by providing support for institutional development and capacity building

Figure 17: A roadside breathalyzer test in the Four Regions



Photo: Consultant

The Master Plan includes projects for implementation over the short (up to 5 years), medium (5-10 years) and long (10-20 years) term. Many of the 41 proposed short-term measures will be pilot projects, which can be gradually extended to the other municipalities and/or regions during the Master Plan's implementation period, subject to the confirmation of their cost effectiveness.

These short-term measures are described in more detail in the MP than the 43 medium- and 27 longer-term ones. A synthesis of projects is presented in Figure 18 below:



Urban areas (services)

Short-term 2018 - 2022

Establish a reliable, timely and safe bus system between Ondangwa and Ongwediva. Is based on a public service contract (PSC), contracted and controlled by public authorities.

Budget: NAD 22,480,000

Extension of bus service - route Oshakati-Ongwediva-Ondangwa

Upgrade components of the bus transport system: bus shelters, bus stops, improved public information at bus stations and integrate with other transport modes (taxi, NMT, motorcycle taxis).

Budget: NAD 1,000,000

Improvement of public transport, in liaison with the MoveWindhoek project

Develop a framework to define the framework for taxi call centres and to set up a call centre. Hire qualified staff / provide training.

Responsible: MWT & LA

Budget: NAD 600,000

Support for setting up a call centre in Oshakati

Establish a traffic management centre in one municipality, possibly in Ondangwa. Define monitoring area, equipment needed and a staffing plan. Prepare a staffing plan and the equipment list. Establish the TMC (traffic management centre) and provide staff training.

Budget: NAD 3,840,000

Support for setting up a traffic management centre in one municipality, possibly in Ondangwa

Establish the Transport Commission as the lead institution and the Transport Commission to prepare a draft bill for a public transport act; circulate the draft bill to the relevant municipalities and the Parliament. Prepare guidelines for issuing by-laws and regulations in LAs.

Budget: NAD 1,000,000

Support for new public transport legislation

Support for taxi licensing; 2) expiry dates for permits; 3) require taxis to display characteristics clearly and enforce strict enforcement. Carefully orchestrate the reform.

Budget: No direct cost

Support for taxi industry reform - phase 2

Support for training on the transfer. a model to develop road reserves

Medium-term 2023-2027

UA 1B

Subject to a feasibility study, Helao Nafidi could develop a scheduled bus public service between the two cities. Based on the results of the transport model, the flows between Ondangwa, Onuno and Oshikango could also justify a PSC.

Responsibility: RA

Budget: to be determined by CBA

Extension of the scheduled bus service to other segments of the network/routes with significant traffic, e.g. Ondangwa-Onuno-Oshikango, Oshakati-Onuno-Eenhaana

UA 2B

Set up fully dedicated bus lanes, a sophisticated real time passenger information system including mobile application support and integrated ticketing services. Introduce environmental friendly and comfortable buses on the busiest routes.

Responsibility: MWT

Budget: NAD 1,000,000

Improvement of the image and use of public transport, in liaison with the MoveWindhoek project (continued)

UA 3B

Support the setup of a call centre in Windhoek. Extend services to remote areas.

Responsibility: Taxi industry

Budget: NAD 600,000

Support for setting up additional taxi call centres in other large cities

UA 4B

Facing prospecting increase of traffic, set up further TMC, e.g. in Oshakati, (possibly jointly with Ongwediva), and in Oshikango.

Responsibility: LA, MWT

Budget: NAD 8,640,000

Roll-out of the traffic management centre to other municipalities

UA 5B

Prepare and implement traffic management plans. Typical plans would address traffic flows, traffic surveillance, urban pedestrian access and a traffic incident management plan, measures for special events and management of road works.

Responsibility: LA

Budget: NAD 500,000

Preparation of city traffic management plans for municipalities that have no traffic management

UA 6B

1) Plan & build taxi terminals; 2) require taxi owners to register as proper businesses (minimum size 3-5 taxis); 3) put pressure on taxi associations to reform; 4) provide support and capacity development for regulators, taxi operators and drivers; 4) incentives for the use of higher capacity vehicles (e.g. minibuses).

Responsibility: MWT

Budget: No direct cost

Support of the taxi industry reform - phase 2

UA 7B

The trainees of the related capacity building measures should be able to implement

Long-term 2028-2037

UA 2C

Launch public awareness campaigns focussing on cost benefit advantages of public transport. Introduce transport demand management in the main cities. Make use of advanced technical solutions.

Responsibility: MWT

Budget: NAD 2,000,000

Improvement of the image and use of public transport, in liaison with the MoveWindhoek project (continued)

Urban areas (infrastructure)

Short-term 2018 - 2022

of the final design, number and location of access points
 ring procedure for works could start in 2018 and the
 9 and will have a duration of three to four years.

Budget: NAD 1,100,000,000

construction of the planned dual carriage way

vements. Prepare standards and an implementation
 structure and safe cycle-friendly routes. Build a
 in a pilot region. Strict enforcement of traffic rules and

Budget: NAD 1,300,000

for pedestrians and cyclists in one municipality

Medium-term 2023-2027

UA 9B

New NMT facility coverage of 10 kilometres per year on average is targeted over the implementation period of the Master Plan.

Responsibility: RC, LA

Budget: NAD 1,300,000

Investment in NMT facilities for pedestrians and cyclists in additional municipalities

UA 10B

Based on the expected bill on PPP, involvement of private sector will be enhanced, e.g. in bus terminals, truck rest areas and - on a smaller scale - bus stops along the Oshakati-Ongwediva-Ondangwa-route.

Responsibility: MWT

Budget: No direct costs

Attract private investors for transport/logistics infrastructure projects

Long-term 2028-2037

UA 9C

The long-term measures are of an infrastructure nature with a defined y budget for sidewalks/paved track maintenance and new construction.

Responsibility: RC, LA

Budget: NAD 2,600

Investment in NMT facilities for pedestrians and cyclists (complete a b in the Four Regions' main towns)

UA 10C

Initiate larger PPP projects, e.g. investments in airport infrastructure a operations, rail terminals or logistics centres and platforms.

Responsibility: MWT

Budget: No direct

Attract private investors for transport/logistics infrastructure projects

Peri-urban and inter-city (services)

Short-term 2018 - 2022

... a limited scheduled bus service between the city in the Four Regions, designed as PSC or planning and optimization of routes, cost analysis & tor

Budget: NAD 1,440,000

... er public services in the vicinity of large cities by or a municipality to be determined)

... SC is to be prepared. Negotiate with traditional low night time operation. Arrange proper access to and linkage to the final destinations of train users

Budget: NAD 115,400,000

... ir train Tsumeb-Omuthiya-Ondangwa-Oshikango

Medium-term 2023-2027

PU 1B

Other municipalities adopt and adapt PU 1A in line with their respective financial possibilities and similar numbers of population living in the surroundings.

Responsibility: RC, LA

Budget: NAD 1,140,000

Extension of school bus and public services in the vicinity of other large cities by private operators (considering the experience in the implementation of PU 1A)

PU 2B

The feasibility study will consider possible schedules as well as the degree of reliability and the level of ridership of the passenger service on the line Tsumeb-Oshikango.

Responsibility: MWT, TransNamib, TA, MoPE

Budget: NAD 1,000,000

Feasibility study for the introduction of a dedicated passenger train between Ondangwa and Oshikati (after commissioning of new railway line)

Long-term 2028-2037

Short-term 2018 - 2022

... total of 499 km peri urban roads are to be range of approximately 100 km per year. 267 km R (approx. 53.4 km/y).

Budget: NAD 246,500,000

... roads) for the Four Regions

... community elders identify points on paved roads g facilities at settlements and intersections. Provide amenities. Prepare and tender out small contract

Budget: NAD 4,470,000

... sers (where relevant) in the road design; start of ous areas

... d intercity road network to be maintained in the such as road characteristics, traffic, terrain, indicators on, payment and monitoring modalities, penalties, tor

Budget: NAD 200,000

... rmance-based road contracts(OPRCs) for road

... the most important NMT movements, including in the settlements and the city. Establish a at increase mobility for pedestrians/cyclists and a vicinity of the city.

Budget: NAD 1,300,000

... e, linking settlements to a large town on a pilot

Peri-urban and inter-city (infrastructure)

Medium-term 2023-2027

PU 3B

Continuing implementation.

Responsibility: RA

Budget: NAD 246,500,000

Implementation of the RA plan for the Four Regions (continuation)

PU 4B

Continue upgrading of roads with lay-bys as a transport service and road safety infrastructure, targeting up to 30 new lay-bys per year.

Responsibility: RA, RC, LA

Budget: NAD 4,470,000

Construction of integrated lay-bys with shelters (where relevant), both for existing and new roads

PU 5B

Based on the experiences and lessons learnt in PU 5A, the new contracts can be adapted and variables be further fine-tuned. Assess indicators like average travelling speed and road user satisfaction.

Responsibility: RA

Budget: No costs

Extension of OPRCs for road maintenance to additional sections of the road network, taking into account the evaluation of pilot results

PU 6B

Carry out an assessment of the remaining missing infrastructure links around the main cities and provide the basis for planning a continuation of the NMT network between peri-urban settlements and cities and/or the road network.

Responsibility: RC, LA

Budget: NAD 1,300,000

Investment in NMT infrastructure, linking settlements to additional towns (continuation: 30 km per year)

PU 7B

This measure contributes to prepare a Geo-spatial rural road information system which will be useful for planning and development of rural road networks, aiming

Long-term 2028-2037

PU 3C

Continuing implementation.

Responsibility: RA

Budget: NAD 493,000,000

Implementation of the RA plan for the Four Regions (continuation)

PU 4C

Based on a scheduled agenda and budget constraints, extend construction of safe lay-bys to the whole tarred road network of the Four Regions, covering most of the relevant locations by the end of the Master Plan's life span.

Responsibility: RA, RC, LA

Budget: NAD 8,940,000

Construction of lay-bys, with shelters (where relevant) (continuation)

PU 5C

Continuation of the planning and implementation of OPRC if justified by the results of regular monitoring and (self) evaluation of maintenance performance.

Responsibility: RA

Budget: No costs

Extend OPRCs for road maintenance to additional sections of the road network, taking into account the evaluation of results

PU 6C

Assuming that the NMT constructed under PU 6A and 6B will produce the expected results, the NMT network will be extended to all the peri-urban areas around the main cities of the four Regions.

Responsibility: RC, LA

Budget: NAD 2,300,000

Investment in NMT infrastructure, linking settlements to towns (continuation: 30 km per year)

Remote areas (services)

Short-term 2018 - 2022

Improved 'bakkie' (or passenger truck services) will be initiated to serve the 3642 gravel road between Outapi and Okahao, and to serve surrounding villages and Outapi. Outline of a work plan available.

Responsible: RC, Communities, Budget: NAD 3,540,000

Improved bakkies as professional taxis (Okathitu)

Will assess a range of rural transport technologies and collaborate with local residents. It will ensure suitable training, skills, safety, operational requirements and maintenance of vehicles.

Responsible: RC, Communities, private Budget: NAD 6,000,000

Assessing various rural transport options

Medium-term 2023-2027

RE 1B The lessons learnt during the pilot project and their monitoring and evaluation will indicate how the bakkies could be purchased or hired without external support, or how the private bakkie owners could be interested in providing the service.

Responsibility: RC, LA Budget: NAD 3,540,000

Replication of the use of improved bakkies as professional taxis in other areas and/or regions, taking into account lessons learnt in RE 1A

RE 2B The pilot project should be extended to similar remote rural areas in the same region and others such as Ohangwena, where half of the residents rely on subsistence agriculture for living and thus are located in remote areas.

Responsibility: RC, LA Budget: NAD 6,000,000

Replication of successfully tested options to other areas and/or regions, based on lessons learnt in RE 2A

RE 3B Drawing lessons from the pilot projects, a project will be initiated to prepare a rural remote areas transport programme (i.e. strategy and action plan) that covers both services and infrastructures for the Four Regions.

Responsibility: MWT, MURD, RC, TA Budget: NAD 3,000,000

Preparation and implementation of transport programme for rural remote areas, based on the lessons learnt from projects RE 1A and RE 2A

Long-term 2028-2037

RE 1C Supplemented by on-demand trips in the case of emergency, regular scheduled service, has the potential to be further sustainable, subject to it being financially sustainable.

Responsibility: RC, LA Budget: NAD 3,540,000

Replication of the use of improved bakkies as professional taxis in other areas and/or regions, taking into account lessons learnt in the previous years

RE 2C The pilot project should be extended to further remote rural areas.

Responsibility: RC, LA Budget: NAD 6,000,000

Replication of successfully tested options to other regions, based on experiences in the previous years

RE 3C The transport programme will be revised.

Responsibility: RC, LA Budget: NAD 3,000,000

Revision of the transport programme for rural remote areas, based on lessons learnt in the first five years of preparation and implementation

Remote areas (infrastructure)

Short-term 2018 - 2022

Estimated total of 210 km remote areas roads are to be completed with an average of approximately 42 km per year. 471 km of gravel roads (approx. 94.2 km/y).

Budget: NAD 164,400,000

Road network development plan

Medium-term 2023-2027

RE 4B In accordance with the plan a list of projects has been elaborated. It is also expected that revised road network plans for remote areas will be developed in the mid-term.

Responsibility: RA Budget: NAD 164,400,000

Implementation of the RA road network development plan (continuation)

RE 5B A new GIS mapping will provide scientific evidence of the remaining households living at more than 2 kilometres from an all-year road. Following the results, a phased plan to complete the network should be prepared.

Responsibility: RA, TA Budget: NAD 3,000,000

Mapping of the remote areas without proper access to all-year roads

RE 6B The objective is to achieve an effectively interlinked network of roads and NMT infrastructures, in order to facilitate the movement of pedestrians, be it to go to school or to access a pre agreed catchment point on the road network.

Long-term 2028-2037

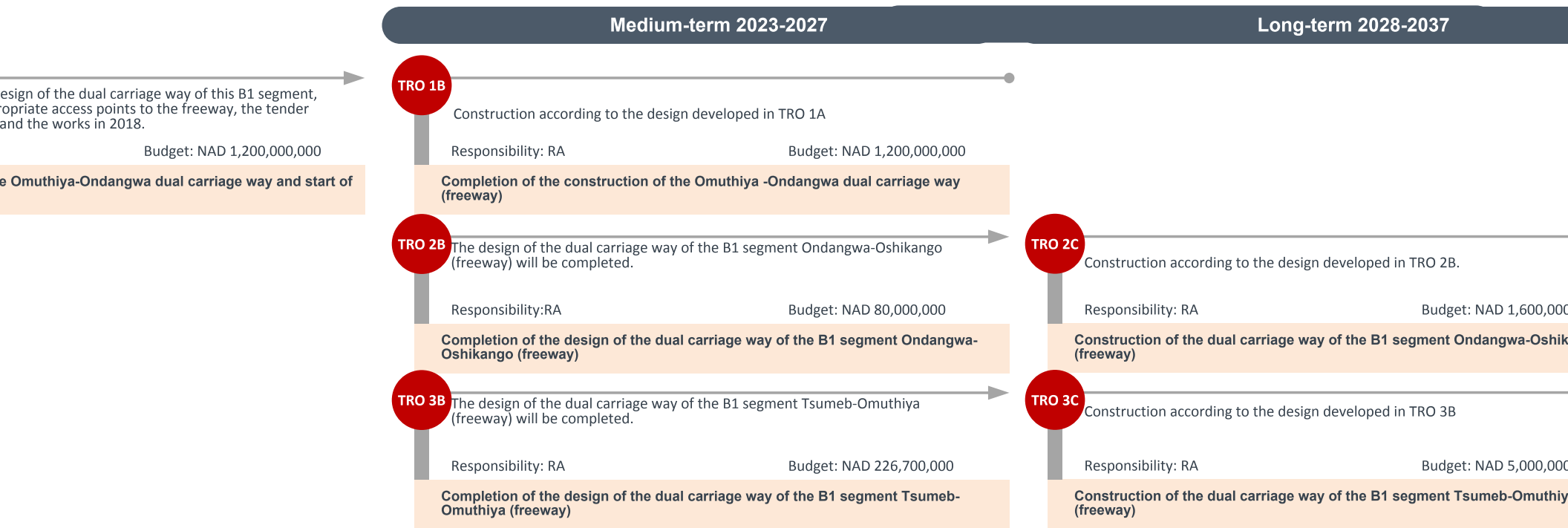
RE 4C In conjunction with the rural transport development programme, RE 4C will be that almost 100% of households living in the Four Regions will be less than 2 kilometres away from an all-year road.

Responsibility: RA Budget: NAD 164,400,000

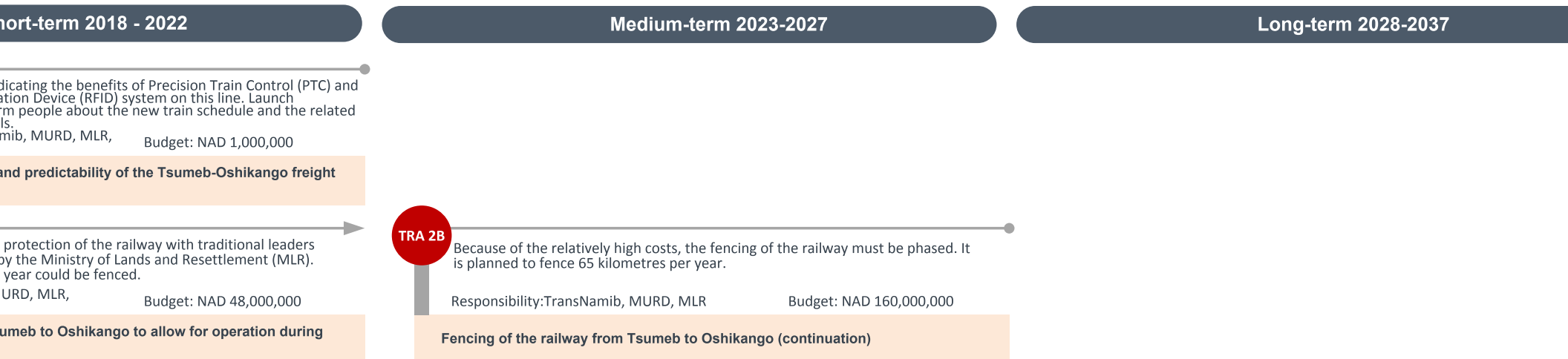
Implementation of the RA road network development plan (continuation)

RE 6C Cover remote areas as much as possible and complete the network to allow residents in remote areas to have easy or at least improved access to transport network.

Travel and transport to and from the regions (roads)



Travel and transport to and from the regions (rail)



Travel and transport to and from the regions (air)

Short-term 2018 - 2022

Medium-term 2023-2027

Long-term 2028-2037

study of the market potential for international flights; 2) liability for rehabilitating the total length of the runway of positive outcome, start the works tendering process.

Revenue Fund, Budget: NAD 181,000,000

Transport to international level

Cross-border issues

Short-term 2018 - 2022

Medium-term 2023-2027

Long-term 2028-2037

ations and clarify legal issues, e. g. case specific database. Purchase the equipment, implement

Budget: NAD 770,000

Database for cross-border offenders

and extension of ASYCUDA in Santa Clara BCP as well of working hours for customs clearance and step: opening of a single window joint BCP.

Budget: State revenue fund

Procedures with Angola

CB 3B

The removal of the third party rule can be expected to help to better balance inbound and outbound movements and to create an incentive for the establishment of new enterprises in the transport and logistics sector.

Responsibility: WBCG

Budget: No costs

Removal of the third party rule (SADC level)

Cross-cutting issues (road safety)

Short-term 2018 - 2022

crossings and sidewalks on roads bordering or leading to schools with additional safety measures (e.g. school patrols) and bicycle repair (e.g. bicycle parking).

To be undertaken with UA9A/9B, UA9A/6B

Schools

1) Develop an institutional training structure to be implemented at schools (6-12 months); 2) Implement a project on road safety; 3) Implement the training program in all schools in the district; 4) Implement the training program in all schools in the district; 5) Implement the training program in all schools in the district.

Responsible: MoE, NRSC

Budget: NAD 1,440,000

Teachers

1) Constructed at 5-10 intersections per year, until all intersections are covered with pedestrian crossings. Pedestrian sidewalks are constructed at 10 km per year, starting at the highest priority intersections.

To be undertaken with UA9A/9B, UA9A/6B

Improvement of pedestrian and cyclist infrastructures (see PU 6A and RE 6A)

1) Conduct a pilot project to place strategically variable speed signs on a 150 km road section per year. The project can be implemented in a 20-year time period.

Responsible: NRSC

Budget: NAD 4,800,000

Introduction of variable speed signs for night times

1) A trial should take place from 2018 to 2022 on a 5-10 km road per year.

Responsible: RA, RC, Contractor

Budget: NAD 7,554,000

Prevention of animals crossing the road

1) Assign a hotline coordinator to coordinate all emergency medical services units in a closed social system; 2) Test the system, verify and fix errors; 3) Test the system, verify and fix errors; 4) Test the system, verify and fix errors; 5) Test the system, verify and fix errors.

Responsible: Telecom

Budget: NAD 525,000

Reporting, based on existing procedures/solutions

1) Conduct sections at an approximate cost of NAD 50,000 - 100,000 per year. Design and review project over a 20-year time period.

Responsible: RA, RC, LA, Contractor

Budget: NAD 4,000,000

Improvement of road marking on higher order roads

Medium-term 2023-2027

This project is the continuation of RS 1A. The strategy is to build 10 kilometers of sidewalks/paved tracks each year for servicing schools in urban and remote areas (200 kilometers by the end of the MP).

To be undertaken with UA9A/9B, UA9A/6B

Promotion of safe access to schools (continuation)

This measure is the continuation of the project RS 2A. It will target 50-100 new schools and train the teachers at the identified schools (6-12 months).

Responsible: MoE

Budget: NAD 1,800,000

Road safety education at schools (continuation)

The strategy is to build 40 kilometers of sidewalks/paved tracks each year for pedestrians and cyclists in urban, peri-urban and remote areas.

To be undertaken with UA9A/9B, UA9A/6B

Improvement of pedestrians and cyclists infrastructures (continuation, see PU 6B and RE 6B)

Extend the network of rural road where variable speed signs are used within MP's time frame, subject to the evaluation of the results after five years of implementation.

Responsible: RA, RC, Local Communities

Budget: NAD 6,000,000

Introduction of variable speed signs for night times (continuation)

Subject to the results of the RS 5A project (less car crashes with animals, no stealing of the fences, and cooperation of the concerned communities) the fencing of up to 10 km of road per year will be extended for the medium-term MP implementation.

Responsible: RA, RC, Contractor

Budget: NAD 12,590,000

Prevention of animals crossing the road (continuation)

The forecast upgrading of these road signs has to be spread during the whole MP life time, for cost as well as work load reasons. Mid-term, up to 20 kilometers of road per year will then be equipped with state-of-the-art road signs/markings.

Responsible: RA, RC, LA, Contractor

Budget: NAD 5,000,000

Improvement of road signs and road marking on higher order roads (continuation)

Long-term 2028-2037

Following-up on the projects RS 1A and RS 1B the strategy is to build 10 kilometers of sidewalks/paved tracks each year for servicing schools in urban and remote areas (200 kilometers by the end of the MP).

To be undertaken with UA9A/9B, UA9A/6B

Promotion of safe access to schools (continuation)

This measure is the continuation of the project RS 2A and RS 2B. By the end of the MP's time frame practically one generation (up to 300 schools in total) have been trained on road safety issues.

Responsible: MoE

Budget: NAD 3,600,000

Road safety education at schools (continuation)

Continue to build 40 kilometers of sidewalks/paved tracks each year for pedestrians and cyclists in urban, peri-urban and remote areas, with the goal to finalize 400 kilometers by the end of the MP.

To be undertaken with UA9A/9B, UA9A/6B

Improvement of pedestrians and cyclists infrastructures (continuation, see PU 6B and RE 6C)

The fencing of up to 10 km of road per year will be extended for the MP implementation period, allowing for fencing of roughly 180 kilometers in total.

Responsible: RA, RC, local communities

Budget: NAD 25,180,000

Prevention of animals crossing the road (continuation)

During the long-term period of implementation, up to 20 kilometers of road per year will be equipped with state-of-the-art road signs/markings, i.e. roughly 380 kilometers by the end of the Master Plan.

Responsible: RA, RC, LA, Contractor

Budget: NAD 10,000,000

Improvement of road signs and road marking on higher order roads (continuation)

Cross-cutting issues (road safety) – cont.

Short-term 2018 - 2022

During peak seasonal periods where traffic volumes are highest, road, vacation and year-end festive holiday period. Defining the target audience (sex, age etc.), based on communication Agency

Budget: NAD 2,500,000

Evaluation of road safety campaigns (year on year)

Identify risks with right-turn lanes. Implement at 5-10

Budget: NAD 12,000,000

Construction of higher order cross roads

Medians on road where medians are to be implemented. on 3-5 km sections of road per year.

Budget: NAD 14,100,000

Implementation of median islands on higher order roads

Plan for the development of an AMP; 2) advertise the firms; 3) appoint a service provider; 4) develop an access; 6) obtain approval; 7) control access approval

Budget: NAD 1,600,000

Implementation of road access management plan

Annual for the communications between its local indicating the information to be included such as accidents, hospital in charge, etc.

Budget: No direct cost

Improvement of integrated road safety management system including an IT crash

Program at three local hospitals; 2) assign experienced the courses for ambulance assistants on three levels of critical care; 4) man each ambulance accordingly.

LA

Budget: NAD 960,000

ITS

Medium-term 2023-2027

RS 8B

Repeat road safety campaigns and measure impact in order to continue investing or not in these road safety campaigns.

R: NRSC, MWT, RA, Communication Agency

Budget: NAD 2,500,000

Design, implementation and evaluation of road safety campaigns, taking into account evaluation results

RS 9B

During the mid-term period, up to 20 intersections per year are forecast to be provided with right turn lanes.

Responsibility: RA, RC, LA contractor

Budget: NAD 15,000,000

Construction of right turn lanes at higher order cross roads (continuation)

RS 10B

Medians should be constructed on sections where the posted speed limit is 80km/h or less. This continuation is mandatory as the number of potential median settings will likely be high, especially in towns or on roads where there are settlements with speed limit.

Responsibility: RA, RC, LA contractor

Budget: NAD 22,500,000

Implementation of median islands on higher order roads (continuation)

RS 11B

As separating local distributor roads or agricultural ways from highways is the only sustainable solution, construction must be spread over the MP's whole time frame.

Responsibility: RA, RC, LA contractor

Budget: NAD 100,000,000

Implementation of road access management plan (continuation)

RS 12 B

The IT data crash system should be improved with time, integrating the existing traffic management centres, the traffic police, the emergency medical support and civil society. Review procedures, taking into account the lessons learnt from the first years of implementation.

R: NRSC, MVA, IT specialist, MHSS, TP, TMC

Budget: No cost

Improvement of the integrated road safety management system including an IT crash data system (continuation)

RS 14B

The first step would be to identify areas strategically suitable for the implementation of manned cameras, then to procure the cameras.

Responsibility: NamPol

Budget: NAD 20,000

Increased systematic implementation of speed control cameras to covering enforcement issues

RS 15B

In a gradual approach, a mandatory testing based on constructor data should be

Long-term 2028-2037

RS 8C

The road safety campaigns will be repeated or adjusted, considering traffic accident data and the evaluation of campaign results.

R: NRSC, MWT, RA, communication Agency

Budget: NAD 5,000,000

Design, implementation and evaluation of road safety campaigns, taking into account evaluation results

RS 9C

Up to 20 intersections per year are planned to be provided with right turn lanes for a total of roughly 350 intersections by the end of the MP.

Responsibility: RA, RC, LA contractor

Budget: NAD 30,000,000

Construction of right turn lanes at higher order cross roads (continuation)

RS 10C

Medians should be constructed on 3-5 km sections of road per year until all the higher order roads are provided with medians.

Responsibility: RA, RC, LA contractor

Budget: NAD 45,000,000

Implementation of median islands on higher order roads (continuation)

RS 11C

As separating local distributor roads or agricultural ways from highways is the only sustainable solution, construction must be spread over the MP's whole time frame.

Responsibility: RA, RC, LA contractor

Budget: n/a

Implementation of road access management plan (continuation)

RS 12C

The IT data crash system procedures should be reviewed and improved again, considering the lessons learnt from the first 10 years of implementation.

Responsibility: NRSC, MVA, MHSS, TP, TMC, TA

Budget: No cost

Improvement of integrated road safety management system including an IT crash data system (continuation)

RS 15C

During the last 10 years of MP implementation, a mandatory regular vehicle testing

Cross-cutting issues (environment)

Short-term 2018 - 2022

1) Introduce Euro 5 norm (step by step) and Euro 6 norm (step by step) for diesel buses, 2) Introduce Euro 5 norm (step by step) and Euro 6 norm (step by step) for petrol buses, 3) Provide bus shelters and information on NMT facilities in towns to encourage walking and cycling.

In liaison with UA2A/2B/2C

Limit the attractiveness of systematically using private cars in public transport. Limit the attractiveness of systematically using private cars in public transport.

Medium-term 2023-2027

ENV 1B

Introduce systematic exhaust emission control versus constructor data. This project could be combined with RS 15B.

Responsibility: RA, NaTIS

Budget: n/a

Improved mandatory regular vehicle testing for all motorised vehicles (exhaust emission control versus constructor data, could be combined with RS 15B)

ENV 2B

Introduce stricter requirements for internal combustion engines (Euro 5), taking into account international best practices.

Responsibility: MoET, TP

Budget: n/a

Stricter requirements for internal combustion engines (Euro 5)

Long-term 2028-2037

ENV 2C

Bring in cleaner propulsion technologies, in accordance with technological development and international experiences in similar public transport environments.

Responsibility: MWT, MoET, LA

Budget: n/a

Use of hybrid electric/gas buses in public transport.

ENV 3C

Raise vehicle emission standards by gradually adapting import regulations to reflect technological progress in this area.

Responsibility: MWT, MoET, MoF

Budget: No direct cost

Making Euro 6 compatibility mandatory for imported second hand vehicles

ENV 4C

Low volume sealed roads have a much better environmental performance than gravel roads, and their use should therefore be enhanced over the Master Plan.

Responsibility: RA, MWT, MoET

Cost 30% higher than gravel roads (on average)

Switch from gravel surfaced roads to light seal bitumen roads.

Short-term 2018 - 2022

an road planning & development; 2) Increasing the port and NMT; 3) requirements of peri-urban areas; road reserve of de-proclaimed main roads.

A, TA Budget: NAD 100,000,000

on the preparation of integrated land use/transport project cycle management

ject cycle management; 2) Introduction to ysis; 3) PSCs for transport service delivery; tract management and quality management.

A Budget: NAD 100,000,000

for improvement of public transport management

Medium-term 2023-2027

CBT 3B

This measure will take place after the implementation of the project RE 1A and 2A. Training topics will include efficient ways of organisation, compensation for PSOs and private sector involvement for non-conventional means of transport.

Responsibility: MWT, TA Budget: NAD 100,000,000

Training on rural transport programme implementation

Long-term 2028-2037

Cost estimates

For the next twenty years the Sustainable Transport Master Plan has a total estimated budget of NAD 12.8 billion out of which NAD 5.1 billion is already planned by the RA (dual carriage way Omuthiya-Ondangwa-Oshakati and road construction/maintenance for each region).

NAD 6.9 billion are assigned for the dual carriage way from Tsumeb up to Oshikango at the Angolan border.

The main items for the Master Plan budget are presented in Table 5.

Table 5: Master Plan budget overview

Budget item	NAD
Services and small infrastructure projects	757,831,000
Already planned by the RA (Omuthiya-Oshakati dual carriage way and projects in table 4-3 of the MP)	5,146,000,000
New large road infrastructure projects included in the MP but not yet budgeted by the RA (Tsumeb-Omuthiya and Ondangwa-Oshikango dual carriage ways)	6,906,700,000
Total road infrastructure projects	12,052,700,000
Grand Total	<u>12,810,531,000</u>
<i>Yearly additional expenses for services and small infrastructure projects (equivalent to: 0.9% of the 2016-17 transport budget)</i>	37,891,550

NAD 757.8 million is allocated to transport services and small infrastructure projects including studies. This is equivalent to expenditures of around NAD 37.89 million per annum or around 0.9% of the yearly transport budget for the country (NAD 4.2 billion for each of the years 2016 and 2017).

This amount, which appears to be still affordable despite the current financial constraints in the Namibian state budget, can make a real difference in the daily life of the residents in the Four Regions. It is composed of the below main items as follows:

a) Public transport
Improving public transport, including services and supplies, is estimated at NAD 41.8 million in urban areas, at NAD 18.9 million in peri-urban areas and for inter-city transport and at NAD 37.6 million in remote areas.

Figure 19: A new public bus in Windhoek



Source: GIZ

The total for improving public transport services and supply is 98.4 million or roughly 13 % of the Services and small infrastructure projects budget of the Master Plan.

b) Infrastructures (not including RA large road projects and road safety)

Without the RA planning and large investments in road projects and road safety, infrastructure measures proposed by the project amount to a total of NAD 418.88 million, i.e. 55% of the Services and small infrastructure projects budget:

- NAD 13 million for non-motorised transport for roughly 200 km of paved tracks/sidewalks in urban, peri-urban and remote areas by the end of the planning horizon;
- NAD 17.8 million for lay-bys with shelters where relevant;
- NAD 209 million for the fencing of the railway;
- NAD 180 million for the rehabilitation of the total runway length of the Ondangwa airport.

Figure 20: A bicycle workshop in the Four Regions



Photo: Paul Starkey

c) Supplies (equipment, software, etc.) Small supplies outside public transport such as the border safety measure at Oshikango (IT fingerprint database) amount to NAD 0.77 million while the pilot train for wagon GPS localisation is estimated at NAD 1 million.

d) Road safety

The road safety component is substantial with an estimated cost of NAD 233 million, the infrastructure part of which amounts to up to NAD 213 million. This cost is justified by the comprehensive approach taken by the Master Plan to improve the current very critical road safety situation.

Finally, the main innovative aspects of the Master Plan only amount to a very small percentage of the global costs for transport

investment, e.g. 0.76% for improving and promoting public transport and 0.1% for facilitating walking and cycling.

Implementation arrangements

The Master Plan requires a champion to lead the implementation process and to coordinate the allocation of available funds. It is proposed to form a new Regional Transport Board, based on the existing project Steering Committee. This would be best placed to oversee the implementation of this Master Plan, given its current role, scope of representation and understanding of the various aspects of the Master Plan.

It is further proposed that the MWT (as the transport sector ministry) oversees the functioning of this new Board, taking the lead in the implementation and representation of this Board. The composition of Board needs to be decided, but it is pro-posed that at least the four CROs, MURD (co-chair), RA, RFA, MoF as well as NamPol become full members. This could be a core Board membership, with other important institutions such as LAs, MOE, TransNamib, the NAC, WBCG, NRSC, being invited on a regular basis, to address issues in their respective domains.

The NPC would be involved in the Board meetings at its request as it is proposed to entrust the external monitoring of the Master Plan implementation to this planning institution.

The Regional Transport Board should meet at least quarterly, with the minutes of its meetings made publically available within 30 days.

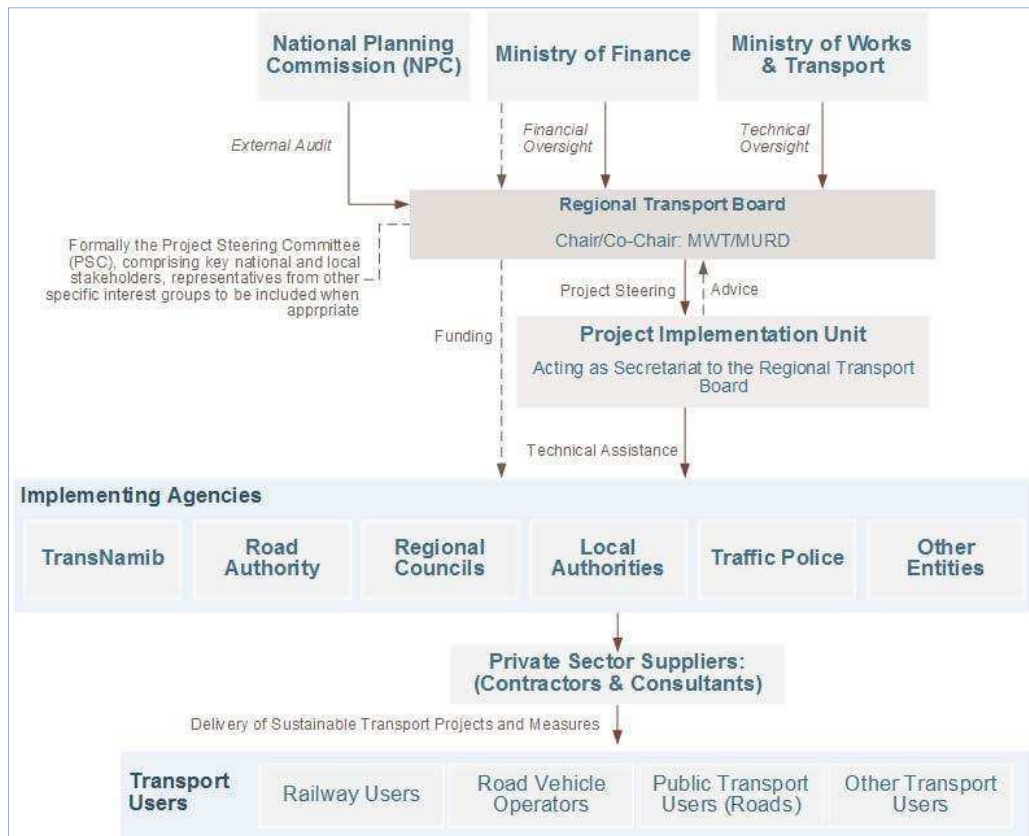
The Regional Transport Board should be supported by the Project Implementation Unit (PIU) which will be established at the MWT, also sought to support the implementation of the Sustainable Urban Transport Master Plan in Windhoek. It is envisaged that the PIU serves as a secretariat.

The main roles and responsibilities of this secretariat, possibly also involving development partners and/or external consultants, would be:

- to prepare any supporting materials to assist the Board in its decision making;
- to prepare annual costed business plans, identifying what specific activities are planned for the forthcoming year, their costs, responsibilities and how they are to be measured/monitored;

- to provide technical advice in the implementation of the Master Plan
- to prepare and supervise technical studies
- to propose the allocation of the available funds to the relevant implementing agencies in accordance with the wishes of the Board;
- to develop specific conditions under which funds are to be allocated and reported on;
- to oversee the monitoring of the use of the disbursed funds (using independent consultants as necessary); and
- to provide regular progress reports to the Board on the disbursement of available funds.

Figure 21: Organisational and institutional summary of implementation arrangements



Source: Consultant

Terms of Reference and operational procedures for this secretariat / PIU should be drafted by the MWT, defining its role, duties and powers within the existing legal framework.

For each project for which funding has been approved/provided, the PIU (on behalf of the Board) would assign key responsibility to the most appropriate implementing agency. These implementing agencies would be required to account to the PIU on a regular basis, using standardised forms and procedures, as established by the PIU.

The PIU should also be responsible for regularly reviewing and updating the Master Plan (at least every 3 years), which should be approved by the Board. This would take into account the progress in the implementation of the various projects; any policy and institutional changes; changing socio-economic and related land-use and transport patterns; and any findings from activities already undertaken. The institutional arrangement for implementation would also be included in this review. The NPC as the external monitor of the Master Plan implementation will have a key role in this evaluation exercise.

The PIU should prepare regular (six monthly) progress reports, which would be submitted to the Board and the MWT. These would also be provided to the NPC for external auditing purposes.

Monitoring & evaluation

As for any institutional arrangements, it is important that the proposed Board and its supporting executive, are subject to effective and independent internal and external monitoring and auditing.

Internal monitoring should be carried out by an auditor who should report directly to the Board and the PIU, with these reports also made available to the NPC (as the external auditors) and the MWT (as the overseeing ministry) if requested. The auditor should work closely with the internal auditors in the various implementing agencies and as a condition of funding, be able to monitor and audit the use and management of any funds provided by the Regional Transport Board. Whilst the focus is likely to be on financial auditing, the auditor should also carry out periodic technical audits (using an independent expert to assist with this task if necessary).

The internal monitoring reporting, based on the data and information provided at the local level and during field visits should be provided on a quarterly basis. Any recommendations provided in these monitoring reports should be submitted to the Board for decision and action.

The internal monitoring reporting, based on the data and information provided at the local level and during field visits, should be provided on a quarterly basis. Any recommendations provided in these monitoring reports should be submitted to the Board for decision and action.

With respect to external monitoring, the NPC is in charge of planning and directing the course of national development. In this role, it has been coordinating the implementation of the three previous National Development Plans, the current Fourth National Development Plan and the preparation of the Fifth National Development Plan (2017-2022).

The Master Plan is a regional plan but concerns almost half of the country's population.

Whilst the proposed Regional Transport Board (steering committee) should be responsible for the selection of projects and their administration, given its current role, the NPC could be involved in the regular external monitoring of the implementation of the Master Plan.

The reports prepared for the Board, plus the minutes of all Board meetings, should be provided automatically to the NPC, as external auditors. The NPC could then directly monitor the implementation of the projects.

Specific reporting and monitoring arrangements should be developed by the NPC, in conjunction with the MWT (for technical matters) and the MoF (for financial matters).

Figure 22: Final Presentation on 5 June 2017



Photo: GIZ

The external monitoring report would be prepared by the NPC on an annual basis, with a comprehensive evaluation carried out after three to five years, which can be incorporated in to the update of the Master Plan.

The interest about the Master Plan that has already been generated via the social media Facebook and Twitter presence should be sustained as the Four Regions move towards a sustainable urban transport future.



www.transport4people.com.na



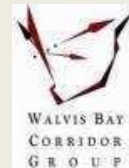
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