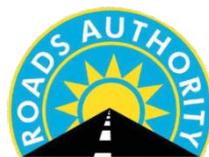




Road Transport Sustainability Plan for Namibia



FOREWORD

Since its inception in 2000, the Roads Authority of Namibia has established itself in the key role of managing Namibia's road network and has been a leader among national road agencies in the Southern African Development Community (SADC). It has helped the Republic of Namibia provide its citizens with a safe and efficient road system that supports economic growth and social needs.



The Mission of the Roads Authority is *“to manage a safe and efficient national road network to support economic growth.”*

The Vision of the Roads Authority is *“to be a sustainable road sector which is ahead of national and regional socio-economic needs in pursuit of Namibia's Vision 2030.”*

At the Roads Authority, we are therefore committed to the notion of *sustainability* in helping us advance our mission and vision. By making sustainability a part of what we do, we can address environmental, economic, and social objectives in a holistic manner, and meet the needs of the present and the future.

On behalf of the Roads Authority of Namibia, I am pleased to put forward this Road Transport Sustainability Plan, as a statement of our vision and direction in helping the nation move toward a prosperous and sustainable future. As outlined in this Plan, we believe that the Roads Authority and the Transport Sector as a whole can play a key role in achieving a prosperous and sustainable future.

A handwritten signature in black ink, appearing to be 'C. Lutombi', written in a cursive style.

Mr. Conrad M. Lutombi

Chief Executive Officer

Roads Authority of Namibia

ABOUT THIS PLAN

The Texas A&M Transportation Institute (TTI), a research agency that is a part of The Texas A&M University System, was engaged by the Roads Authority of Namibia to facilitate the development of a Road Transport Sustainability Plan. TTI developed a guidebook on sustainable transport performance measures for public agencies for the Transportation Research Board of the National Academies of Sciences in the United States, published as National Cooperative Highway Research Program (NCHRP) Report 708, *Guidebook for Sustainability Performance Measurement for Transportation Agencies*. The approach and methodology contained in this guidebook was applied in the development of this plan. The development of this plan was a collaborative effort between TTI, the Roads Authority of Namibia, the Namibia Technology Transfer (T2) Centre, and other key transport sector stakeholders. The authors of this plan include Dr. Josias Zietsman and Ms. Tara Ramani of TTI, and Ms. Palesa Hekandjo, Ms. Taapopi Ithana, and Ms. Kerstin Urban of the Roads Authority/T2 Centre.

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Abbreviations

ECN – Engineering Council of Namibia

ITS – Intelligent Transportation Systems

NDP – National Development Plan

NDP4 – Namibian Fourth National Development Plan

RMS – Road Management System

SADC – Southern African Development Community

SME – Small and Medium Enterprise

T2 – Technology Transfer Centre

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Introduction

The issue of sustainability can be broadly viewed as the balancing of environmental, economic, and social objectives in a holistic manner that meets the needs of current and future generations. Given the broad scope and importance of the transport sector, the topic of sustainable transport has gained increasing importance in recent years and has emerged as a major global issue. The sustainability plan will assist the Roads Authority of Namibia in addressing a broad range of transport issues in a strategic manner. It will help Namibia to position itself as a leader in sustainable transport in Africa and achieve many of the goals outlined in Namibia's National Development Plan (NDP). The key elements of the overall initiative also included training of Namibia's Technology Transfer Centre (T2) staff and key members of the Road Authority on transport, sustainability, and planning-related topics. By developing a sustainable transport plan and addressing the issue of sustainability in the transport sector, Namibia can position itself to:

- Take advantage of international funding opportunities;
- Address a broad range of transport issues in a strategic manner; and
- Position itself as a leader in Africa and the world with regards to sustainable transport.

Further, this sustainability plan will help the Roads Authority effectively and efficiently incorporate sustainability goals into the agency's overall goals and objectives of managing a sustainable transport system. In addition, it will provide the Authority with a direction on how it can place itself at the forefront of sustainable transport through tracking and measuring progress toward achieving sustainability goals.

The sustainability plan will assist the Roads Authority of Namibia in addressing a broad range of transport issues in a strategic manner.

Relevance to Key Plans and Initiatives

The sustainability plan will not only assist in putting Namibia in a leadership position in the implementation of sustainable transport in Africa, but it will also support Namibia's Vision 2030 and goals outlined in Namibia's Fourth National Development Plan (NDP4). The NDP4 for 2012–2017 outlines the government's five-year development goals. The three main goals contained in the NDP4 are:

- High and sustainable economic growth,

- Employment creation, and
- Increased income equality.

This sustainability plan will enable the transport sector to support these goals through actions identified in the plan. Further, this plan is envisioned to have a two-way relationship with the existing transport sector plans in existence in Namibia, such as the Roads Authority's Strategic Plan, Namibia's Integrated Transport Master Plan, the Regional Master Plans, Windhoek's Urban Transport Master Plan, etc. This sustainability plan was developed by stakeholders, with knowledge of these various plans and initiatives, to be consistent with the direction and goals of these plans. It is also envisioned that future updates of these plans can be informed by the goals, objectives, performance measures, and actions listed in this plan.

The Road Management System (RMS) is a framework currently used by the Roads Authority in the management of the road network, including the determination and optimisation of economically-warranted projects, programmes, strategies, and budgets for both project development and maintenance. The RMS can play a key role in sustainable decision making and in the implementation of this plan by being an important source of data for performance measures and other applications.

Summary of Key Road Transport Sector Needs

A stakeholder workshop was conducted in Windhoek, Namibia in March 2014 in order to develop goals, objectives, performance measures, and actions to be included in the plan. During this workshop, attendees identified transport sector issues and needs that could be included in the sustainability plan. These included the following issues and needs.

- ***Improvement of Road Safety:*** Attendees discussed the overall need to improve traffic and pedestrian safety in general. Attendees mentioned that there are many areas where safety can be improved in Namibia, such as: aggressive public safety campaigns and driver education; enforcement of road rules (especially truck load limits); improvement of roadside signage, lighting and fencing; establishment of bike lanes and pedestrian sidewalks in urban areas; and engagement of stakeholders to work together where National roads pass through town/cities to improve safety measures. The forum noted that there may be a need to revisit the design of old roadways in order to ensure that vertical and horizontal curves and other design elements meet current standards or improved safety standards.

- ***Improvement of Accessibility:*** The forum stressed the need to improve accessibility in rural areas in terms of access to critical social and economic services such as schools, jobs, hospitals/clinics, and access to the main road network. Attendees noted that accessibility during unfavourable weather conditions, especially rainy seasons, is crucial. Improving accessibility also ties in with the NDP intent of making Namibia a transport hub for Southern Africa. It was further noted that there is also the possibility of building more roads/broadening network connectivity by using alternative materials to build cheaper roads.
- ***Promoting Equity:*** Attendees noted equity concerns especially between the northern and southern regions of Namibia. The distribution of resources has been favoured to the southern region because of the trading hubs located in the south rather than the north. Furthermore, the cost of transport is increasing, especially for taxis in urban areas. In terms of affordability, buses will be required to serve lower income groups as transport costs increase. A commuter rail can be considered to serve the labour force coming in and out of Windhoek, which can also reduce traffic on roads.
- ***Promoting Technological Innovation:*** Technology can be applied to improve and address transport needs in Namibia. The forum noted that technological innovations can provide solutions such the construction of low-cost roads through innovative stabilisers that can enhance the performance of local materials to perform more efficiently and effectively. Technology can be used for route mapping, intelligent transport system (ITS) applications, and for other transport planning uses.
- ***Promoting Public Transport:*** Public transport in urban areas needs to be more effective, such as a more comprehensive bus system linking towns. Furthermore, the need for better regulation of taxis and alternatives to taxis in terms of public transport should be considered.
- ***Improvement of Freight Transport:*** It was stated that currently in Namibia a vast majority of freight moves through trucks, and there is a need to resolve the issues of abnormal trucks through better enforcement of abnormal limits, optimisation of the location of weighbridges, or completely eliminating these loads in some cases. The use of railways for abnormal loads was discussed as a possible solution to limiting abnormal loads on roads. Railways have potential to move a larger percentage of freight, therefore reducing truck traffic and abnormal loads on the road network. However, it was noted that origins and destinations of some of these loads can make using the railways difficult, and additionally, railways also do not have the capacity to handle certain types of goods. The need for network connectivity and corridors was emphasised as Namibia is developing itself as a logistics hub. This includes the vision

for a freight hub via Walvis Bay to serve landlocked/interior countries such as Botswana, Zambia, and Zimbabwe.

- ***Reduction of Traffic Congestion:*** Compared to other African countries, Namibia's congestion is low. Attendees noted that there is some congestion during rush hour in Windhoek. Use of flextime and implementation of ITS could help solve the "congestion" problem.
- ***Increasing Funding for Roadway Infrastructure:*** It was pointed out that funding for transport infrastructure development and preservation, as well as transport integration planning, is a challenge as revenue from fuel levies that are the main source of funding have not been increased in line with transport infrastructure needs. Additionally, Namibia has faced an increase in vehicles registered in neighbouring countries operating on its roads, which do not contribute to registration-based revenue. Therefore, the Roads Authority does not receive sufficient funding and support to address all needs. Innovative approaches, such as public-private partnerships and direct or physical tolling for revenue collection could be used for the development and adequate preservation of the road network. Moreover, there is an urgent need to optimise the revenue collection from Mass-Distance Charges, as well as a need to adopt a system of levies that ensures users truly pay for damage caused to the road.
- ***Protection of the Natural Environment:*** Attendees described a need for 'greener' road construction methods and liveability as important concepts for cities. Furthermore, concerns needing intervention included erosion control to protect road infrastructure from flooding and the phenomenon of shifting dunes.
- ***Improvement of Transportation, Land Use, and Urban Planning:*** The need to integrate transport and land use planning was discussed. The centralised nature of Namibia has everyone traveling to the capital city. Incentivising development in other places can reduce this burden. Urban planning has not kept pace with population growth, especially in the Windhoek central business district in the past 3-to-4 years. The need to integrate planning efforts was pointed out as an urgent planning exercise that has to be elevated to the highest levels of authority in order to address sustainability effectively. Currently Namibian development is being planned in silos, which makes addressing sustainability in a cross-cutting manner difficult if not impossible.
- ***Promotion of Capacity Building and Workforce Development:*** There is a need to improve local capacity in terms of transport planners, consultants, contractors, and engineers, because currently, a lot of the work is being performed by Chinese and South African companies. There is a need for Namibian professionals to participate

in SADC forums that deal with standards and specifications to promote regional standardisation.

- ***Enhancement of Infrastructure Preservation:*** The need for infrastructure preservation was discussed at length. The serviceable life of pavement needs to be improved as road surfaces seem to deteriorate sooner than they should especially because of abnormal and overloaded trucks and the fact that the economy of Namibia moves mainly on wheels instead of a fair distribution between roads and railways. Quality of construction and workmanship seems to be more of an issue than design standards/specifications, and supervision at construction sites needs to be improved. Quality of materials and construction methods is a concern (i.e., hiring cheaper contractors due to funding issues). The RMS addresses some of these by testing pavements and maintaining data. Routine and preventative maintenance can help further, along with a sustainable asset management system to optimise where improvements are needed.

Sustainability Statement and Sustainability Goals

The following sustainability statement was developed to emphasise the Roads Authority's approach to sustainability:

The Roads Authority strives to achieve sustainability of the transportation system by providing a safe and efficient national road network which supports economic growth and ensures access for all citizens and other road users while preserving the environment for current and future generations.

In addition, the following seven sustainability goals were proposed:

1. Improve Road Safety;
2. Enhance Preservation of Road Infrastructure;
3. Promote Capacity Building and Workforce Development;
4. Increase Funding for Road Transport;
5. Optimise the Balance between Access and Mobility;
6. Preserve Namibia's Environmental and Ecological Systems; and
7. Pursue New Innovations and Technologies.

Sustainability Objectives and Performance Measures

Table 1 provides details for each goal in the form of objectives (which are more specific, measurable, sub-goals) and performance measures linked to the goals and objectives. Outcome-based performance measures are high-level measures provided for each of the goals. Other performance measures are suggested for each objective. The appendix to the document contains a listing of the goals, objectives, performance measures, and possible actions that can be taken to advance the various goals and objectives.

Table 1. Summary of Goals, Objectives, and Performance Measures

Goal	Objective(s)	Performance Measure(s)
1. Improve Road Safety <i>Outcome Performance Measure</i> – Number of roadway fatalities	1.1 Institutionalise and improve the effectiveness of road safety audits	<ul style="list-style-type: none"> Percentage of network that is audited Percentage of audit recommendations that are implemented
	1.2 Protect vulnerable road users	<ul style="list-style-type: none"> Number of fatalities of vulnerable road users
	1.3 Promote awareness and education regarding traffic laws and regulations	<ul style="list-style-type: none"> Percent of population exposed to awareness campaigns
	1.4 Improve safety on major roads	<ul style="list-style-type: none"> Number of fatalities on trunk, main, and district roads
2. Enhance Preservation of Road Infrastructure <i>Outcome Performance Measure</i> – Percentage of Network in Acceptable Condition or Above	2.1 Optimise allocation of funding between infrastructure preservation and new construction	<ul style="list-style-type: none"> Difference in allocated funds relative to needs for construction and preservation
	2.2 Implement innovative and alternative low-cost maintenance techniques	<ul style="list-style-type: none"> Percentage of annual maintenance expenditures used toward these low-cost and innovative techniques
	2.3 Implement more effective control of abnormal vehicles	<ul style="list-style-type: none"> Number of abnormal vehicles operating without a permit
	2.4 Optimise freight transport	<ul style="list-style-type: none"> Percentage of truck freight moved to rail
	2.5 Utilise the Road Management System Effectively	<ul style="list-style-type: none"> Consideration of RMS data in preservation decisions (Y/N)
3. Promote Capacity Building and Workforce Development <i>Outcome Performance Measure</i> – Percentage of individuals [employees, contractors, and consultants] needing training who actually get trained	3.1 Implement a more comprehensive training and mentoring programmes for Roads Authority technical staff	<ul style="list-style-type: none"> Percentage of Roads Authority technical staff who have received adequate training
	3.2 Increase retention of engineers in the public sector	<ul style="list-style-type: none"> Turnover rate of transport engineers in the Roads Authority
	3.3 Implement comprehensive knowledge transfer from consultants	<ul style="list-style-type: none"> Percentage of completed projects with all records transferred to Roads Authority Percentage of active projects where adequate knowledge transfer is occurring
	3.4 Facilitate Small and Medium Enterprises (SMEs) to graduate beyond SME Classification	<ul style="list-style-type: none"> Number of SMEs that graduate beyond SME Classification
	3.5 Implement tender system that is based on contractor/consultant levels and types	<ul style="list-style-type: none"> Successful implementation of a tender system (Y/N)

Goal	Objective(s)	Performance Measure(s)
4. Increase Funding for Road Transportation <i>Outcome Performance Measure – Percentage of transportation needs actually funded</i>	4.1 Increase appropriated funds from Road Fund Administration	<ul style="list-style-type: none"> Amount of funds (\$)
	4.2 Pursue innovative funding methods	<ul style="list-style-type: none"> Percentage of road project funds that come from innovative sources
5. Optimise the Balance between Access and Mobility <i>Outcome Performance Measure – Percentage of the road network that functions to its intended functional class</i>	5.1 Improve rural accessibility	<ul style="list-style-type: none"> Percentage of people within 2 km of an all-weather road
	5.2 Ensure appropriate land use and transportation interaction	<ul style="list-style-type: none"> Percentage of the road network that functions to its intended functional class
	5.3 Support public transportation modes	<ul style="list-style-type: none"> Percentage of total trips using public transport
6. Preserve Namibia’s Environment and Ecological Systems <i>Outcome Performance Measure – Namibia’s ranking on the Yale Environmental Performance Index</i>	6.1 Minimise the impact of the road transport system on the natural environment and the human environment	<ul style="list-style-type: none"> Percentage of new transport projects for which an environmental assessment is required
	6.2 Use sustainable materials and green construction practices during road construction	<ul style="list-style-type: none"> Percentage of projects employing sustainable practices
7. Pursue New Innovations and Technologies <i>Outcome Performance Measure – Roads Authority’s Classification per the Technology Adoption Life Cycle Curve</i>	7.1 Implement latest technologies and innovations	<ul style="list-style-type: none"> Roads Authority’s Classification per the Technology Adoption Life Cycle Curve
	7.2 Increase collaboration with universities, academic institutions, and think tanks	<ul style="list-style-type: none"> Number of joint initiatives with such institutions

Implementation of the Plan

The implementation of this sustainability plan is envisioned as a multi-year, iterative approach in which this plan not only informs the actions and initiatives undertaken by the Roads Authority, but also forms the basis for performance measurement practices and applications to be institutionalised.

Figure 1 shows how the various elements of this sustainability plan can be viewed as relating to each other and to broader transport sector actions.



Figure 1. Relationship between Sustainability Plan Elements and Transport Sector Actions

As indicated in the figure, the sustainability statement, the goals, and objectives identified form the basis from which key actions and performance measurement processes can be undertaken in parallel with each other. Several of the actions identified in this plan (see Appendix) can be implemented based on a prioritised order to tackle specific goals and objectives, taking into consideration factors such as time, cost/resources needed, ease of implementation, level of control the Roads Authority has over such actions, etc. As noted in the diagram, several of these actions (and corresponding goals and objectives) may also get implemented through other plans and initiatives, involving stakeholders inside and outside of the Roads Authority. Ideally, at least one action should be implemented for a selected objective.

While undertaking actions outlined in the sustainability plan, the simultaneous implementation of a performance measurement approach can help to not only measure efficacy of actions taken, but also track progress toward selected goals and objectives. Performance measurement efforts will include an

Comprehensive implementation of this plan will ensure that the Roads Authority is on the forefront of sustainable transport by measuring progress toward sustainability and implementing actions to meet the sustainability goals.

aggregate ‘outcome measure scorecard’ reported for the outcome measures associated with each of the seven goals. This can provide a high-level overview of progress towards sustainability for the Roads Authority.

Additionally, customised approaches for selected goals, objectives, and performance measures can be deployed for different applications (such as reporting, evaluation, or decision making) by relevant groups or units within the Roads Authority. This can include setting of targets for specific performance measures, collecting or assembling relevant data, tracking measures over time, and analysing how key actions undertaken influence the performance measures. As noted in Figure 1, the use of goals, objectives and performance measures can influence data collection and decision making, and vice-versa.

In conclusion, this Sustainability Plan is a living document that will be updated periodically based on changing needs and context. Similarly, the content of this plan will be used as the basis for actions and performance measurement practices by the Roads Authority and its partners. This includes integration with other initiatives and plans, including the RMS, which serves as an excellent resource for basic data to feed into the performance measurement process. Comprehensive implementation of this plan will ensure that the Roads Authority is on the forefront of sustainable transport by measuring progress toward sustainability and implementing actions to meet the sustainability goals.

Appendix - List of Goals, Objectives, Performance Measures, and Possible Actions

GOAL 1: IMPROVE ROAD SAFETY

Outcome Performance Measure – *Number of roadway fatalities*

Objective 1.1 Institutionalise and Improve the Effectiveness of Road Safety Audits

Performance Measure(s) –

- Percentage of network that is audited
- Percentage of audit recommendations that are implemented

Possible Action(s) –

- Perform more comprehensive road safety audits
- Develop and implement a black spot management programme
- Design ‘forgiving’ highways – go beyond just design standards and include the latest versions of safety devices such as guardrails, rumble strips, etc.

Objective 1.2 Protect Vulnerable Road Users

Performance Measure(s) –

- Number of fatalities of vulnerable road users

Possible Action(s) –

- Do not allow bicycles and pedestrians on higher order roads
- Provide surfaced areas (like sidewalks) in the Road Reserve to keep non-motorised modes off of National Roads
- Require developers to provide bicycle and/or pedestrian facilities where appropriate
- Implement context-sensitive design principles

Objective 1.3 Promote Awareness and Education Regarding Traffic Laws and Regulations

Performance Measure(s) –

- Percent of population exposed to awareness campaigns

Possible Action(s) –

- Investigate and implement a driver education process
- Implement driving course requirements for anyone operating public transport
- Make public aware of amendments to laws/regulations
- Implement more awareness campaigns, in all major languages

Objective 1.4 Improve Safety on Major Roads

Performance Measure(s) –

- Number of fatalities on trunk, main, and district roads

Possible Action(s) –

- Consistently adopt and implement Safety Engineering Principles
- Investigate methods to improve quality of accident data
- Pursue options for highway patrolling by Roads Authority's transport inspector
- Investigate regulation of heavy trucks and public transport on daily driver hours and late night driving
- Provide more truck port facilities with appropriate amenities
- Provide lighting on roads where appropriate
- Ensure that road markings and reflectors are provided on major roads to make alignment visible

GOAL 2: ENHANCE PRESERVATION OF ROAD INFRASTRUCTURE

Outcome Performance Measure – *Percentage of Network in Acceptable Condition or Above*

Objective 2.1 Optimise Allocation of Funding between Infrastructure Preservation and New Construction

Performance Measure(s) –

- Difference in allocated funds relative to needs for construction and preservation

Possible Action(s) –

- Investigate solutions to preserve road quality and extend useful life
- Investigate best practices across the world with regard to balancing construction and maintenance costs
- Explore the possibility of making major developers (including mines) contribute financially toward the construction and maintenance of their access roads

Objective 2.2 Implement Innovative and Alternative Low-Cost Maintenance Techniques

Performance Measure(s) –

- Percentage of annual maintenance expenditures used towards these low-cost and innovative techniques

Possible Action(s) –

- Apply alternative methods for providing all-weather access
- Investigate public/private partnership (PPP)-type options such as performance-based maintenance contracting for maintenance
- Expand collaboration with universities and academic institutions with regard to low-cost maintenance technologies

Objective 2.3 Implement More Effective Control of Abnormal Vehicles

Performance Measure(s) –

- Number of abnormal vehicles operating without a permit

Possible Action(s) –

- Investigate and implement weigh-in-motion facilities in strategic locations

Objective 2.4 Optimise Freight Transport

Performance Measure(s) –

- Percentage of truck freight moved to rail

Possible Action(s) –

- Have laws in place for Roads Authority to prohibit certain loads on roads
- Investigate what types of freight can be moved from truck to rail
- Promote coordination between stakeholders such as TransNamib, Roads Authority, Ministry of Works and other ministries, and municipalities

Objective 2.5 Utilise the Road Management System Effectively

Performance Measure(s) –

- Consideration of RMS data in preservation decisions (Y/N)

Possible Action(s) –

- Promote systematic use of RMS data in decision making for road preservation

GOAL 3: PROMOTE CAPACITY BUILDING AND WORKFORCE DEVELOPMENT

Outcome Performance Measure – *Percentage of individuals [employees, contractors, and consultants] needing training who actually get trained*

Objective 3.1 Implement a More Comprehensive Training and Mentoring Program for Roads Authority Technical Staff

Performance Measure(s) –

- Percentage of Roads Authority technical staff who have received adequate training

Possible Action(s) –

- Investigate effectiveness of the Counterpart Trainee Programme

- Implement a formal mentorship and succession planning programme
- Where possible, expose engineering staff to broad range of engineering duties in line with ECN registration requirements

Objective 3.2 Increase Retention of Engineers in the Public Sector

Performance Measure(s) –

- Turnover rate of transport engineers in the Roads Authority

Possible Action(s) –

- Implement strategies to reduce turnover based on a recent report produced by Engineering Professions Association and the Engineering Council of Namibia
- Implement retention strategies including established career paths, competitive remuneration linked to performance, and providing time for senior engineers to mentor junior engineers

Objective 3.3 Implement Comprehensive Knowledge Transfer from Consultants

Performance Measure(s) –

- Percentage of completed projects with all records transferred to Roads Authority
- Percentage of active projects where adequate knowledge transfer is occurring

Possible Action(s) –

- Allocation of relevant project tasks to Roads Authority technical staff
- Implement a formalised system to collect project records and documentation in appropriate formats

Objective 3.4 Facilitate Small and Medium Enterprises to Graduate beyond SME Classification

Performance Measure(s) –

- Number of SMEs that graduate beyond SME Classification

Possible Action(s) –

- Ensure proper implementation of the SME Capacity Building Plan

Objective 3.5 Implement Tender System That Is Based on Contractor/Consultant Levels and Types

Performance Measure(s) –

- Successful Implementation of a tender system (Y/N)

Possible Action(s) –

- Study practices in other countries where tender eligibility is based on consultant/contractor levels and types
- Develop and implement such a system in Namibia

GOAL 4: INCREASE FUNDING FOR ROAD TRANSPORTATION

Outcome Performance Measure – *Percentage of transportation needs actually funded*

Objective 4.1 Increase Appropriated Funds from Road Fund Administration

Performance Measure(s) –

- Amount of funds (\$)

Objective 4.2 Pursue Innovative Funding Methods

Performance Measure(s) –

- Percentage of road project funds that come from innovative sources

Possible Action(s) –

- Investigate international best practices on innovative financing

GOAL 5: OPTIMISE THE BALANCE BETWEEN ACCESS AND MOBILITY

Outcome Performance Measure – *Percentage of the road network that functions to its intended functional class*

Objective 5.1 Improve Rural Accessibility

Performance Measure(s) –

- Percentage of people within 2 km of an all-weather road

Possible Action(s) –

- Secure and allocate funds for rural access for all relevant projects

Objective 5.2 Ensure Appropriate Land Use and Transportation Interaction

Performance Measure(s) –

- Percentage of the road network that functions to its intended functional class

Possible Action(s) –

- Enforce restrictions on encroachment in road reserve

Objective 5.3 Support Public Transportation Modes

Performance Measure(s) –

- Percentage of total trips using public transport

Possible Action(s) –

- Collaborate with appropriate stakeholders in support of improved public transport

GOAL 6: PRESERVE NAMIBIA'S ENVIRONMENT AND ECOLOGICAL SYSTEMS

Outcome Performance Measure – *Namibia's ranking on the Yale Environmental Performance Index*

Objective 6.1 Minimise the Impact of the Road Transport System on the Natural Environment and Human Environment

Performance Measure(s) –

- Percentage of new transport projects for which an environmental assessment is required

Possible Action(s) –

- Road development should not impede animal movements
- Minimise conflicts between vehicles and animals
- Road development should not negatively impact air, water, and soil quality

- Road development should not negatively impact the landscape and areas of natural, historical, cultural, or aesthetic value

Objective 6.2 Use Sustainable Materials and Green Construction Practices during Road Construction

Performance Measure(s) –

- Percentage of projects employing sustainable practices

Possible Action(s) –

- Investigate possible options for the use of sustainable materials and green construction practices

GOAL 7: PURSUE NEW INNOVATIONS AND TECHNOLOGIES

Outcome Performance Measure – *Roads Authority's Classification per the Technology Adoption Life Cycle Curve*

Objective 7.1 Implement Latest Technologies and Innovations

Performance Measure(s) –

- Roads Authority's Classification per the Technology Adoption Life Cycle Curve

Possible Action(s) –

- Stay abreast of latest developments in terms of technologies and innovations

Objective 7.2 Increase Collaboration with Universities, Academic Institutions, and Think Tanks

Performance Measure(s) –

- Number of joint initiatives with such institutions

Possible Action(s) –

- Coordinate applied research through the T2 centre