



**SOUTHERN AFRICAN DEVELOPMENT COMMUNITY
NACALA ROAD CORRIDOR STUDIES**

**FEASIBILITY STUDY FOR ONE-STOP BORDER POSTS,
DETAILED ENGINEERING DESIGN AND LEGAL FRAMEWORK
FOR OPERATION OF ONE-STOP BORDER POSTS AT
MCHINJI [MALAWI]/MWAMI [ZAMBIA AND CHIPONDE
[MALAWI]/MANDIMBA [MOZAMBIQUE].**

FEASIBILITY REPORT

**VOLUME 2:
TRAFFIC STUDIES & ECONOMIC FEASIBILITY REPORT**



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FEASIBILITY STUDY FOR ONE-STOP BORDER POSTS, DETAILED ENGINEERING DESIGN AND LEGAL FRAMEWORK FOR OPERATION OF ONE-STOP BORDER POSTS AT MANDIMBA AND MWAMI

1. BACKGROUND

1.1 The Nacala Development Corridor

The Nacala Development Corridor (NDC) consists of the regional trunk road route that begins from Nacala port on the Indian Ocean in Mozambique, and runs westwards through Nampula, Cuamba to Mandimba at the border with Malawi and proceeds into Malawi through Mangochi, Liwonde, Lilongwe and further westwards to Mchinji at the border with Zambia. The route continues to Lusaka through Chipata. The Corridor is designated as Route 20 of the Southern African Development Community (SADC) Regional Trunk Road Network (RTRN). On its westernmost branch, the route continues into the Democratic Republic of Congo (DRC). The whole Corridor covers a total of 1,700 km from the port of Nacala to Lusaka.¹

The Port of Nacala is one the deepest sea ports on the Indian Ocean. Because of this, it does not require any dredging. Importance of the NDC is that it provides an important trade links for land-locked Malawi and Zambia as well and connecting these countries with other North-south corridors through its roads and railways.

1.2 Baseline Traffic and Trade Volumes on the Corridor

Currently, traffic volumes on the NDC are very low. Table 1.1 below summarizes cargo and containers handles at Mozambique ports during the period 2005-2008. It may be noted that Nacala Port is the third largest port after Maputo and Beira in terms of cargo handled during the period. In 2008, for instance it handled a total of 1,054,000 tonnes of cargo accounting for 9% of total cargo handled in Mozambican ports. During the same period, it handled 49,770 twenty-foot equivalent units (TEUs) of containers, this being equivalent to 22 % of the total containers handled, coming third after Beira and Maputo ports.

Table 1.1: Cargo and Containers Handled in Mozambique's Ports, 2005-2008

	Total	Maputo	Beira	Nacala	Quelimane	Pemba	M.da Praia
Cargo handled (1,000 metric tonnes)							
2005	9,982	6,360	2,428	878	244	63	10
2006	10,683	6,666	2,746	952	219	85	14
2007	11,079	6,858	2,915	1,108	86	97	16

¹ Terms of Reference for the Study, Paragraph 1.2

2008	11,637	7,406	2,991	1,054	66	100	20
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Containers handled (TEUs)

2005	159,287	57,511	35,000	32,310	9,704	5,244	215
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2006	171,216	65,390	34,965	34,184	8,753	7,976	645
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2007	194,247	63,764	71,167	44,870	4,870	8,244	1,332
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2008	225,419	74,792	85,716	49,770	4,172	9,295	1,674
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Source: *Cost of Factors in Mozambique*; CPI; April 2004; quoted in the World Bank Study, Table 37, p. 77.

During the same period, it handled 47.8 million TEUs of containers constituting about 22% of the total container traffic handled at the ports of Mozambique. Although Nacala port currently handles modest volumes of cargo and containers, compared to those at Beira and Maputo, it has considerable potential to handle much higher freight volumes, given the on-going improvements on the Corridor.

2. OVERVIEW OF ECONOMIES OF BORDER COUNTRIES IN THE NACALA CORRIDOR

2.1 Introduction

In this section it is intended to provide a baseline resume of the performance of economies of the three countries served by the Nacala Corridor, namely, Mozambique, Malawi and Zambia. The baseline will include a summary of projections of their development in the short and long term. It will take into account the major development activities and projects that may impact on trade among the countries and with other countries in the region in the medium and long term. This review will provide the context in which the proposed OSBPs will be implemented.

This is necessary in order to indicate the manner in which each of the economies generates trade and hence traffic which affect activities of the border posts the efficiency of which is sought to be improved. Table 2.1 below summarizes the demographic profiles of Mozambique, Malawi and Zambia while Table 1.3 summarizes real Gross Domestic Product growth rates of the countries during the period 2002-2012 and inflation rates in each of the countries over the last four years, i.e. 2009-2012.

Mozambique

The Tables reveal that Mozambique had a total population of 23.3 million in 2010 with an urban population comprising 38.4 %. During the period 2005 -2010, the population grew at the rate of 2.5 % per annum (p.a.). Malawi had a total population 15.7 million in 2010 of which nearly 20 % lived in urban areas. During the period 2000-2005 its population grew at 3.1% but this rate has since declined slightly to 3.0 % p.a. during the next five years (2005-2010). Zambia, which had the lowest population of the three countries at out about 13.3 million in 2010, has an urban population of about 36 %. Its total population has been growing at 2.6 p.a. during the period 2005-2010.

Table 2.1: Demographic Profiles of Mozambique, Malawi and Zambia

Population	Total ('000)	Urban (%)	Growth Rate 2000-2005 (%)	Growth Rate 2005-2010
	2010	2010		
Mozambique	23,406	38.4	2.8	2.5
Malawi	15,692	19.8	3.1	3.0
Zambia	13,406	35.7	2.4	2.6

Source: African Development Bank, UNDP, *et al.* African Economic Outlook, 2013 (Check).

Table 2.2 below shows annual growth rates of real Gross Domestic Product (GDP) for Mozambique, Malawi and Zambia during the period 2002-2012. Mozambique's economy appears to be quite stable in terms of GDP growth rates. Table 2.2 below indicates that its GDP grew at an average of 7.7 % per annum during the period 2002-2012. Compared to Malawi, Mozambique's economy has had fewer fluctuations during the period.

Malawi

Malawi has a total area of 11.85 hectares (ha) and is inhabited by a total population of 15,883,000 (2008) growing at about 2.7% p.a. (1998-2008). The country's economy enjoyed rising growth until recently; its real GDP rose from 1.7 % in 2002 to 5.7 % in 2004 but declined to 5.4 % in 2004 and further dropped to only 2.6 % in 2005. From 2006 the real GDP shot up to 7.7 % in 2006 and thenceforth grew at an average of 7.1 % per annum (p.a.)

till 2011. In 2012, however, the country's GDP grew by only 2.0 %. The Table indicates that Malawi's economic growth has been steadily slowing down from a peak of 8.6 % in 2008 to only 2.0 % in 2012 against an Africa's average of 4.8% p.a. Overall, between 2002 and 2012, the country's economy showed instability, recording an average growth rate of 4.8 % p.a. Malawi is land-locked and depends on Mozambican and South African ports to access the sea.

Foreign exchange shortages, fuel and electricity supply shortages continue to be constraints to the business environment, and the cost of living keeps going up. Inflation rate has been rising since the beginning of the year 2012 up to 25% in August 2012 from 10.3% in January 2012, compared to single digit figures in 2010. Since 2005, Malawi had enjoyed uninterrupted solid growth for five consecutive years averaging about seven percent, backed by sound economic policies and a supportive donor environment. But since 2010 the policy environment began to deteriorate resulting in acute economic problems.

The economy of Malawi is heavily dependent on agriculture which continues to be the country's main foreign exchange earner with tobacco, sugar, tea, coffee and cotton as major export products followed by manufacturing and tourism. This heavy dependence on the agricultural sector, especially tobacco, renders its economy vulnerable to economic shocks, hence the need to diversify. In recent years, efforts have been made to diversify the economy to other sectors such as mining, tourism and service sectors. Consequently, the contribution of other sectors including mining to GDP has increased over the years with agriculture declining from about 38 percent in 1994 to about 27 percent in 2010. Prior to the implementation of Malawi Growth and Development Strategy (MGDS, 2002 to 2005), GDP growth rate averaged 3.5 percent against a target of 5.2 percent. On the other hand, during the implementation period of the MGDS (2006 to 2010), the economy performed remarkably well, with an average real GDP growth rate of 7.1 per cent compared to a target of 6 percent. Over the past years, there has been significant reduction in the number of people living in poverty from 52 percent in 2004 to 39 percent in 2010.

Malawi has abundant mineral resources that can be exploited. These resources include bauxite, heavy mineral sands, monazite, coal, uranium, precious and semi-precious stones, limestone, niobium, dimension stones and rock aggregates. The role of the mineral sector in the economy is increasing with the Kayelekera uranium mine in the northern part of the country opened in 2009. However, agriculture still remains an important source of growth, and it continues to be a significant driver of growth through regional exports and import substitution.

Evidence from the recently completed Investment Climate Assessment² (ICA), however, suggests that macroeconomic instability is the biggest perceived constraint to the country's private-sector performance, followed by access to finance, problems in the supply of electricity, availability of skilled workers, crime and corruption.

Zambia

Table 2.1 indicates that Zambia which is also land-locked, has a total population of 13.4 million of whom 35.7 % live in the urban areas while the majority (64.3 %) live in the rural areas. As Table 2.2 below indicates, the Zambian economy has been growing at a stable rate of about 5.8% per annum between 2002 and 2012, in terms of real GDP growth.

Table 2.2: Summary of Real GDP Growth Rates (2002-2012) and Inflation Rates (2009-2012) for Malawi, Zambia and Mozambique, DRC

Country	Real Gross Domestic Product Growth Rates (%)											Average Growth Rate (2002-2012)
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Mozambique	9.2	6.5	7.9	8.4	8.7	7.3	6.8	6.4	8.1	7.7	7.9	7.7
Malawi	1.7	5.7	5.4	2.6	7.7	5.5	8.6	7.6	6.7	6.4	2.0	4.8
Zambia	3.3	5.1	5.4	5.3	6.2	6.2	5.7	6.4	6.6	6.5	6.7	5.8
DRC												
Africa												
Inflation (%)												
Malawi								8.4	7.7	7.6	6.2	
Mozambique								3.5	12.7	9.2	7.3	
Zambia								9.9	7.9	7.1	6.2	

Source: African Development Bank, UNDP, *et al.* African Economic Outlook, 2013 (Check).

3. ON-GOING AND FUTURE ROAD DEVELOPMENTS

As already indicated, the current low activity at the border as reflected in the low traffic volumes above, are due to the poor condition of the roads. Most vehicles appear to be avoiding passing through the Nacala Corridor because of the poor condition of the roads and the high vehicle operating costs (VOCs) and long transit times which make the corridor use more uneconomical. It may be noted, however that several road works are at advanced stages of implementation. During the First Meeting of the Nacala Development Corridor One-Stop Border Post (OSBP) Programme held in Lilongwe, Malawi in August 2013, the following road projects were expected to enhance the capacity of the Nacala Development Corridor (NCD).

In **Malawi** the projects include:

- 1) Completion of rehabilitation and resealing of the 162 km section of the Lilongwe-Nsipe road on the Malawi side of the corridor;
- 2) The rehabilitation of the 77.5 km Lilongwe-Dedza road which was completed in May 2012;
- 3) Completion of rehabilitation of the Dedza-Nsipe road (83.5 km) to be completed during 2013 through funding by the Government of Malawi;
- 4) The on-going construction of the Lilongwe City West By-Pass road to be funded by the AfDB which was reported to be 11 % complete in August 2013.

Thus besides the Lilongwe by-pass, a total of 323 km of roads are being developed along the Malawian section of the NDC.

On the **Mozambican** side, developments projects aimed at increasing the efficiency of the Corridor include:

- 1) The emergency rehabilitation of the Nacala port that is expected to be completed in March 2014, funded by the Japan International Cooperation Agency (JICA);
- 2) Construction of an international airport in Nacala that is expected to be completed in March 2014. It is funded by the Government of Mozambique through assistance from Brazil; the terminal will be completed in January 2015;
- 3) On-going construction of a new coal terminal at Nacala port to be served by the on-going Moatze-Nacala railway line passing through Malawi;
- 4) The on-going rehabilitation and upgrading of the Nampula-Cuamba Road which is funded by AfDB and is expected to be completed at the end of 2014. The road will proceed to Mandimba on the border of Mozambique with Malawi (confirm). This road, with a total length of approximately 302km including the Mandimba-Malawi Border road, traverses four districts Mozambique with high agricultural potential, namely Cuamba, Mandimba, Ngauma and Lichinga in Niassa Province. In particular, the Cuamba-Mandimba-Malawi Border road is an important section of the Nacala Development Corridor, which besides connecting Niassa and Nampula Provinces, also links both land-locked Zambia and Malawi to the Mozambican coast at Nacala port.
- 5) Launching of the Nacala Economic Free Zone in 2012 (q.v.);
- 6) Conclusion of the Master Plan for Nacala Development Corridor (q.v.);
- 7) The launching of the Economic Development Plan for the Development of Nacala Corridor.

Projects in **Zambia** aimed at enhancing the capacity of the NDC include the following:

- 1) Construction /rehabilitation of the 98.93 km Luangwa-Petanke road funded by the EDF, AFD and EIB, expected to be completed in...(q.v.);) it was reported that the works contract for the Nyimba-Petauke-Sinda section commenced in June 2013 while the works contracts for the other three sections were expected to commence in September 2013. Works for all the sections are expected to be completed by September 2015.
- 2) Construction of the 114 km Nyimba-Petauke road through funding by the AfDB.
- 3) Construction and rehabilitation of the Mutenguleni-Chipata-Mwami road (50.39 km) which will include Chipata township roads – all to be funded by EDF, AfDB and EIB.
- 4) Construction/rehabilitation of Luangwa – Nyimba (98.93km) through funding by EDF, AFD, EIB; and
- 5) Construction/rehabilitation of Sinda – Mutenguleni (95.5km) through funding by EDF, AFD, EIB;
- 6) The feasibility study for the development of an Inland Dry Port at Chipata for which funds were reported to have been received from the EDF.

Progress in the implementation of these projects reflect determination at the national and regional levels by border countries to strengthen the capacity of the Nacala Development Corridor. Overall, it is expected that the development of these transport infrastructure will put pressure on the existing operational capacity, efficiency and facilities of the BPs, given that their completion dates are quite close. When they are all completed, the remaining main trade facilitation constraints will be delays at the border posts and hence the need to hasten the OSBP Programme.

4. TRAFFIC SURVEY STUDY FOR MCHINJI AND CHIPONDE BORDER POSTS

4.1 Results of Traffic Survey

The traffic survey was undertaken by the Study Team for seven days on the Malawi side of the borders with Zambia and Mozambique, respectively, i.e. at Mchinji and at Chiponde Border Posts (BPs). Origin-Destination (O-D) survey was also carried out at each of the BPs for one day. Since it was not possible to undertake these surveys on the Zambian and Malawian BPs (Mwami and Mandimba) it was assumed that traffic that passed through one of the border posts in Malawi also passed through the corresponding BP in Zambia and Mozambique. In addition, an axle load surveys was conducted at Mchinji. Separate formats were used for passenger vehicles and goods vehicles. No historical traffic data was available at any of the border posts during the survey.

4.1.1 Vehicle Classifications

During the traffic counts, Motorized Transport (MT) traffic was classified into nine (9) categories as shown in Table 4.1 below.

Table 4.1 : Vehicle Categories Surveyed

Sl. No.	Vehicle Category	Description
1	Cars	Include saloon cars, station wagon passenger cars
2	Pick-ups, Jeeps, 4WDs, Vans	All pick-ups, 4 WD cars and private vans
3	Matatus and Minibuses	All public service mini-buses with seating capacity less than 45
4	Buses	All public service buses with seating capacity more than 45
5	Light Goods Vehicles (LGV)	All trucks with maximum laden weight of 5 tonnes
6	Medium Goods Vehicles (MGV)	All trucks with 2 axles and laden weight of more than 5 tonnes
7	Heavy Goods Vehicles	All trucks with $\frac{3}{4}$ axles and weight greater than 12 tonnes
8	Articulated Trucks	5-6 axles truck
9	Other Vehicles	Tractors, construction equipment, etc

4.1.2 Annual Daily Traffic (ADT)

Results of the vehicle counts at Mchinji and Chiponde BPs are shown in Table 4.2 below. As the Table reveals, the Average Annual Daily Traffic (AADT) traffic is very low at a total of 78 vehicles at Mchinji and only 31 at Chiponde.

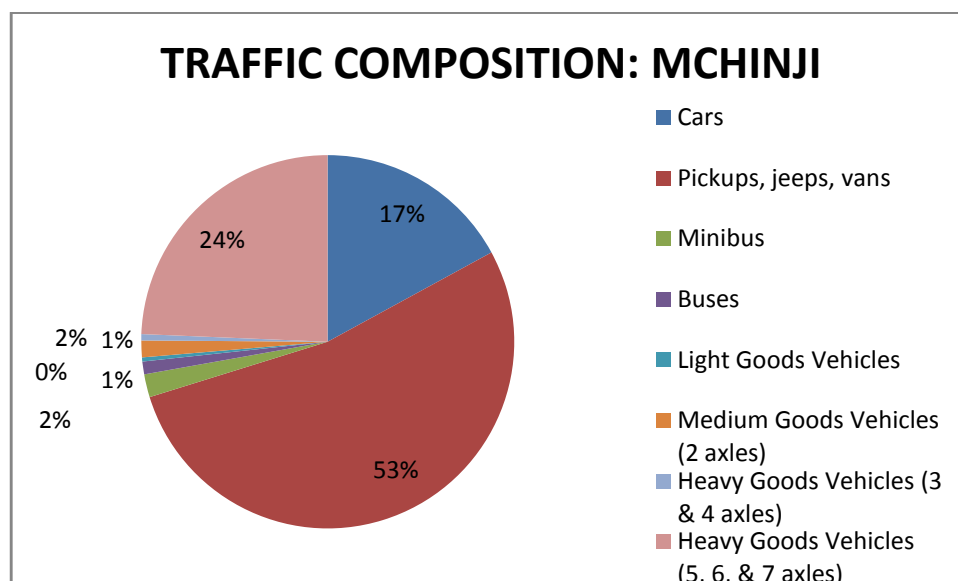
At **Mchinji BP**, It may be observed from the Table and Figure 4.1 below, majority of the vehicles consist of pickups, jeeps and vans which account for 53.8% of the total AADT, followed by Heavy Goods Vehicles (HGVs of 5-7 axles) which comprise 24.3% of the total vehicles, while 17% of the AADT consist of cars and four wheel drives going to and coming from the National parks in Zambia or residents visiting the neighboring countries on either side of the border. It may be noted that the AADT for minibuses, buses and medium goods vehicles was quite low, indicating the low level of cross-border passenger traffic. Minibuses and buses accounted for only 2% and 1% of the total AADT at this BP, respectively.

Table 4.2: Number and Category of Vehicles at Mchinji and Chiponde BPs

Vehicle Type	MCHINJI	CHIPONDE
Cars	13	5
Pick ups, Jeeps, Vans	42	4
Mini Bus	2	0
Buses	1	0
LGV	0	0
MGV (2Axles)	1	0
HGV (3to 4Axles)	0	0
HGV (5to 7Axles)	19	22
Tractors	0	0
AADT	78	31

Source: Study Team

Figure 4.1 Traffic Composition at Mchinji BP



Additional primary information obtained by the Study Team from border staff from Malawi, shows, however, that the border post handles about 80 vehicles and 400 persons every day. About three buses operate across the border daily. Imports into Malawi include electrical and household goods, farm produce, juices, foodstuff, construction products like cement, lime, and steel bars while imports into Zambia include farm produce, tea, sugar and timber.

The above survey data differ significantly from data in a recent similar study undertaken by USAID on Mchinji BP³. According to the USAID study, “a total number of 220 trucks crossed Mchinji border during the 6 days of the border assessment”, with 138 trucks being recorded as coming into Malawi and 82 trucks leaving Malawi at Mchinji. That study, however abandons the collected data due to what it terms “gaps in the data collected” and instead uses the total number of trucks entering or exiting Malawi as indicated in Table 4.3 below. It is assumed in this study that these were annual border crossing data for trucks at Mchinji.

Table 4.3: Border Crossing Trend at Mchinji

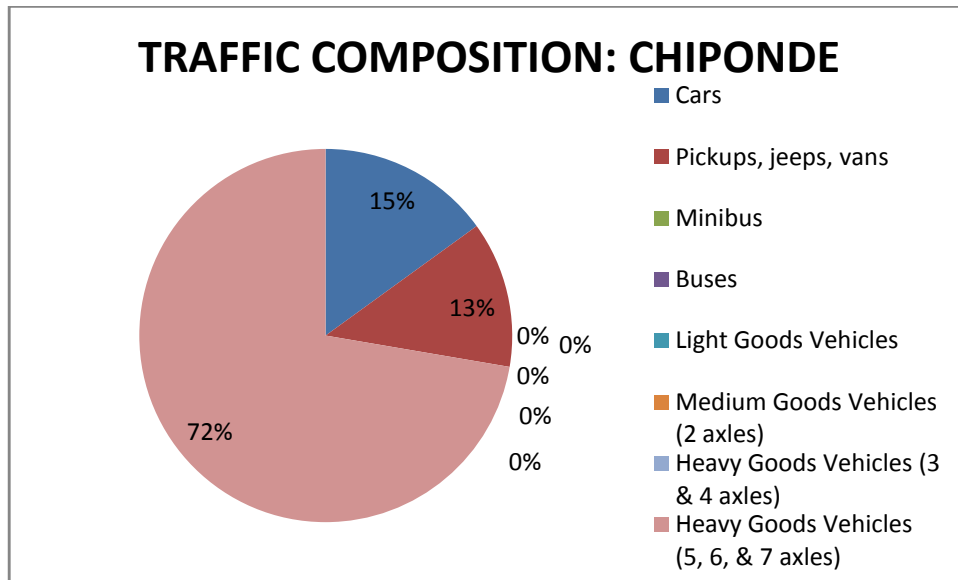
	Exports	Imports	Total
Loaded	28	91 (41 pre-cleared, 28 transit)	119
Empty	42	33	75
Total	70	124	194

The study’s findings indicated in the above Table show that “60% of the trucks leaving Malawi were empty while only 27% of the incoming trucks were empty. Of the 91 incoming trucks that were loaded, a substantial part of these (45%) were pre-cleared consignments and 30% were transit consignments.”

The current traffic volume of traffic at **Chiponde** BP is low with an AADT of only 31 observed during the survey (Table 4.2 above and Figure 4.2 below). The majority of these vehicles (72%) were HGVs, followed by cars (15%) and pick-ups, jeeps and vans which constituted 13%. The AADT for buses, minibuses, light goods vehicles (LGVs), and medium to heavy goods vehicle of 2-4 axles was below 1.

³ Source: USAID: Trade Hub Southern Africa Technical Report: Coordinated Border Management (CBM) – Mchinji Border Operations Assessment (BOA) Work Plan Activity: 1.2, March 2013, Table 1, Page 17.

Figure 4.2 Traffic Composition at Mchinji BP



During discussions with the BP managers, however, it was indicated to the Study Team that about 30 vehicles and 300 persons passed through Chiponde/Mandimba BPs daily.

The traffic volumes observed at at Mchinji and Chiponde are low due to the poor condition of roads in the Nacala Development Corridor. As indicated in Section 3 above, several road rehabilitation projects along the Corridor are still at various stages of implementation. The completion of those projects will result in considerably increased traffic levels (AADT) and will exert pressure on the current BP operations.

4.2 Origin-Destination Survey

Origin-Destination surveys were conducted by the road side interview method. This was done for a day on both borders to establish:

1. Trip origins
2. Trip destinations
3. Passenger carrying capacities
4. Truck loading
5. Trip frequency
6. Trip purpose
7. Processing time for vehicles.

At the Mchinji border post, most vehicles, 22 in number, were found to originate from Zambia while 2 were found to have come from Johannesburg. Most of the vehicles crossing the border were passenger cars and other light goods vehicles such as pickups, sports utility vehicles and vans.

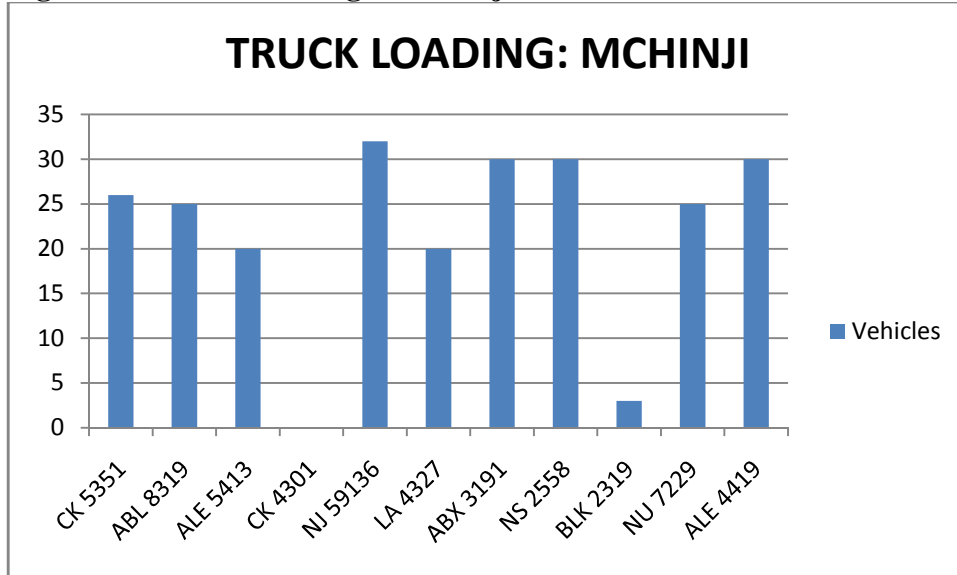
At Chiponde border post trips of 15 drivers of the total 17 interviewed were found to originate from Mozambique and of these 12 were found to be through traffic going back to Mozambique the common route being Mandimba to Tete and mostly freight vehicles carrying tobacco and cotton.

There are very few cross-border passenger service vehicles currently on both borders but it was noted that there are some buses crossing at the Mchinji border post.

4.3 Truck Loading

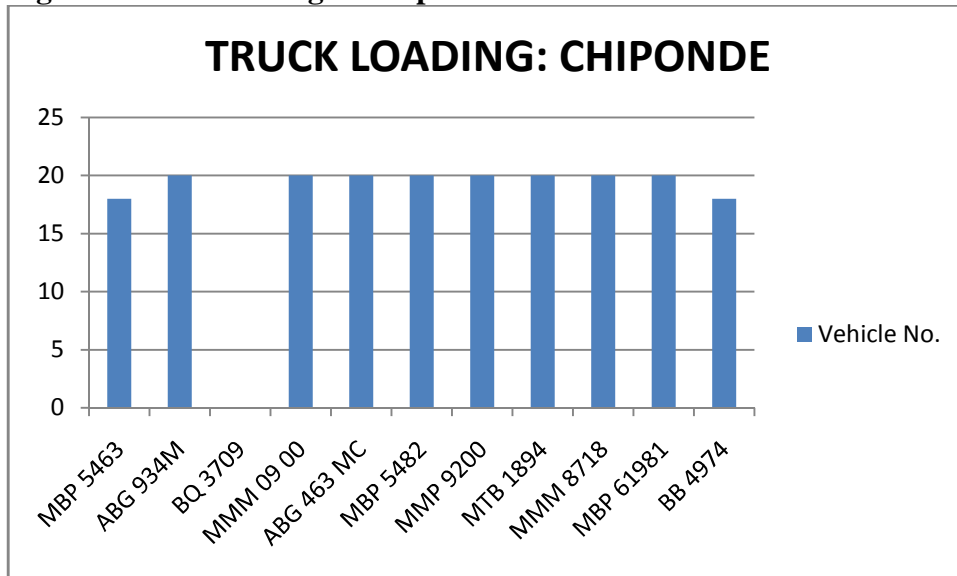
Truck loading at Mchinji was found to be between 3 to 32 tonnes with an average of 21 tonnes.

Figure 4.3 Truck Loading at Mchinji



At Chiponde, the truck loading was found to be an average of 23 tonnes ranging between 18 and 25 tonnes.

Fig. 4.4 Truck Loading at Chiponde



4.4 Trip Frequency

Most vehicles crossing through Mchinji border post were found to pass through between once a month and eight times in a month with most being sports utility vehicles, touring vans and pickups.

At Chiponde, 11 of the vehicles which were mostly Heavy goods vehicles were found to use the border twice a month.

4.5 Trip Purpose

Out of all vehicles that participated in the exercise at Mchinji, 39% were found to be carrying freight. Other trip purposes included visits to the national parks, 25% were visiting relatives, 15% were returning home, 14% travelled to work and 7% were public service vehicles carrying passengers. As can be seen cross-border passenger vehicles are very few. Figure 4.5 below illustrates the trip purposes for Mchinji while Fig. 4.6 illustrates trip purposes for Chiponde.

Figure 4.5: Trip Purposes at Mchinji

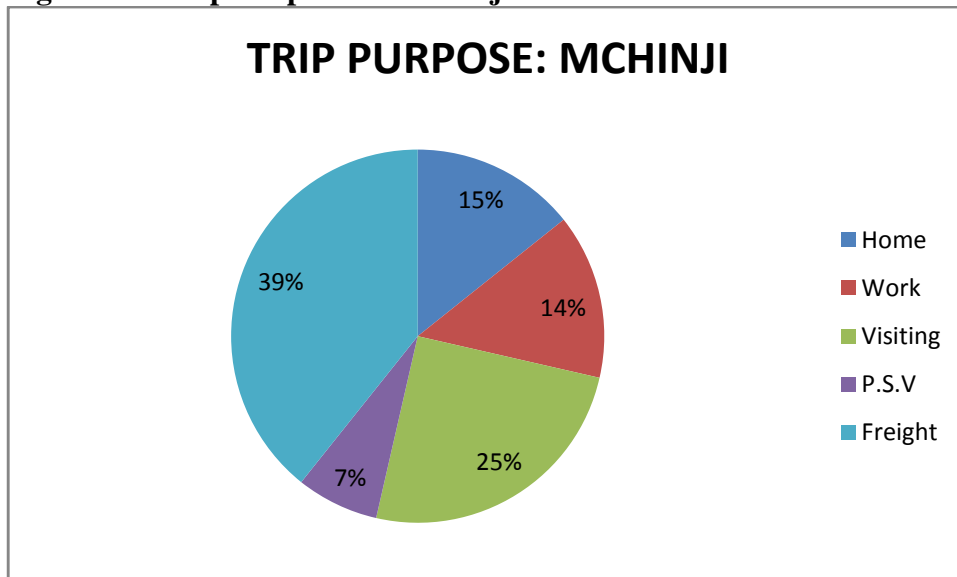
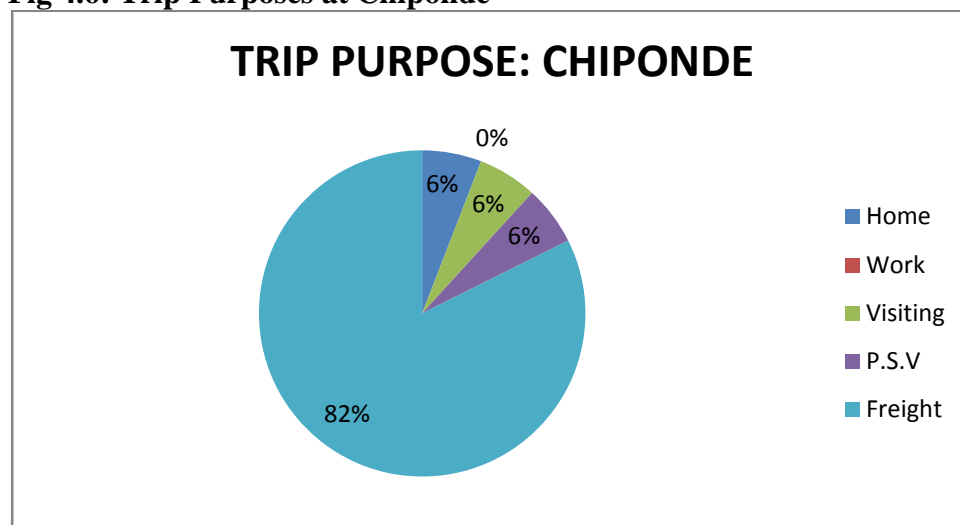


Fig 4.6: Trip Purposes at Chiponde



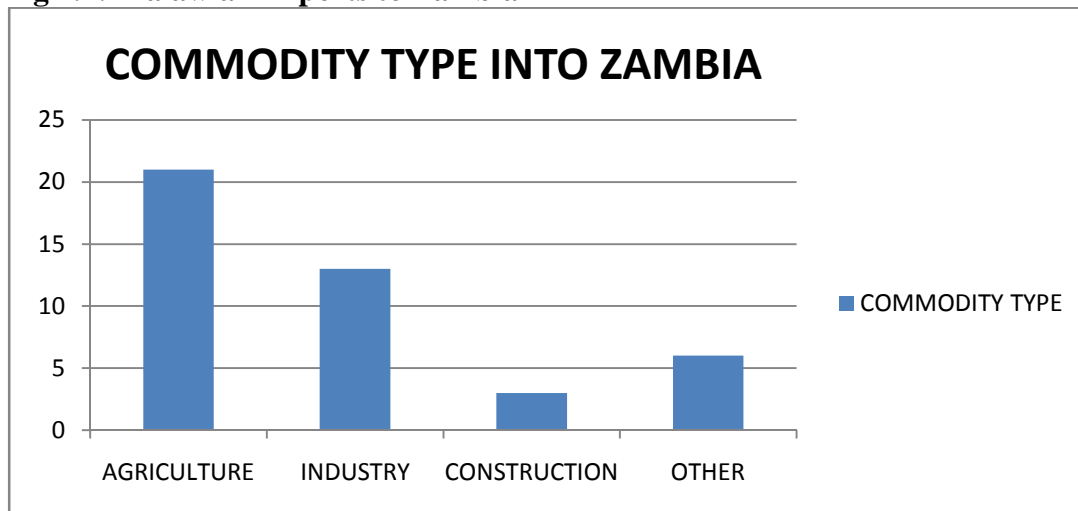
82% of the vehicles passing through Chiponde during the interview were found to be carrying freight. It was noted that the cross border passenger service vehicles were also very few at 6% while those visiting relatives or friends also comprised 6% of the total vehicles.

4.6 Axle Load Survey

An axle load survey was conducted at the Mchinji weighbridge in Malawi. This was done to record the average axle loading of the vehicles to determine the pavement design of the border post carriageway and lay-bye. It was also done to establish the types of commodities going through the border and in which direction. A sample of 100 vehicles was taken.

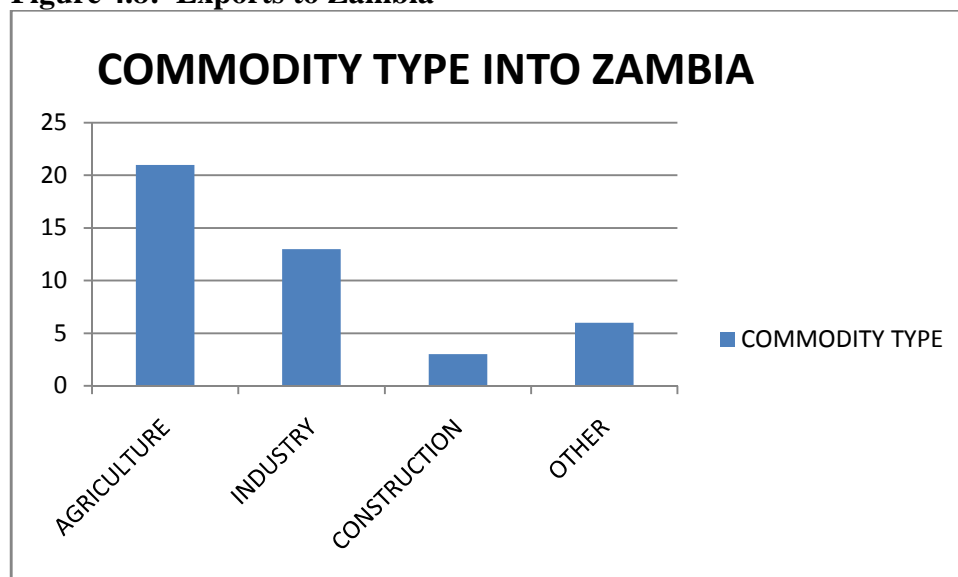
Figure 4.7 below illustrates the commodity categories carried by vehicles carrying exports from Malawi to Zambia. From the survey it was found that 43 trucks were ferrying goods to Zambia from Malawi. The most common commodity types were agricultural commodities followed by industrial goods, construction goods and other goods. 21 trucks were in transit carrying cotton. Other goods were miscellaneous and included hooks and horns.

Fig 4.7: Malawian Exports to Zambia



Of the 36 trucks carrying goods into Malawi from Zambia, 13 were carrying agricultural products which was the main commodity followed by construction material.

Figure 4.8: Exports to Zambia



5. TRAFFIC PROJECTIONS

5.1 Introduction

The TOR requires the Consultant to “determine 5 year market projections for border traffic by major traffic categories (Traffic Projection)”. During the seven-day traffic survey it emerged that no historical data had been kept on the whole of Nacala Corridor, particularly at the BPs. In view of this it is considered appropriate to estimate traffic projections on the basis of economic activities in each of the border countries over the next five years as reflected in their average growth rates. of Gross Domestic Product over the last 5 years, i.e. between 2009 and 2012 (See **Chapter 2.2 Table 2.2**).

5.2 Projected Traffic “without the project”

Table 5.1 below shows the projected traffic levels during the next 5 years, i.e. the period 2013-2018 for each of the observed category of vehicles, “without the project”.

For **Mchinji BP**, Table 5.1 reveals that if no effort is made to convert the BP into an OSBP, then total traffic would increase from an average of 78 vehicles per day in 2013 to about 110 vehicles per day in 2018, with cars increasing from an average of 13 to 18 while pick-ups, jeeps and vans would increase from 42 to 59 vehicles per day. The daily number of buses, minibuses and medium goods vehicles would remain low at only 3 vehicles per day by 2018.

Table 5.1: Traffic (AADT) at Mchinji BP “Without the Project”

Vehicle Type	2013	2014	2015	2016	2017	2018
Cars	13	14	15	16	17	18
Pick-ups, Jeeps, Vans	42	45	48	52	55	59
Mini Bus	2	3	3	3	3	3
Buses	1	2	2	2	3	3
LGV	0	0	0	0	0	0
MGV (2Axles)	1	2	2	2	3	0
HGV (3to 4Axles)	0	0	0	0	0	0
HGV (5to 7Axles)	19	21	22	24	25	27
Tractors	0	0	0	0	0	0
Total (AADT)	78	87	92	99	106	110

Source: Study Team

Note: Totals do not reflect higher growth rates that are slightly above 6.7% due to rounding off errors. Where the number of vehicles comprised decimals they were rounded off to whole numbers.

Under the above “without the project case” scenario, it is assumed that besides no changes being made to convert the BPs into OSBPs, no road improvement will have taken place and that the economies of the three border countries (Mozambique, Malawi and Zambia) will continue to grow at a combined average of 6.8% p.a. over the period 2013-2018.

Similar traffic projections for **Chiponde BP** are shown by vehicle categories in Table 5.2 below which indicate that the total AADT at the BP will rise from 31 vehicles in 2013 to 43 vehicles, with HGVs continuing to constitute the majority of the vehicles. AADT for HGVs will increase from 31 in 2013 to 43 in 2018, while cars will increase from 5 in 2013 to 7 in 2015 and remain at that level till 2018. The number of pick-ups, jeeps and vans passing through the border daily will also increase only slightly from 4 vehicles to 5 in 2014, 2015 and 2016, rising further to 6 vehicles in 2017 and 2018.

Table 5.2: Traffic (AADT) at Chiponde BP BP “Without the Project”

Vehicle Type	2013	2014	2015	2016	2017	2018
Cars	5	6	7	7	7	7
Pick-ups, Jeeps, Vans	4	5	5	5	6	6
Mini buses	0	0	0	0	0	0
Buses	0	0	0	0	0	0
LGV	0	0	0	0	0	0
MGV (2Axles)	0	0	0	0	0	0
HGV (3to 4Axles)	0	0	0	0	0	0
HGV (5to 7Axles)	22	24	25	27	29	31
Tractors	0	0	0	0	0	0
Total	31	35	37	39	42	43

Source: Study Team

5.2 Projected Traffic “with the project”

As already mentioned, the scarcity of historical data and lack of data on other roads and transport modes as well as cross-border times and processes make it difficult to make projections under the “with the project” scenario. Preference for the route along the Nacala Corridor and hence the routes passing through the BPs would be determined not only by the efficiency of border crossing times but also by the condition of the roads.

At the moment there is no data on the basis of which traffic projections could be made for the Mchinji/Mwami BPs.

A feasibility study undertaken by JICA on the Cuamba Mandimba Road in 2010 had made projections which could be useful in an indication of the anticipated traffic at the **Chiponde-Mandimba BP** on the Mozambique side of the border and hence at Chiponde BP on the Malawi side. Table 5.3 below shows JICA’s projections of traffic volumes “with the project”, i.e with the completed Cuamba-Mandimba.

Table 5.3: Projected Traffic Volume on Cuamba-Mandimba Road 2009, 2014, 2023, 2033

Year	2009	2014	With	2023	With	2033	With
		Case		Case		Case	
Passenger cars	35	77		193		519	
		96		239		643	

Minibuses	26	117	641	2,587
		145	795	3,207
Trailers	23	118	213	343
		164	272	425
Others	17	42	143	612
		52	176	753
Total	101	355	1,190	4,061
		457	1,481	5,027

Source: JICA The Preparatory Study on Road Improvement Plan in Nacala Development Corridor Final Report (N13: Cuamba-Mandimba-Lichinga) February 2010, Table 4.4.1, p. 23.

Although data in that Table is not sufficiently broken down by vehicle categories, the grouping is broadly similar to that in Tables 5.1 and 5.2. From the data, it may be noted that under the “with the case scenario”, i.e. if the Cuamba-Mandimba road is completed under the feasibility study, passenger cars were to increase at 34.8% p.a. from the base year (2009) AADT of 35 vehicles to 96 in 2014. The AADT for minibuses was projected to increase from 26 to 145, i.e. at a growth rate of 91.5% p.a. while trailers and other vehicle categories would grow at 122.6% and 41.2%, respectively.

Assuming that the same rates of growth are likely to remain the same over the next 5 years, they can be applied to the traffic data from the Study Team. Table 5.4 below, shows projected traffic at Chiponde-Mandimba BP during the period 2013 and 2018 under the “with the project” scenario.

Table 5.4: Projected Traffic at Chiponde-Mandimba BP, “With the Project”, 2013-2018

Vehicle Type	2013	2014	2015	2016	2017	2018
Cars	5	7	10	13	17	22
Pick-ups, Jeeps, Vans	4	6	8	12	16	23
Mini Bus	0	0	0	0	0	0
Buses	0	0	0	0	0	0
LGV	0	0	0	0	0	0
MGV (2Axles)	0	0	0	0	0	0
HGV (3to 4 Axles)	0	0	0	0	0	0
HGV (5to 7Axles)	22	44	49	55	62	70
Tractors	0	0	0	0	0	0
Total Study	31	57	67	80	95	115

Source: Study Team

The above Table indicates that the AADT for all vehicles passing through Chiponde-Mandimba BP will increase nearly four-fold from a total of 31 vehicles in 2013 to 115 vehicles in 2018, assuming the successful completion of all the roads currently under construction in the Nacala Corridor and that the OSBP project is successfully implemented. It is important to note that the number of HGVs of 5 to 7 axles is expected to increase more than threefold from 22 vehicles in 2013 to 70 vehicles in 2018. These long-distance HGVs

will account for the majority (over 60%) of the total traffic ferrying imports and exports to and from the port of Nacala and the hinterland.

The implication of these data is that the volume of traffic will place considerable pressure on the Chiponde-Mandimba BP activities and facilities unless it is developed into an OSBP, given that most of the road improvements along the Nacala Corridor are expected to be completed during the before by the year 2015 as indicated in Chapter 3.

5.3 Informal Border Trade

The JICA report observed that there was considerable informal trade going on through the border dominated by exports from Mozambique to Malawi comprising mostly of goods of less than 500 US dollars which are not subject to customs duty.

6. BORDER CROSSING TIMES

The Study team will soon be undertaking a baseline study on the border crossing times at each of the four border posts with a view to determining the current time each authority at the border takes to clear traffic passing through the BP, the procedures and processes involved and the duration each category of goods takes to be cleared, especially trucks carrying various categories of goods and for passengers. This will also facilitate the identification of procedures and processes that are duplicated and those are different or incompatible and those that are unique to specific BPs. The aim is to identify the possibility of harmonization and /or merger of the procedures under an OSBP. Various studies that have been done on border crossing times will inform the intended survey.

6.1 Mchinji/Mwami

(a) Imports

Border crossing times for all traffic is of critical importance since it determines the duration which vehicles and persons take at the border. Basically where alternative routes exist, if the time spent at a BP is short, more vehicles will be attracted to use the route passing through the border post and *vice versa*. Based on a study by USAID⁴, border crossing times for imports at Mchinji BP are summarized in Table 6.1 below.

Table 6.1: Average Crossing Times at Mchinji for Incoming Trucks Carrying Imports

	Weekday	Weekend	Average Crossing Time
Loaded trucks	2 hours 11 minutes	11 hours 30 minutes	4 hour 37 minutes
Empty	53 minutes	40 minutes	48 minutes
Transit	2 hours 36 minutes	19 hours 45 minutes	8 hours 07 minutes
Pre-cleared	1 hour 31 minutes	37 minutes	1 hour 22 minutes
All trucks	1 hour 52 minutes	8 hours 10 minutes	3 hours 51 minutes

Source: USAID: Trade Hub Southern Africa Technical Report, op. cit., Table 2, Page 17.

The Study reveals that the border crossing time for loaded trucks was 2 hours 11 minutes on weekdays and 11 hours 30 minutes on weekends and that the average crossing time⁵ for loaded trucks was 4 hours 37 minutes. Empty trucks, however, took only 53 minutes during the weekdays and only 40 minutes to cross Mchinji BP on weekends, with an average crossing time of 48 minutes. Average crossing time for transit trucks was high at 8 hours 7 minutes due to the long crossing times recorded during the weekend (19 hours 45 minutes), compared to 2 hours 36 minutes during the weekdays.

⁴ USAID: Trade Hub Southern Africa Trade Hub Technical Report, Coordinated Border Management (CBM) – Mchinji Border Operations Assessment (BOA) Work Plan Activity: 1.2 Table 2, Page 18.

⁵ Note: It is not clear how this average was computed.

Trucks carrying pre-cleared freight had an average crossing time of 1 hour 22 minutes with 1 hour over the weekdays and 37 minutes during the weekend.

Overall, all trucks the crossing time for all trucks averaged 3 hours 51 minutes. Their average crossing time on weekdays and weekends, were, respectively, 1 hour 52 minutes and 8 hours 10 minutes. It is not clear why the average crossing time for pre-cleared cargo was only 37 minutes over the weekends and took longer (1 hour 31 minutes) to pass through the BP on weekdays. The study found that the following factors led to the long average crossing times for trucks over the weekend:

- Closure of commercial banks on Saturdays and Sundays, thus preventing importers and agents from making immediate payments;
- Unwillingness of drivers to pay the overtime fee of MK 500 payable per truck on Saturdays, Sundays and public holidays;
- Unwillingness by drivers to proceed with the trips if their destinations are closed over the weekend.

The study observes that:

“The average of 4 hours 57 minutes is high for a border with very low traffic like Mchinji, also considering that a substantial amount of goods coming through the border are pre-cleared”.

It then proceeds to make the following **recommendations**:

- a) that “efforts should be made to reduce this time to less than 3 hours”;
- b) that “MRA should also introduce measures that will ensure the border area is not used as rest areas as this causes unnecessary congestion at the border”.

Other studies indicate that delays by drivers and their assistants at border posts have been among the major causes of the spread of HIV/AIDS at border posts and similar “hot spots” where long-distance truck drivers engage with local women or commercial sex workers⁶.

(b) Exports

The USAID study mentioned above found that trucks leaving Malawi through Mchinji border took a shorter period than those entering Malawi through the same BP as Table 6.2 below indicates. The average crossing time for loaded trucks averaged 4 hours 21 minutes. On weekdays they took four hours on average to cross the BP while on weekends they took much longer, 6 hours and 50 minutes. The average duration for crossing the BP for empty trucks was 1 hour and 02 minutes. On weekdays, the average crossing time was only 43 minutes although on weekends the average crossing time was longer at 1 hour 38 minutes. The study found that “all export trucks took an average of 2 hours 48 minutes to cross the Mchinji border.”

Table 6.2: Crossing Times for Outgoing Trucks at Mchinji BP

⁶ See for instance, a study by Ecotech Consultants for Kenya National AIDS Control Council: *Characteristics and Lifestyles of Long Distance Truck Drivers and Commercial Sex Workers in the Northern Corridor, Kenya, Vol. I - Main Report*, November 2011.

	Weekday	Weekend	Average Crossing Time
All	1 hour 05 minutes	5 hours 16 minutes	2 hours 48 minutes
Loaded	1 hour 51 minutes	6 hours 50 minutes	4 hours 21 minutes
Empty	43 minutes	1 hour 38 minutes	1 hour 02 minutes

Source: USAID: Trade Hub Southern Africa Technical Report, op. cit., Table 3, Page 18.

A large proportion of the total export trucks (60 %) were empty, as already indicated above. This average includes empty trucks which represent a large portion of the total export trucks (60%) as already indicated in 4.2 above. As in the case of crossing times for import traffic, crossing time for trucks carrying exports, i.e. leaving Malawi, through Mchinji recorded higher crossing times during weekends (6 hours 50 minutes) than on weekdays when their average crossing time was about two hours.

6.2 Chiponde/Mandimba

While detailed data is still awaited on border crossing times at Chiponde / Mandimba BPs, it may be noted that a study undertaken by JICA indicates that at the current level of traffic numbering about 1,000 vehicles/day, the average crossing time is 30 minutes⁷. Traffic comprises mostly of small cargo valued below US 500 dollars. The report observes that cargo “release time of customs clearance and passport control are tolerable against current traffic volume”. The border opens from 6am to 6 pm. (local time). It is not clear if this applies to both Chiponde and Mandimba. Majority of vehicles are trucks carrying goods while passenger goods comprise mainly minibuses. As indicated in Chapter 5 above, the Study Team never observed any passenger vehicles such as minibuses except passenger cars.

⁷ JICA: *The Preparatory Survey on Road Improvement Plan in Nacala Development Corridor Final Report (N13: Cuamba-Mandimba-Lichinga) Summary in the Republic of Mozambique February 2010, Table on page 26.*

7. BASELINE REVIEW OF BORDER AGENCIES

7.1 Study Team's Findings

Table 7.1 below summarizes the number of agencies at each of the four BPs, Mchinji, Mwami, Chiponde and Mandimba. It reveals that Mchinji BP on the Malawian side has 9 agencies while Mwami on the Zambian side has 6 agencies at the BPs. At the Mozambique/Malawi border, Chiponde and Mandimba BPs each has 5 agencies. By staff numbers Malawi has a total of 77 staff compared to only 13 at Mwami on the Zambian side of the border. Malawi has also a larger number of staff (32) at Chiponde compared to Mozambique's staff of 23 at Mandimba BP on the border between the two countries.

Table 7.1 Summary of Institutions and Agencies at the Border Posts

Institution/Agency	Mchinji	Mwami ⁸	Chiponde	Mandimba	Total	
Customs	8	2	4	10	24	
Immigration	31	1	11	3	46	
COMESA	1	-	-	-	1	
Health	-	1	2	1	4	
Roads Traffic/Freight	-	1	-	2	3	
Roads Fund Administration	3	2	-	-	5	
Bureau of Standards	4	-	-	-	4	
Animal Health/Livestock	2	-	-	-	2	
Police	12	2	7	7	28	
Weighbridge	10	-	-	-	10	
Clearing Agents	6	-	6	-	12	
Crops/Plant Health	-	-	2	-	2	
Others (All)	-	4	-	-	4	
Total	77	13	32	23	145	
Total	90		55		145	

Source: Study Team

The Table further reveals that altogether, the four border posts were manned by a total staff of 145 of which immigration had the highest number of officials at 46, accounting for 31% of the total staff on the Nacala Corridor, followed by Police at 28 (or 19%), and Customs at 24 (or 17%). Mchinji/Mwami BP is more heavily manned with a total staff of 90 representing 62% total border staff on the Corridor while Chiponde/Mandimba BP had a total staff of 55 representing about 38% of total border staff on the Corridor.

7.2 Other Studies

Findings of the USAID Study

⁸ The Number of agencies at Mwami has been compiled from the list of staff met at the BP in September 2013.

A study by the USAID that a total of thirteen (13) agencies were operating at the Mchinji BP, each playing a defined role. It however reviewed only the following 12 agencies⁹:

- 1) The Department of Animal Health and Livestock
- 2) Department of Forestry's
- 3) Ministry of Agriculture
- 4) Malawi Bureau of Standards
- 5) Clearing and Forwarding Agents
- 6) Immigration Department
- 7) Border Patrol
- 8) Insurance
- 9) Roads Fund Administration
- 10) Ministry of Health
- 11) NSB Bank
- 12) Malawi Revenue Authority

Table 7.3 below summarizes the functions of each of those agencies and describes their processes and requirements. It may be observed that although detailed information is still awaited, the above data together with the UUSAID data provide a good profile of the institutions and agencies operating at the Mchinji Mwami BPs. For purposes of this study, they confirm that many activities at the border posts are duplicated and hence the need for their harmonization, standardization and / or merger so as to establish an OSBP and reduce the border crossing times.

Table 7.3: Selected Border Agencies, their Roles and Requirements¹⁰

Agency	Role	Import Requirements	Export Requirements	Issuing Authority
Department of Animal Health and Livestock	To ensure livestock, livestock products and by-products (e.g. livestock drugs, livestock feeds) that cross the border conform to the Malawi standards of animal health.	Import Permit - Valid for one month, to be used once; costs between MK5,000 – MK10,000. International Sanitary Certificate issued from the country of origin		Veterinary head office, Lilongwe

⁹ USAID Trade Hub Southern Africa Technical Report: Coordinated Border Management (CBM) – Mchinji Border Operations Assessment (BOA), Work Plan Activity: 1.2, March 2013, pp. 7-11.

¹⁰ The USAID Study's list excludes the Customs, Immigration, Border Security and other agencies.

Department of Forestry	To ensure that forest products e.g. timber, for both imports and exports have the relevant documentation for either exportation or importation	Import Permit Import Licence Phytosanitary Certificate (issued in country of origin)	Export Permit Valid for 21 days and is issued to a consignment at a cost of MK5,000 (\$14). Export license is valid for one year and costs MK50,000 (\$139) Phytosanitary certificate	Director of Forestry in Lilongwe. Issued at farm where goods produced.
Department of Agricultural Research	To inspect agricultural products, both imports and exports, to ensure they are free from pests and diseases.	Import Permit Phytosanitary Certificate (issued in country of origin) Fumigation Certificate Genetically Modified Organisms Certificate (Seeds)	Export Permit Phytosanitary certificate (issued at border) Fumigation Certificate Genetically Modified Organisms Certificate (Seeds)	Ministry of Agricultural Research Lilongwe Export Permit issued by Ministry of Trade in collaboration with Ministry of Agriculture
Malawi Bureau of Standards	To promote standardization and quality assurance in Malawi. 300 products on the Import Quality Scheme ranging from food products (e.g. milk, margarine, and salt), electronic products, fertilizers etc.	Cost of testing The cost include registration fees, inspection and sampling fees (0.65% of FOB value), transportation fees, reporting and certification fees, testing fees and a 16.5% VAT and MBS CESS Government Fuel certification Levy collected by MBS. (0.2% of landed cost).		Malawi Bureau of Standards
Road Fund Administration	Is responsible for collecting toll fees on foreign	Zambia, DRC, Zimbabwe and Botswana = \$15 per 100km		Issued at the Border

	registered vehicles greater than 3000kg	Mozambique = \$28 per 100km Tanzania = \$16 per 100km		
Ministry of Health	Health inspects all food products (fresh and processed) coming into Malawi. Example, salt is tested to determine the iodine content.	Certificate of origin from the supplier Import Permit and a certificate from the Medicines and Poisons Board in the case of surgical materials.		Medicines and Poisons Board

Source: ¹ USAID Trade Hub Southern Africa Technical Report, *op. cit.*, Annex C, pp. 25-26.

8. BASELINE BORDER PROCEDURES AND PROCESSES

The purpose of introducing the OSBP is to achieve greater trade facilitation by combining border clearance activities in a single location to benefit from economies of scale, shorten time of border crossing, simplify clearance procedures, increase cooperation and coordination of controls, foster data and intelligence sharing and to improve control over fraud.

The main purpose of OSBP is to increase efficiency of the border post clearance by reducing or minimizing the border crossing times from their current levels under a duplicated or unduly repetitive sets of border activities. The study team is in the process of undertaking a review of the time, cost and reliability of the border procedures and processes at each of the two sets of border posts with a view to establishing performance/trade logistics and recommending “measures for introducing improved transit regimes and “smart corridors¹¹”. The aim is to seek consensus among the border countries on the procedures and clearance times as a prerequisite for establishing a framework for an OSBP and on the introduction of tools for improving border procedures and clearance times.

Detailed information will soon be compiled on the border processes and procedures.

8.1 Mchinji/Mwami

[Information awaited from the Client]

8.2. Chiponde/Mandimba

[Data awaited]

¹¹ JICA OSBP Source Book, p. 43.

9. ECONOMIC FEASIBILITY

The economic benefits of the OSBPs will be estimated based on the comparison of cross-border clearance time for freight and passengers under the conditions of “With the Project Case” and those incurred under “Without the Project Case”. For the truck operators transporting goods through the border posts, economic benefits of the Project are assumed to be derived from the difference in the Vehicle Operating Costs (VOCs) between the “Total VOCs of With Project Case” that involves the improved speed of passage of traffic through optimized OSBPs and the “Total VOCs of Without Project Case” that currently involves long border post delays in clearing goods and passengers at a lower speed than the case of “With the Project”. The benefits of reduced border crossing times after the OSBPs have been established will be estimated after data has been obtained on the border processing times for various activities and types of traffic.

The economic feasibility can be undertaken for key stakeholders such as vehicle owners.

10. SUMMARY OF RECOMMENDATIONS

Several baseline studies have been undertaken on the above border posts with recommendations on the approach to their conversion into OSBPs. Those recommendations will be evaluated and considered. At this juncture, however, the following recommendations are considered appropriate.

10.1 Implementation Phases

It is **proposed** that subject to the filling of the data gaps, on traffic and border processing times, implementation should follow a gradual but systematic process taking into account the lessons learnt in the implementation of the Chirundu OSBP. As in the case of Chirundu,

“The goal was successful implementation without loss of effective controls¹²”.

Implementation should be in three phases as recommended below.

This approach will enable staff to assimilate the changes faster and give room for them to develop home-grown solutions to the harmonization of the implementation process, based on the practicalities of their experiences. While these proposals will be taken into account, the timelines for each phase at the two sets of borders will be proposed when the information currently awaited on each BP is obtained from the Client.

Phase 1:

In this Phase the following activities should be undertaken:

- 1) Detailed study of current border facilities, processes and procedures and number of staff and at each border post as attempted in Section 6.2 above.
- 2) Considering that Chiponde BP is located about 2.5 km from Malawi / Mozambique border while Mandimba BP is located 0.5 km away from the border and that the two border posts are connected by a 3 kilometre long earth road, it is **recommended** that the two BPs should be relocated in such a manner that they are each closer to the border and to each other. This will facilitate their operation as an OSBP make them less porous and reduce chances of smuggling in the space of land between them.
- 3) On the basis of an assessment of the border processes at both BPs a decision should be made to merge, standardize or harmonize them and hence to determine the total number of staff required, under improved working facilities including office space and furniture;
- 4) Since it is intended that the changes at each set of BPs should be introduced at the same time to facilitate harmonious implementation, it is **recommended** that a training programme should be initiated immediately for the border staff at Chiponde to learn Portuguese as a working language and for the Mozambican staff at Mandimba to undergo training in the English language. This language training should be undertaken without disrupting work at any of the stations. Modalities for this training could be worked out for consideration by the **Project Steering Committee (PSC)**.

¹² ¹² JICA: op. cit., page 103.

- 5) Border States should agree on the options for operation of BPs: Single Country, Straddle, or Juxtaposed type of BP. This will enable the study team to proceed with the design of the construction works needed at each set of BPs.
- 6) An agreed time frame for the signing of a Bilateral Agreement between Malawi and Mozambique on joint operation of the BPs in anticipation of introduction of an OSBP. This duration should take into account traffic volumes expected to be handled at the BPs by 2018.
- 7) In order to minimize incidents of smuggling and increase security, each of the border posts should be fenced;

Phase 2:

During this Phase it is anticipated that the Bilateral Agreements will have been signed to facilitate the introduction of selected joint operation of certain activities and procedures such as immigration and truck clearance. The Phase will thus cover the following activities

- 1) Introduction of joint operation of selected activities and procedures;
- 2) Merger of selected procedures such as joint inspection;
- 3) Introduce data collection for all traffic categories on a continuous basis to facilitate monitoring and evaluation.

Phase 3:

This Phase will comprise the following activities:

- 1) Identification of procedures and processes at Chiponde and Mandimba that could be simplified, standardized, merged or harmonized and the requirements for the changes, with a view to gradually moving towards an OSBP. At this stage it may be necessary, for instance, to provide new facilities to cater for traffic volumes in 2014 and to introduce new equipment where these are lacking.
- 2) On the basis of these activities, optimum staff levels required for the OSBP will be determined.
- 3) Build parking and other infrastructural facilities where these are inadequate;
- 4) Estimate the timing of the procedures and processes;
- 5) Introduce joint application of some processes such as joint inspection, separate clearance for trucks and specified goods vehicles, cars and other traffic.
- 6) Introduce ICT components in the border processes and activities and prepare the joint border to handle the volume of traffic projected in 2023 and 2033.

Phase 4: On the basis of data obtained in Phase 3, it will be necessary to establish joint application of certain procedures in the form of an OSBP, e.g. joint inspection, and the introduction of separate clearance for trucks and cars or other vehicles and clients, etc. During this phase, various ICT components may be introduced in undertaking various joint processes and procedures. Similarly this is the stage where preparation will be made to handle cross-border traffic levels projected to be realized in 2024 and 2033. Building plans for the OSBP should be ready for the merged facilities.

10.2 Conclusion

Economic feasibility of the OSBPs under this study depends very much on availability of data, especially on traffic and on the procedures at the border post and their duration. It is intended to continue liaison with the client to ensure availability of this data for the next stage of the study.