

Ghana

Anwiankwanta-Yamoransa Road Rehabilitation Project

Report Date: October 2002

Field Survey: July 2001

1. Project Profile and Japan's ODA Loan



Project Site: Anwiankwanta-Yamoransa Project Picture (Road and Small Market)

1.1. Background

At the time of JBIC appraisal of the Anwiankwanta-Yamoransa Road Rehabilitation Project in 1986 in Ghana, out of 28,290 km of trunk roads (14,130 km) and feeder roads (14,160 km), only 5,782 km (20.4%) had been paved, and frequently they were in a deteriorating condition. The government was nevertheless on track to implement its second economic recovery program (ERP-2), with a focus on agriculture, mining, road and other means of transport, and telecommunications.

The top priority was the improvement of the coastal trunk road network connecting the capital Accra and the two hub cities of Takoradi and Kumasi, of which the World Bank financed the Accra-Takoradi Road and the Accra-Kumasi Road projects. Anwiankwanta-Yamoransa (175 km) constitutes a major section from central Kumasi to the coastal region. Cocoa, gold ore and timber - the main export commodities of Ghana - from central Ashanti, Brong Ahafo and the western region, are transported to Takoradi Port for export. Hence, the improvement of Anwiankwanta-Yamoransa was crucially important for achieving the objectives in ERP-2, through promotion of export by removing barriers in road transportation.

1.2. Objectives

To rehabilitate Anwiankwanta-Yamoransa Road in order to improve the conveyance of export and import products.

1.3. Project Scope

Rehabilitation civil work for the Anwiankwanta-Yamoransa Road (172 km), procurement of equipment, and consulting services.

1.4. Borrower / Executing Agency

The Government of the Republic of Ghana / Ghana Highway Authority

1.5. Outline of Loan Agreement

Loan Amount	11,091 million yen
Loan Disbursed Amount	11,025 million yen
Exchange of Notes	May 1987
Loan Agreement	September 1987
Terms and Conditions	
Interest Rate	3.0 % p.a.
Repayment Period (Grace Period)	30 (10) years
Procurement	Partially Untied
Final Disbursement Date	September 1995

2. Results and Evaluation

2.1. Relevance

The Anwiankwanta-Yamoransa Road (abbreviated AY Road for short) provides access to the coastal area for commodities, such as timber and agricultural products, brought from inland areas. In this sense, the project objective was consistent with the Government's road sector strategy and order of priority at the time of appraisal, and so is it still now. Japan, as Ghana's largest donor, has been coordinating with the World Bank and other international development assistance agencies on the road sector strategy in this country.

2.2. Efficiency

All civil works were completed as planned, except for the additional replacement of two bridges in Lot 1. In order to compensate for increases in the cost of construction work, some road maintenance equipment was not procured, although this did not cause significant adverse effect on the project. There have been some other modifications of project scope (refer to the table “Comparison of Original Plan and Actual Scope”, p.10), including the amendment of design speed from 60 km/h to 80 km/h to correspond with speeds on other trunk roads in the country.

The construction part of the project was completed in September 1993, approximately two years later than originally scheduled, and consulting services part in October 1994, approximately three years later than originally scheduled. The delay of project completion resulted from a late start-up, by approximately two years, of the construction work which can be largely attributed to longer-than-expected procurement approval and review procedure within the Government. In addition, a heavy rainfall in the southern and central regions during the construction period delayed the civil works, road earthworks in particular, to some extent.

The total project cost increased by about 1,300 million yen, owing to a sharp increase in the local currency portion. The increment was funded by the Government of Ghana. Most of this increase is attributable to an increase in earthworks necessitated by unexpected underground water problems at the project site.

2.3. Effectiveness

(1) Traffic Volume

Since the completion of the project, the actual traffic volume has exceeded the projected volume by more than 100%. This is largely attributable to the improvement of macroeconomic conditions implemented through various structural adjustment programs, which JBIC has also co-financed since the 1990s.

Table 1 (a): AY Road Traffic Volume in Time Series (Annual Average Daily Traffic)

	1987	1994	1995	1996	1997	1998
Planned	424	522	538	554	570	587
Actual	-----	1,012	1,129	1,374	1,278	1,409

Source: GHA

For all sections of the road, the actual traffic volume exceeded the estimate (Table 1(b)).

Table 1 (b): AY Road Traffic Volume by Vehicle Types in Selected Sites (1997 Survey)

Section (km)	Light (%)	Medium (%)	Heavy (%)	AADT
Yamoransa – Tetsi Jct (24)	52	26	22	1,371
Tetsi Jct. – Assin Manso (22)	43	48	9	1,061
Assin Manso – Assin Praso (53)	81	11	8	1,606
Assin Praso – Asokwa (40)	70	19	11	1,242
Asokwa – Anwiankwanta (36)	75	13	12	891

Source: GHA

(2) Road Condition

Before the project, big commercial vehicles could not use AY Road, as it was narrow (4-7 meter wide) and mostly unpaved. The maintenance equipment procured under the project (wheel loader, roller, trucks, etc.) is functioning without major problems¹. The project has provided significantly improved road access to passenger cars and commercial vehicles. However, some parts of the pavement surface started developing distress even before the construction works were completed. Major causes of distress included an increase in the number of overloaded trucks, heavy rains, non-functional drainage structure due to lack of maintenance, and insufficient funds for road maintenance.

(3) Economic Internal Rate of Return

The recalculated EIRR was 6.3 %, lower than the original EIRR at the time of appraisal (9.0%). This reduction is largely attributable to the increase in the operations and maintenance (O&M) costs due to the increase in the number of transport.

(Assumptions)

Project life: 20 years

Benefits: Savings in vehicle operating costs (VOC)

Costs: Investment costs and O&M costs

¹ Equipment list and their working condition is updated regularly at GHA database. At the time of evaluation mission in July 2001, all equipment was in good working condition.

2.4. Impacts

(1) Interview Survey

An interview survey of road users was conducted on a random sample of 150 individuals living in proximity to the AY Road. The maximum age among the respondents is 75 and the minimum age is 16, with an average age of 36. Professions range from truck driver to school teacher. The gender ratio is 1.3 males to 1 female. The income question was not included, however housing condition was used instead as a proxy for an approximation of standard of living. 54% of the respondents live in a “mud house (poor household)” and 27% of them live in a “concrete block house (non-poor household).”

The following table (Table 2) summarizes major interview results.

Table 2: Interview Survey Major Results (n=150)

How much has the condition of the road improved?	Largely improved	69%
	Partly improved	24%
	Not so much improved	6%
	Not improved	1%
Are you satisfied with the level of road improvement?	Very much satisfied	13%
	Satisfied	66%
	Less satisfied	16%
	Dissatisfied	4%
If you are very satisfied or satisfied, please explain the reason.	Road has widened	73%
	Road has become safer	21%
	Road has been paved	3%
	Others	3%
In case of less satisfied or dissatisfied, please explain the reason.	Roads are still narrow.	18%
	Accidents have increased.	9%
	There is lack of maintenance	52%
	Others ²	21%
What is the positive impact of the project?	New shops and factories	6%
	Faster trips to villages	45%
	New houses	6%
	Others ³	43%
What is the negative impact of the project?	Air pollution	1%
	Higher cost of living	1%
	Increases in accidents	53%
	Others ⁴	45%

93% of sampled individuals replied that the road condition “largely improved” or “partly improved” since the project, and 79% of them replied that they were “very satisfied” or “satisfied” with the road improvement. The reasons for their satisfaction are due to “widened” and “safer” roads, while the reasons for non-satisfaction for the remainder of the sample are “lack of maintenance” (52%). Their perceived positive impact from the project is “faster trip to

² Others include such opinions as “there are still pot holes,” “there are no (or few) road signs to control traffic safety,” or “when it rains water comes into my house,” etc.

³ Most opinion in others is “personal business opportunities” (as shop owner, driver, etc.)

⁴ Most opinion in other is “none” (no negative impacts.)

villages” (45%), and the negative impact is perceived to be the “increase in accidents” (53%).

(2) Traffic Accidents and Safety

The interview survey also indicated that, in some sections of the AY road, there was a sharp increase in traffic accidents. Although there is no quantitative evidence for this assertion, the casual observation by local residents is generally well grounded. This increase may be partly explained by the deterioration of the road condition, and partly by neglect of traffic safety rules by road users. In Ghana, traffic law enforcement, including speed limit and axle load control, has not been effective at the grass-roots level.

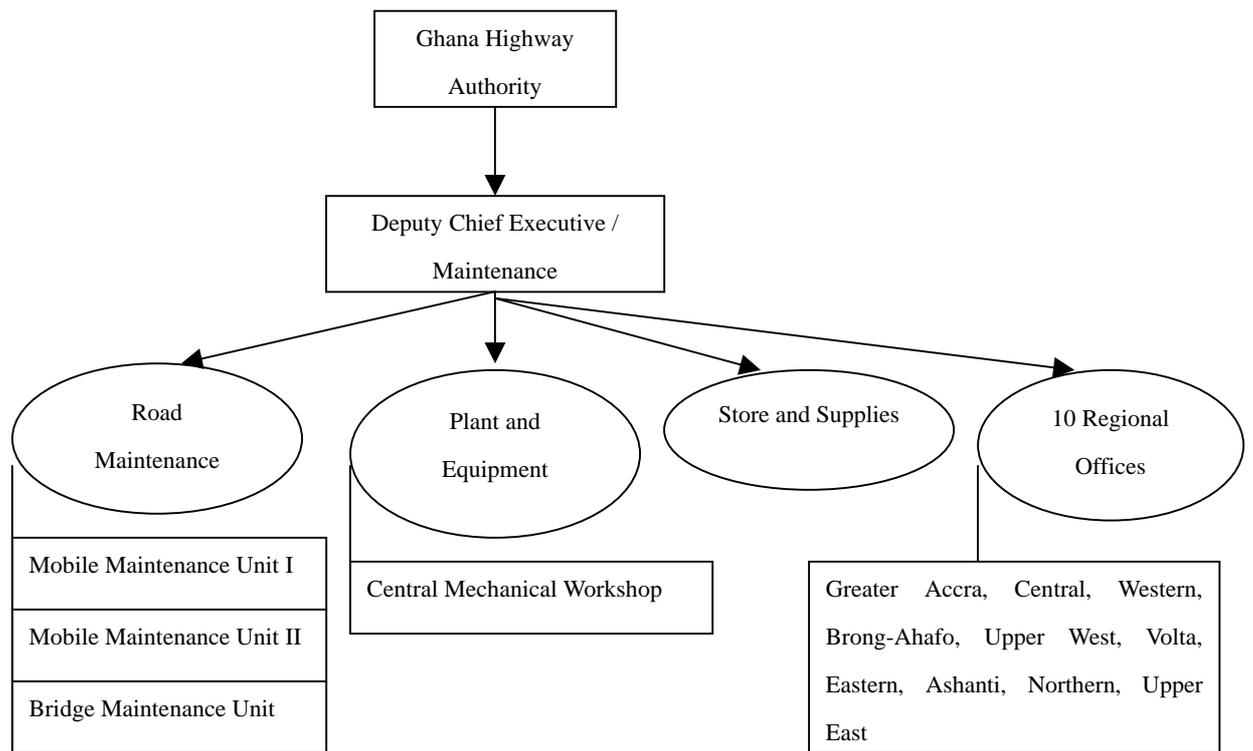
(3) Environmental Impacts

Since the rehabilitation work was implemented mostly on the existing road, no forced resettlement issues were raised, however there were no available data to judge other negative impacts on the environment.

2.5. Sustainability

(1) Operation and Maintenance (O&M)

The GHA Maintenance Department (Deputy Chief Executive) is directly responsible for O&M activities. Routine decisions are made at the regional office level. About 90% of routine and periodic maintenance works are currently contracted out to local contractors with the World Bank’s recommendation, and the remaining 10% of less labor-intensive works requiring more advanced technology are conducted by the Mobile Maintenance Unit.



(2) Road Fund

In 1985, Ghana was among the first countries in sub-Saharan Africa to establish a Road Fund as a financing mechanism for maintenance. Since 1997, the Fund has been restructured in order to achieve a public-private harmonization in fund management and to strengthen its financial base. Its main financial sources include fuel levies, tolls, vehicle license and inspection fees, international transit fees and other extra-resources as approved by Parliament. (Table 3)

Table 3: Road Fund Revenues by Sources (billion cedis)

	1996	1997	1998	1999
Fuel Levy	59.35	98.65	180.60	193.49
Bridge Tolls	0.85	1.60	2.36	2.74
Road Tolls	0.74	1.83	2.77	3.35
Ferry Tolls	0.07	0.06	0.02	0.06
Vehicle registration fees	1.85	2.10	7.81	11.89
Road use fees	0.00	0.00	0.00	8.05
International transit fee	0.00	0.00	0.18	0.53
Grand total	62.86	104.24	193.74	220.11

Source: GHA

Out of Road Fund resources, 45 billion cedis was spent for routine maintenance and 106 billion cedis was spent for periodic maintenance. No further breakdown was available.

(3) Road Condition

Since its inauguration, the AY Road has been deteriorating severely because of the increase in the number of overloaded trucks, heavy rains, and non-functional drainage structure. This initial observation was made in April 1994 by the consultant, confirmed by the JBIC during follow-up missions and summarized by a SAPS survey completed in March 1999. The deterioration is particularly severe in the northern section of the road, despite occasional repair works, such as resurfacing and replacement of surface asphalt, by local contractors and by GHA's own repair unit, called the Mobile Moving Unit (MMU).

Deteriorating Road Condition in AY Road



Comparison of Original and Actual Scope

Items/Activities	Planned	Actual
(1) Project Scope		
1. Rehabilitation works for Anwiankwanta-Yamoransa	172 km	175 km
Designed Speed	60 km/h	80 km /h
Width of traffic lane	3.3 m	3.65 m
Width of shoulder	1.8 m	1.85 m
Penetration macadam	t=30 mm	50 mm surface course AC
Base course	T=150 mm	150 mm surface rock base
Sub-base course	T=200 mm	600 mm selected fill
2. Equipment		
Bulldozer 320 HP	4	0
Motor Grader 3.7 m 145 HP	8	0
Hyd. Excavator 2.5 m3 233 HP	2	0
Wheel Loader 1.4 m3 94 HP	4	2
Hyd. Excavator 0.53 m3 90 HP	4	0
Dump Truck 18 t	4	2
Dump Truck 15 t	6	3
Dump Truck 8 t	12	7
Water Tanker 8,000 liter	4	0
Bitumen Tanker 8,000 liter	4	0
Cargo Truck 10 t	2	1
Cargo Truck 3 t	4	2
Vibratory Roller 3 t	4	2
Static Roller 10/12 t	8	0
3. Consulting Services		
Detailed Design	Foreign 342 M/M	
Supervision and maintenance of the project	Local Key Staff 94 M/M Local Staff 947 M/M	N.A.
(2) Implementation Schedule		
Selection of Consultant	1987	September 1987
Detailed Design	2 nd term 1987 to 4 th term 1987	
Preparation of Tender Document	4 th term 1987	
Tender and Tender Evaluation	1 st term 1988 and 2 nd term 1988	Feb. 1989 -March 1990
Construction	3 rd term 1988 to 4 th term 1991	May 1990 - Sep. 1993
Engineering Service (incl. TA)	3 rd term 1988 to 4 th term 1991	Sept 87-Oct.1994
Procurement (equipment)	3rd term 1990 to 4th term 1990	Oct. 1993
(3) Project Cost		
Foreign currency	11,091 million yen	11,025 million yen
Local currency	581 thousand cedis	4,585 million cedis
Total	12,306 million yen	13,667 million yen
ODA Loan portion	11,091 million yen	11,025 million yen
Exchange Rate	1 cedi = 2.09 yen	1 cedi = 0.58 yen