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## **AGRIBUSINESS AND TRADE PROMOTION (USAID ATP)**

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### **Annual List of the Highest Priority Road Infrastructure Investments Needed by Transport Corridor Tracking Progress Against Previous List (FY 2010)**

**Contract/ Project No.:** EDH-1-00-00005-08

**Submitted to:** Michael L. Wyzan Ph.D.  
COTR  
Agribusiness and Trade Promotion Project  
USAID/WA/RAO  
Accra, Ghana



Abt Associates Inc. ■ 4550 Montgomery Lane, Suite 800 North ■  
Bethesda, Maryland 20814 ■ Tel: 301.347.5000. ■ Fax: 301.913.652.9061  
■ [www.abtassociates.com](http://www.abtassociates.com)

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ACDI/VOCA  
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# HIGHEST PRIORITY ROAD INFRASTRUCTURE INVESTMENTS – FY10

AGRIBUSINESS AND TRADE PROMOTION (ATP)

December 2010

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Agribusiness and Trade Promotion program  
USAID/WA/ANRO  
Accra, Ghana



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## **DISCLAIMER**

The authors' views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development (USAID) or the United States Government



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# I. A LIST OF THE HIGHEST PRIORITY ROAD INFRASTRUCTURE INVESTMENTS – ONION

## 1.1 INTRODUCTION

In examining the cost of transport logistics for the onion value chain, it is apparent that investment in road infrastructure is not the highest priority for the concerned corridor. The interstate road linking production and consumption areas has two lanes and these roads are mostly well paved and in good condition, allowing trucks to commute in a fairly organized and efficient manner. The delays and accidents that do occur generally emanate from inefficient control procedures and lack of compliance with vehicle standards, such as axle weights and dimensions. That being noted, there are various segments of road that could benefit from repaving and/or resurfacing.

The road segments in the worst condition are found in Ghana. These conditions contribute marginally to truck breakdowns and transit times. The most significant delays due to poor road conditions were witnessed in Tamale, Kumasi, along the border with Burkina Faso, and on the access roads into Accra. Trucks were forced to reduce speed to as low as 5 KMH in these areas

## 1.2 ROAD CONDITIONS ALONG THE ONION CORRIDOR AND INTERVENTIONS IDENTIFIED

In examining the corridor that links onion production areas around Galmi, Niger to markets in Accra through Kantchari (Niger/Burkina border), ATP found the following stretches of road that would benefit from upgrades:

- a. 35 km in Burkina Faso from Bitou to the Ghana border
- b. 28 km of unpaved segments in Ghana close to the border with Burkina Faso
- c. 35 km of deteriorated asphalt between Bawku and Bolgatanga in the northeast region of Ghana
- d. 30 km of removed asphalt in south Kintampo
- e. 43 km section close to Accra (trucks are forced to reduce speed to as low as 5 KMH, cumulating to 136 km in Ghana and only 35 km in Burkina, and
- f. 17 km separating Burkina Faso and Ghana borders where formalities are carried respectively;
- g. 9 km outside of Accra

Except for these seven separate sections of road, it was noted that most of the roads along the corridor are in very good condition. Apart from several segments (for a total of approximately 14 km) that were under construction, the road network in Niger is very well maintained. Ongoing road investment programs financed by multilateral finance institutions deserve some of the credit for these conditions.

The roads in Burkina Faso are also in good condition, with some noted exceptions totaling approximately 8 km. The average speed for trucks in these segments went down by 10 km/h, though this did not seem to generate significant delays given the low traffic volume observed. The country has also rehabilitated the national network and implemented a proper road management system with World Bank financing.

In 2007, the Ghana Ministry of Roads and Highways estimated that 39% of the roads were in good condition, while 29% were in fair and 32% in bad condition.<sup>1</sup> This is a 10% improvement in road conditions compared to their 2000 estimates, and we observed generally good conditions during field work.

In order to deal with the causes of road damage, the MRT has established weigh stations on some of the main roads. On the studied corridor, there is a new station in Yapei, which has been operational since 2007. The percentage of overloaded trucks registered in 2007 was 27%,<sup>2</sup> which was an increase of 9% from the previous year (at the Yapei station the trend was reversed, with the rate of overloading falling from 31% in 2006 to 14% in 2007). It was observed that overloading still occurs and continues to represent a safety risk.

### **1.3 FINANCING PLAN FOR IMPLEMENTING ROAD INFRASTRUCTURE INVESTMENTS<sup>3</sup>**

Should any road infrastructure investments be implemented, we suggest the following as one example of how they could be financed:

Several studies undertaken by the World Bank's Sub-Saharan Africa Transport Program (SSATP) in late 1980s indicated that a lack of maintenance was eroding the road asset value. Those studies identified that this lack of maintenance was not rooted in technical matters but was instead political and institutional. There was a need for effective changes, and these changes needed to be rooted in firm awareness at the highest level of government of the importance of road maintenance. SSATP recommended four basic building blocks of reforms to effect the changes.

1. Create ownership by involving road users in managing road maintenance.
2. Secure a sustainable and secure source of financing.
3. Clarify responsibility by identifying who is responsibility for what part of the network.

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<sup>1</sup> Official Statistics. Ministry of Roads and Highways (MRT), Ghana. [www.mrt.gov.gh](http://www.mrt.gov.gh)

<sup>2</sup> Official Statistics. MRH, Op. cit

<sup>3</sup> Dr. Sadok Zerelli is the author of the text in this section. He was contracted by CARANA Corporation as the Lead Field Researcher for the Livestock Transport and Logistics that was conducted under the ATP project.

4. Strengthen management of roads by providing effective systems, procedures and accountability.

In line with the principles of road maintenance reforms recommended by World Bank's SSATP and adopted in all West African countries, all road users should be engaged in supporting the rehabilitation/maintenance of the Madaoua-Accra corridor, ideally through a Road Maintenance Levy Fund. Such a fund normally includes:

- A charge against petroleum products purchased;
- Transit Toll charges;
- Heavy goods vehicle distance covered charges;
- Overloading fines; and
- Licensing fees.

According to these principles, the ATP project could work with corridor management institution to expand the participation of value chain actors in infrastructure investment and financing plans. The project could also work with these actors on evaluating current road maintenance and related financing strategies to ensure that they conform with SSATP principles and overall best practices. That said, due to the extensive involvement of other donors, such as World Bank, African Development Bank and MCC, in road infrastructure projects and the marginal contribution of road conditions to onion transport and logistics costs, this is probably not an effective use of project resources.

# 2. A LIST OF THE HIGHEST PRIORITY ROAD INFRASTRUCTURE INVESTMENTS - LIVESTOCK

## 2.1 INTRODUCTION

As the primary transport mode for livestock trade in West Africa, many sources have cited poor roads as an important cost driver - leading to higher vehicle operating costs per kilometer, which are in turn passed onto freight customers through higher road usage costs. In addition, it is argued that poor roads lengthen travel times and contribute to vehicle breakdowns and accidents, jeopardizing the health and safety of animals in transit.

The USAID Agribusiness and Trade Promotion (ATP) project's research, however, does not support these conclusions. From ATP's recent livestock transport and logistics cost study, it is apparent that investment in road infrastructure is not the best way to address transport and logistics costs. Most of the roads along those corridors are in fair to good condition and other transport and logistics cost drivers are of greater concern.

Direct and indirect transport and logistics costs do represent a significant percentage of the end market value of regionally traded livestock. The indirect cost of deteriorating health, weight loss and death of cattle in transit, for instance, is approximately 10% of a typical sale for livestock traded between Fada N'Gourma in Burkina Faso and Ilesha, Nigeria. That compares to approximately 3% of final sale in direct transport services costs and less than 1% for bribes paid to public officials. The excessive rates of deterioration and death in transit are driven primarily by non-road logistics infrastructure, however, while the region's roads have greatly improved in recent years. Practices (such as overloading of trucks) also have a role to play.

This document defines the road segments that, to the extent road infrastructure investment is considered necessary, would benefit from such investment.

## 2.2 ROAD CONDITIONS ALONG THE LIVESTOCK CORRIDOR AND REQUIRED REMEDIES

The following table describes the road conditions along the Ouaga-Fada-Parakou-Nikki and Ouaga-Tamale corridors as they appeared during the field mission along with proposed remedies.

Road section	Distance	Road condition	Remedy
OUAGA- PARAKOU	690 km		
OUAGA TO FADA	222 km	Good	Maintenance
FADA TO PORGA	157 km	Good	Maintenance
PORGA TO DJOUGOU	187 km	Good	Maintenance
DJOUGOU TO PARAKOU	137 km	Bad	Construction
PARAKOU – NIKKI	107 km		
PARAKOU TO N'DALI :	60 km	Fair	Rehabilitation; pot-holes repair
N'DALI TO NIKKI	56 km	Bad	Pavement, rest stops facilities. (There are already works planned to repair this road, financed by AfDB)
FADA - TAMALE	414 km		
FADA TO KOUPELA	82 km	Good	Maintenance
KOUPELA TO TENKODOGO	46km	Fair	Rehabilitation; pot-holes repair
TENKODOGO TO BITTOU	65 km	Bad	Construction
BITTOU TO BOLGATANGA	294 km	Bad	Construction
BOLGATANGA TO TAMALE	178 km	Good	Maintenance
OUAGA-TAMALE	543 km		
OUAGA TO PO	159 km	Bad	Construction (there are currently works underway to repair this section)
PO TO DAKOLA	9 km	Bad	Construction
PAGA TO TAMALE	207 km	Good	Maintenance

LEGEND:

Road Condition	Description
<i>Good</i>	Asphalt road, many rest stops with adequate facilities
<i>Fair</i>	Asphalt road, few rest stops, few pot-holes
<i>Bad</i>	Completely deteriorated

TABLE 1: ROAD CONDITIONS ALONG THE OUAGA-FADA-PARAKOU-NIKKI AND OUAGA-TAMALE CORRIDORS

In terms of prioritization of road infrastructure investments identified, if we exclude the works underway (Ouaga-Po-Dakola) or programmed (Dialy-Nikki), the only remaining sections to repair is Djougou –Parakou on the Fada-Parakou-Nikko corridor and Tenkodogo-Bittou-Bolgatanga on the Ouaga-Tamale – Accra corridor. However, maintenance investment and ongoing repairs to existing road infrastructure will be important to ensure its continuing good condition.

## 2.3 FINANCING MODEL FOR IMPLEMENTING ROAD INFRASTRUCTURE INVESTMENTS

Should any road infrastructure investments be implemented, we suggest the following as one example of how they could be financed.

Several studies undertaken by the World Bank's Sub-Saharan Africa Transport Program (SSATP) in the late 1980s indicated that lack of maintenance was eroding road asset value in developing countries and in particular in Sub-Saharan Africa. Those studies identified that lack of maintenance was not rooted in technical difficulties with maintenance operations, but rather political or institutional obstacles to organized and properly financed maintenance programs. In order for change to occur, greater awareness at the highest level of government of the importance of road maintenance was deemed necessary. SSATP recommended four basic building blocks of reforms to effect the changes.

1. Create ownership by involving road users in managing road maintenance.
2. Secure a sustainable and secure source of financing.
3. Clarify responsibility by identifying who is responsible for each part of the network.
4. Strengthen management of roads by providing effective systems, procedures and accountability.

In line with the principles of road maintenance reforms recommended by SSATP and adopted in all West African countries, all road users should support the rehabilitation/maintenance of the livestock corridors. This would involve the establishment of a Road Maintenance Levy Fund (RMLF). Most SSA countries that embraced the SSATP reforms have set up RMLFs, which are typically established through national legislation and include:

- A charge against petroleum products purchased;
- Transit Toll charges;
- Distance charges for heavy goods vehicles;
- Overloading fines; and
- Licensing fees.

Under this framework, other heavy users of the livestock corridors would share the cost of road maintenance and rehabilitation with livestock traders and transporters. A rational strategy is therefore to advocate for the establishment of functional RMLFs. The exception is the N'Dali to Nikki corridor, which already has financing approved by the ADFB, and upon which rehabilitation work will commence soon.

# 3. A LIST OF THE HIGHEST PRIORITY ROAD INFRASTRUCTURE INVESTMENTS – MAIZE

## 3.1 INTRODUCTION

Observed data and market interviews from the USAID Agribusiness and Trade Promotion (ATP) project's recent maize transport and logistics study suggest that, while road conditions are important, high transport costs for maize are not easily attributable to poor roads. Rather, a combination of high losses in storage (on-farm and in-market), high transport services prices and unnecessarily complex and multi-tiered logistics practices (e.g. multiple re-bagging stages), drive transport and logistics costs to between 50 and 60 percent of the end market price of maize. That said, the ATP study team did identify road segments where road quality is a main cause of accidents and delays. Those segments are detailed in this report.

## 3.2 TECHIMAN – OUAGADOUGOU CORRIDOR

The following road links are estimated to be in need of immediate attention as the current road condition is a hazard to road traffic, provoking frequent accidents and consequential delays.

1. **Road Link 4: Techiman to Kintampo.** There is a 10-km segment from km 84 to km 94 that is dirt, in need of construction and rehabilitation and where a number of broken down trucks were observed.
2. **Road link 13: Border (Dakola) to Ouagadougou.** The 154km between Dakola and Ouagadougou is in need of immediate attention. Problem areas include:
  - 22 km stretch from km 522-544, mostly dirt, narrow double lanes and sometimes single lanes with no shoulder, presence of a number of trucks tipped with lost product;
  - 9km stretch from km 563 to km 572, single lane packed dirt, no shoulder, and an impassable bridge when it rains

## 3.3 TECHIMAN – KANTCHARI CORRIDOR

The following road links are estimated to be in need of immediate attention as the current road condition is a hazard to road traffic, provoking frequent accidents and consequential delays.

1. **Road Link 4: Techiman to Kintampo.** Same 10-km segment from km 84 to km 94 that is dirt, in need of construction and rehabilitation and where a number of broken down trucks were observed.
2. **Road link 11: Bolgatanga Exit to Border (Kulungugu).** While the field team was not able to travel on this specific segment due to scheduling, interviews suggest that the 10 km portion from Musiga to Kulungugu is in terrible shape and is a source of considerable delays and frequent truck accidents.
3. **Road link 12: Border (Kulungugu) to Bittou.** This 21km stretch is reportedly mostly dirt, narrow double lane and sometimes single lane, without shoulder and replete with potholes. Many of those interviewed mentioned it could take over an hour to travel this 21km stretch.

### 3.4 ROAD INFRASTRUCTURE INVENTORY

These road segments are further described in the Road Infrastructure Inventory on the subsequent pages.

#### ROAD INFRASTRUCTURE INVENTORY – TECHIMAN OUAGADOUGOU CORRIDOR

Road Link			Segment			Origin / Destination		Sub-segment	Road Condition			Road Description	Speed Category *
#	Start	End	Km	Hours	Kmh	Starts at:	Ends At:	Km	Type of Pavement	Condition of Pavement and Shoulder	Width of Road Segment		
<b>FARM TO MARKET</b>													
1	Farmgate	Nchiraa (Village)	3.0	0.5	6.0	0	3	3				Dirt, single lane, impassible when rains	4.0
2	Nchiraa	Wenchi	25.0	0.6	42.9	3	14	11				Dirt, single lane, impassible when rains	3.0
						14	16	2				Paved, single lane, no shoulder, potholes	
						16	23	7				Paved, narrow double lane, no shoulder	
						23	28	5				Paved, asphalt, two lanes, shoulder and storm drains	
3	Wenchi	Techiman (Market)	32.0	0.8	42.7	28	60	32				Paved, asphalt, two lanes, shoulder and storm drains	3.0
<b>MARKET TO BORDER</b>													
4	Techiman (Market)	Kintampo entrance	57.0	1.3	45.6	60	68	8				Paved, double lane, potholes, minimal drainage	3.0
						68	84	16				Paved, wide double lanes, new condition, drainage present some unfinished)	
						84	94	10				Dirt, double lane, construction, several broken down trucks	
						94	117	23				Paved, narrow double lane, potholes, no shoulder	
5	Kintampo entrance	Kintampo exit	4.0	0.1	48.0	117	121	4				Paved, narrow double lane, no shoulder, congestion due to bikes, pedestrians and parked trucks	3.0
6	Kintampo city exit	Tamale entrance	188.0	2.0	94.0	121	309	188				Asphalt, wide double lanes with alternating passing lane, some bridges in poor condition	2.0
7	Tamale entrance	Tamale market	6.0	0.2	36.0	309	315	6				Paved, narrow double lane, no shoulder, congestion due to bikes, pedestrians and	4.0

Road Link			Segment			Origin / Destination		Sub-segment	Road Condition			Road Description	Speed Category *
#	Start	End	Km	Hours	Kmh	Starts at:	Ends At:	Km	Type of Pavement	Condition of Pavement and Shoulder	Width of Road Segment		
												parked trucks	
8	Tamale market	Tamale exit	9.0	0.2	54.0	315	324	9				Paved, narrow double lane, no shoulder, congestion due to bikes, pedestrians and parked trucks	3.0
9	Tamale exit	Bolgatanga entrance	151.0	1.5	100.7	324	475	151				Paved, narrow double lane, no shoulder, potholes present, most bridges in good condition except White Volta River bridge	1.0
10	Bolgatanga entrance	Bolgatanga exit	8.0	0.2	48.0	475	483	8				Paved, narrow double lane, no shoulder, congestion due to bikes, pedestrians and parked trucks	3.0
11	Bolgatanga exit	Border (paga) entrance	37.0	0.8	49.3	483	520	37				Paved, narrow double lane, no shoulder, potholes and significant road warping (bumps)	3.0
<b>BORDER</b>													
12	Border (paga) entrance	Border (paga) exit	2.0	0.3	8.0	520	522	2				Mostly paved, narrow double lanes, potholes	4.0
13	Border (paga) exit	Ouagadougou entrance	154.0	2.8	94.0	522	525	3				Mostly dirt, narrow double lane sometimes single, no shoulder, potholes	2.0
						525	542	17				Mostly dirt, narrow double lane sometimes single, no shoulder, potholes, witness several trucks tipped with lost product	
						542	544	2				Detour, dirt, potholes, several trucks broken down	
						544	556	12				Mix of packed dirt and concrete, no shoulder or drainage visible	
						556	563	7				Mix of packed dirt and concrete, no shoulder or drainage visible	
						563	567	4				Construction, 15 minute delay, single lane packed dirt, no shoulder	
						567	572	5				Concrete and dirt, narrow double lane, no shoulder; bridge impassable when rains	
						572	593	21				Asphalt, double lane, moderate shoulder	
593	594	1				Detour, dirt and gravel, potholes, double lane narrow							

Road Link			Segment			Origin / Destination		Sub-segment	Road Condition			Road Description	Speed Category *
#	Start	End	Km	Hours	Kmh	Starts at:	Ends At:	Km	Type of Pavement	Condition of Pavement and Shoulder	Width of Road Segment		
						594	669	75				Asphalt, double lane, moderate shoulder, drainage	
						669	676	7				Gravel, dirt, asphalt mix, narrow double lane	
<b>TOTAL</b>			<b>676</b>	<b>10.9</b>	<b>61.9</b>								

Source: Field Research Observations, November 2010.

**\* Speed Category:**

- 1 - Estimate average truck speed over 80 Kmh
- 2 - Estimate average truck speed between 50 - 80 Kmh
- 3 - Estimate average truck speed under 20 - 50 Kmh
- 4 - Estimate average truck speed under 20 Kmh

## ROAD INFRASTRUCTURE INVENTORY – TECHIMAN KANTCHARI CORRIDOR

Road Link			Segment			Origin / Destination		Sub-segments	Road Condition			Road Description	Speed Category *
#	Start	End	Km	Hours	Kmh	Starts at:	Ends At:	Km	Type of Pavement	Condition of Pavement and Shoulder	Width of Road Segment		
<b>FARM TO MARKET</b>													
1	Farmgate	Nchiraa (Village)	3.0	0.5	6.0	0	3	3				Dirt, single lane, impassible when rains	4.0
2	Nchiraa	Wenchi	25.0	0.6	42.9	3	14	11				Dirt, single lane, impassible when rains	3.0
						14	16	2				Paved, single lane, no shoulder, potholes	
						16	23	7				Paved, narrow double lane, no shoulder	
						23	28	5				Paved, asphalt, two lanes, shoulder and storm drains	
3	Wenchi	Techiman (Market)	32.0	0.8	42.7	28	60	32				Paved, asphalt, two lanes, shoulder and storm drains	3.0
<b>MARKET TO BORDER</b>													
4	Techiman (Market)	Kintampo entrance	57.0	1.3	45.6	60	68	8				Paved, double lane, potholes, minimal drainage	3.0
						68	84	16				Paved, wide double lanes, new condition, drainage present some unfinished)	
						84	94	10				Dirt, double lane, construction, several broken down trucks	
						94	117	23				Paved, narrow double lane, potholes, no shoulder	
5	Kintampo entrance	Kintampo exit	4.0	0.1	48.0	117	121	4				Paved, narrow double lane, no shoulder, congestion due to bikes, pedestrians and parked trucks	3.0
6	Kintampo city exit	Tamale entrance	188.0	2.0	94.0	121	309	188				Asphalt, wide double lanes with alternating passing lane, some bridges in poor condition	2.0
7	Tamale entrance	Tamale market	6.0	0.2	36.0	309	315	6				Paved, narrow double lane, no shoulder, congestion due to bikes, pedestrians and parked trucks	4.0
8	Tamale market	Tamale exit	9.0	0.2	54.0	315	324	9				Paved, narrow double lane, no shoulder, congestion due to bikes, pedestrians and parked trucks	3.0

9	Tamale exit	Bolgatanga entrance	151.0	1.5	100.7	324	475	151				Paved, narrow double lane, no shoulder, potholes present, most bridges in good condition except White Volta River bridge	1.0
10	Bolgatanga entrance	Bolgatanga exit	5.0	0.1	40.0	475	480	5				Paved, narrow double lane, no shoulder, congestion due to bikes, pedestrians and parked trucks	3.0
11	Bolgatanga exit	Border (Kulungugu)	93.0	2.0	46.5	480	573	93				NB - Field team was not able to travel on this specific segment due to scheduling. Interviews, however, suggest that the 10km portion from Musiga to Kulungugu is in terrible shape and causes significant delays	3.0
<b>BORDER</b>													
12	Border (Kulungugu)	Border (Burkina) exit	3.0	0.5	6.0	573	576	3				Mostly paved, narrow double lanes, potholes	4.0
13	Border (Burkina) exit	Bittou	18.0	1.0	18.0	576	594	18				Mostly dirt, narrow double lane sometimes single, no shoulder, potholes	2.0
13	Bittou	Intersection with Fada Road	109.8	2.0	54.9	594	703.8	109.8				Mix of dirt, narrow double lane sometimes single, no shoulder, potholes, witness several trucks tipped with lost product	3.0
15	Intersection with Fada Road	Fada N'Gourma	88.3	1.3	70.6	703.8	792.1	88.3				Road generally in good condition. Lack of shoulder causes unnecessary loss of speed with trucks stopped, people and animals in road.	2.0
16	Fada N'Gourma	Kantchari	149.4	2.0	74.7	792.1	941.5	149.4				Road generally in good condition. Lack of shoulder causes unnecessary loss of speed with trucks stopped, people and animals in road.	2.0
<b>TOTAL</b>			<b>941.5</b>	<b>15.9</b>	<b>59.3</b>								

Source: Field Research Observations, November 2010.

**\* Speed Category:**

- 1 - Estimate average truck speed over 80 Kmh
- 2 - Estimate average truck speed between 50 - 80 Kmh
- 3 - Estimate average truck speed under 20 - 50 Kmh
- 4 - Estimate average truck speed under 20 Kmh