

# **UNDER-UTILISATION OF THE TRANS-KALAHARI HIGHWAY: INSPECTION FINDINGS AND RECOMMENDED SOLUTIONS**

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## **INTRODUCTION**

The Trans-Kalahari Highway, also referred to as the Trans-Kgalagadi Highway in Botswana, is meant to drive the Walvis Bay-Botswana-Gauteng-Maputo Development Corridor, to stimulate economic activity and therefore growth. The highway extends from the Walvis Bay Harbour on the west coast of the sub-continent through Botswana and Pretoria to Johannesburg the industrial capital of South Africa. The highway covers some 1800 kms, which is 400 kms shorter than the alternative route through southern Namibia. The shorter route is meant to significantly reduce travel time and vehicle operating costs.

A feasibility study completed in 1991 for the last section of the highway in Namibia, to the border with Botswana gave 315 vehicles per day with a 22% heavy vehicle content for 1990, growing at 3% per annum. With no problems on the highway, the traffic today should have been 423 vehicles per day of which 93 would have been heavy vehicles crossing the Botswana/Namibia border which is far lower than the current 160 vehicles per day of which between 10-20 are heavy vehicles. The current traffic therefore represents 38% of the expected utilization of the highway, signifying a loss on the investment in the Trans-Kalahari Highway.

This paper is an outcome of an inspection of the highway commissioned by the Southern African Customs Union-Transport Liaison Committee (SACU-TLC) and the Sub-sectoral Committees of the Southern Africa Transport and Telecommunications Commission (SATTC) for the purpose of identifying reasons why the utilization of the highway is low. As an outcome of the inspection, short and long-term measures are recommended to improve the utilization of the highway.

## **MAIN ISSUES IDENTIFIED**

The main issues identified as deterring the utilization of the highway comprise of operational issues, road safety, official control and the levying of cross border charges. The operational issues identified are border hours, driving hours for heavy vehicles, mass and dimensional limits and facilities along the highway. The other issue looked at was road safety, where consideration was given to road geometric standards, road condition, animals and pedestrians on the highway, and the appropriateness of road signs to guide the motorists on the highway.

## **OPERATIONAL ISSUES**

### **Border Hours**

There are two border control points on the highway namely the South Africa/Botswana border post (Schilpadshek/Pioneer Gate), which is open between 07h00 and 19h00 and the Botswana/Namibia (Mamuno/Trans-Kalahari) border post which is open between 07h00 and 22h00. Heavy vehicle operators have expressed the opinion that both border posts should as a minimum be open between 06h00 and 24h00 to give the drivers more time to cover the long distances involved. This will also make the highway more competitive with the alternative route through southern Namibia, where border posts are open 24 hours a day.

### **Driving Hours**

In Botswana, heavily trafficked road sections of the road network are subject to prohibition of heavy vehicle operation from 18h00 to 24h00 on Fridays, Saturdays, Sundays, public holidays and days preceding public holidays for the purpose of reducing accidents resulting from the mixing of long-distance traffic with urban traffic. One such section on the highway is the Pioneer Gate-Lobatse section.

### **Mass and Dimensional Limits**

The legal mass and dimensional limits are similar in South Africa and Namibia, having been raised during 1998 and 1999 respectively. Although Botswana has indicated that it is in the process of revising its Road Traffic Act which will inter alia include revising the mass and dimensional limits upwards, this has not yet taken place and therefore a vehicle legally loaded in Namibia and South Africa is overloaded or oversized in Botswana. The Southern African Customs Union (SACU) and the Southern Africa Transport and Communications Commission (SATCC) are working towards harmonization of axle load and dimensional limits.

### **Facilities**

The highway in South Africa and the south-eastern part of Botswana traverses areas where towns are within acceptable distances and therefore facilities like filling stations, garages, overnight accommodation and communication are available. The same applies to the Namibian stretch of the highway, however in western Botswana where it traverses the Kalahari Desert (known as the Trans-Kgalagadi Desert in Botswana), facilities are long distances apart with the longest distance of 267 km being between Kang and Ghanzi. If the utilization of the highway improved, entrepreneurs would be encouraged to develop facilities and provide services along the route. The three countries have cellular communication systems which can only roam between Namibia and South Africa and between South Africa and Botswana but not between Botswana and Namibia a problem especially when operators require emergency repairs or attention in case of accidents.

## **ROAD SAFETY**

In terms of road safety, the inspection considered road geometric standards, road condition, animals and pedestrians on the road and road signage for directing motorists.

## **Geometric Standards**

Carriageway widths along the highway vary from section to section and from country to country. For a corridor of this nature, as part of the SATCC Regional Trunk Road Network, a minimum of 2x3.7 m paved carriageway and 2x2.5 m shoulders or wider (paved or unpaved) where traffic justifies, is recommended. On some sections especially in South Africa, paved shoulders are used by heavy vehicles and other slow moving vehicles as auxiliary lanes.

## **Road Condition**

The condition of the road on the highway varied from section to section, with the South African section between Rustenburg and Zearust to the border depicting edge breaks. In Botswana the section between Jwaneng and Sekoma, especially the last 40 kms to Sekoma, the pavement has failed resulting in excessive deformation and poor riding quality. The pavement failure is not traffic-related but rather is due to poor workmanship during construction. The remaining sections varied from good to fair with the section between Sekoma and the Botswana/Namibia border being in very good condition.

## **Animals and Pedestrians on the Road**

Animals and pedestrians on the road are common in areas near the highway that are heavily populated, like between Zeerust and the Botswana border, the section Jwaneng-Sekoma-Kang and on the last 50 km in Botswana, to the border with Namibia. The movement of animals across and along the road is attributed to the close proximity of waterpoints to the road.

## **Road Signage**

Road signs to direct motorists on those parts of the highway passing through towns are inadequate. The route also lacks confirmation signs to assure motorists on the highway. Further the route numbering systems in the three countries differ.

## **OFFICIAL CONTROL**

### **Immigration, Customs and the Police**

Information gathered through interviews with heavy vehicle drivers provided information on the general attitude of immigration, customs and police officers usually found at border control points and road blocks. Arrogance and lack of courtesy to the public by all officials of the three countries were identified as major problems.

Law enforcement officers especially in Botswana have been reported to request for payment of spot fines for traffic offences without issuing receipts. One positive note, having recognized the extent and negative effect of malpractices on society and the economy, Botswana has established a Directorate on Corruption and Economic Crimes to address the problem.

## **Overload Control**

Overload control on the highway is carried out using a variety of weigh scales, i.e. mobile weigh scales, single axle platforms, 3x4 m platforms and multi-deck platforms. The accuracy of some of the weigh scales especially the single-axle ones has been the subject of research by the Council for Scientific and Industrial Research (CSIR) of South Africa, which has found gross inaccuracies in this type of weigh scale. As a minimum standard, SATCC has recommended the use of the 3x4 m platforms to replace all single axle platforms. A vehicle therefore at entry to one country weighed on a 3x4 m platform, can be found overloaded at exit if weighed on a single axle platform or vice-versa. Also, weighing vehicles at every weighing facility on the route causes significant delays to heavy vehicle operators resulting in late delivery of goods.

As far as overload fees are concerned in Botswana the fees are based on the gross vehicle mass which if compared to fees based on axle overloads do not recover the actual cost of the additional damage of individual axles.

## **CROSS-BORDER OR ROAD FEES**

Cross-border charges have not yet been introduced in South Africa and Namibia, although Namibia is in the final stages of implementing the charges based on the provision of the Memorandum of Understanding (MOU) on Road Transportation in the Southern Africa Customs Union (SACU). The implementation will be a two stage process, initially only charging the weight-distance component and later incorporating the pro-rata license fee charge. The proposed charges are lower than those proposed by the SATCC and SACU.

Botswana charges cross-border fees for either a single trip, a return trip, a three month permit or an annual permit. The charges are levied separately for the horses and trailers. The level of charges in Botswana compare well with those proposed by the SATCC and SACU.

The only problem identified with these charges is that it is possible that the officials levy the wrong fees and therefore overcharge the operators.

## **LOSS OF BENEFITS**

As mentioned earlier, the Trans-Kalahari Highway shortens the distance between Johannesburg the industrial centre in South Africa and the Walvis Bay Harbour on the west coast by 400 kms, which is meant to significantly save the motorists on vehicle operating and time delay costs.

A detailed survey of heavy vehicles crossing the Namibia border was conducted by the Council for Scientific and Industrial Research (CSIR) in 1994 and gave a daily average of 115 heavy vehicles crossing into Namibia. At a 3% growth, an estimated 137 heavy vehicles are currently crossing the border today. Taking into account that not all heavy vehicles originate from the Gauteng province and beyond, a reduction by 30% gives 96 heavy vehicles per day that would otherwise have used the Trans-Kalahari Highway which compares well with the 93 predicted at the planning stage. Likewise it can be assumed that a similar reduction in light vehicles would give a total of 264 light vehicles per day that would otherwise use the highway. Based on these figures and the current utilization, the present value of benefits over selected analysis periods based on vehicle operating costs and time delay costs, can be calculated. This gives an indication of the loss of potential benefits by motorists and therefore a loss to the economies of the three countries.

The following table presents the said losses based on average time delay costs and vehicle operating costs (VOC) applicable to Namibia using a 3% traffic growth and a 10% discount rate. It is assumed that optimum

maintenance measures on both the Trans-Kalahari Highway and the alternative route are maintained over the analysis periods, for the riding quality to remain below an IRI of 2.6 (IRI abbreviated for International Roughness Index).

**Table 1: Loss Benefits: Present Value of Vehicle Operating Costs and Time Delay Costs: Trans-Kalahari Highway Versus the Southern Route**

*N\$ (million)			
Analysis period	VOC	Time Delay Costs	Total
<b>10 Years</b>	<b>91.6</b>	<b>47.6</b>	<b>139.2</b>
<b>20 Years</b>	<b>287.6</b>	<b>72.2</b>	<b>359.8</b>
<b>30 Years</b>	<b>338.5</b>	<b>85.0</b>	<b>423.5</b>

- 1 N\$ = 1 Rand, 1 USD = N\$6.0

From the figures above, it is evident that there is a significant loss of benefits to the economy of the three countries due to the under-utilisation of the highway, with the vehicle operating costs dominant for all the three periods.

## CONCLUSIONS AND RECOMMENDATIONS

At today's construction costs, the investment in the Trans-Kalahari Highway amounts to US\$ 0.23 billion and the utilisation below the predicted traffic levels, represents a loss of return on the investment. To facilitate the improvement of the highway, the responsible authorities in the three countries should implement the following measures.

- if traffic volumes improve, consideration be given to opening the border control points on a 24 hour basis.
- to avoid long-distance traffic mixing with urban traffic bypasses where viable be constructed around urban centers.
- Botswana increases its legal axle load and dimensional limits in line with the limits recommended in the SACU member states.
- service providers for cellular communication in the three countries sign roaming agreements.
- unless shoulders are designed for use by traffic as auxiliary lanes, use should be prohibited using appropriate road signs.
- watering points for livestock should be moved further away from the road and where possible the road reserve be fenced to eliminate indiscriminate movement of domestic animals across and along the road.
- for consistency the three countries implement the SADC route numbering system.

- confirmation signs incorporating “The Trans-Kalahari Highway” be repeated at regular intervals on the route and at intersections in urban areas to assure motorists.
- the responsible authorities in the three countries develop evaluation systems for officials at the border control points for identification of those that require customer/public relations training.
- name tags and identification numbers be introduced for officials to identify the culprits and those found guilty of malpractices be severely punished to deter the practice.
- approved weighbridge stations in the three countries be identified and a weighbridge certificate system be introduced to avoid weighing at every weighing at every station.
- overload control fees be based on actual pavement damage cost recovery.
- cross-border charges where applicable, be disseminated to the other two countries for the operators to determine the applicable charges before commencement with their trips and to eliminate currency exchange problems at the border and the carrying of cash, a coupon system be introduced.

The Southern African Transport and Communications Commission (SATCC) and the Transport Liaison Committee of the Southern African Customs Union (SACU-TLC) should take the initiative of discussing the identified problems with the relevant authorities in the three countries with a view to implementing the measures.

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Educational Background: BSc. Eng (1978): Makerere University, Uganda  
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Responsible for the strategic planning of the road network as part of a team in the Roads Authority delegated to manage the road network as an agent of the Ministry of Works, Transport and Communication