

Country Name	The Project for the Reconstruction of Mainroad 5 Bridges between Balaka and Salima
Malawi	

### I. Project Outline

Project Cost	E/N Grant Limit: 691 million yen	Contract Amount: 691 million yen
E/N Date	August, 2005	
Completion Date	March, 2007	
Implementing Agency	National Road Authority: NRA (current name: Roads Authority: RA)	
Related Studies	Basic Design Study: December, 2004 – June, 2005	
Contracted Agencies	Consultant(s)	Nippon Koei Co., Ltd
	Contractor(s)	DAI NIPPON CONSTRUCTION
	Supplier(s)	-
Related Projects	[Japan's Cooperation] -none [Other Donors' Cooperation] - Reconstruction and construction of four bridges on Mainroad 5 (M5: Kalwe bridge, Dwambazi bridge, Liwaladzi bridge, Kasangadzi bridge) (Grant Aid Project, EU)	
Background	In landlocked Malawi, road transport was the predominant mode of transportation of freight and passenger movements, including international physical distribution. The Government of Malawi established "Ten year Road Sector Investment Program" in 2002 to establish efficient road networks with high safety and reliability and aimed to render 80% of the trunk road networks in good condition. M5 is approximately 500 km-long main trunk road along Lake Malawi, connecting Balaka (main city in the south) with Muzuzu (main city in the north), and was recognized as a transportation corridor connecting Mozambique with Tanzania. However, M5, which was constructed as the second grade road, was narrow. Many of its bridges that were constructed more than 30 years ago have only one traffic line and seriously damaged and decrepit. In addition, since these bridges were designed without considering measures against floods, many of them were washed away or broken down because of scoured piers in case of floods. As a consequence, reliability as a trunk road was damaged and therefore, it was an urgent task to reconstruct existing bridges on M5.	
Project Objectives	Outcome To smooth and stabilize road traffic transportation by reconstructing four seriously damaged and decrepit bridges on M5 between core cities of Balaka and Salima (158km) in Southern Malawi.	
	Outputs(s) Japanese side -Reconstruction of four existing culverts and bridges: (1) Angoni Culvert (length of culvert: 10m, standard width : 9.7m), (2) Luwadzi Bridge (length: 50m, standard width : 9.7m), (3) Nankokwe Bridge (length: 42m, standard width : 9.7m), (4) Nanyangu Culvert (length of culvert: 15m, standard width : 9.7m) Malawian side -Re-networking of telephones and telephone wires	

### II. Result of the Evaluation

Summary of the Evaluation
<p>Bridges on M5, which is one of the main internal roads in Malawi, are seriously damaged and decrepit and often didn't function as a bridge in case of floods, which largely hindered smooth road transportation.</p> <p>While this project has largely achieved i) increase in traffic volume, ii) reduction in traffic closures and iii) reduction in maintenance and management costs as planned, reduction in the number of traffic accidents was not confirmed due to lack of information. It was recognized that the frequency of public traffic services (small-sized and large-sized buses) on M5 increased after the project. In addition, positive impacts such as improved access to hospitals, schools, churches and markets as well as activation of local economy were observed. As for sustainability, some problems have been observed in terms of financial aspect due to insufficient budget for maintenance and management. For relevance, this project has been highly relevant with Malawi's development policy, development needs as well as Japan's ODA policy at the time of both ex-ante and ex-post evaluation. For efficiency, the project period slightly exceeded the plan and the number of target bridges was reduced from four to three.</p> <p>In the light of the above, this project is evaluated to be satisfactory.</p>

1 Relevance
<p>This project has been highly relevant with Malawi's development policy "rendering 80% of the trunk road networks in good condition" as set in "Ten year Transport Sector Investment Program" (2003-2012), and "enhancement of traffic infrastructure" as set in "The Malawi Growth and Development Strategy II (2011-2016)", development needs "restoration of seriously damaged and decrepit bridges on M5" as well as Japan's ODA policy "sustainable economic growth (improvement of economic infrastructures, promotion of small-scale businesses)" at the time of both ex-ante and ex-post evaluation.</p>

Therefore, relevance of this project is high.

## 2 Effectiveness/Impact

This project has largely achieved its objectives of i) increase in traffic volume, ii) reduction in traffic closures and iii) reduction in maintenance and management costs as planned. Comparison of traffic volume (number of vehicles /12hours) at targeted four bridges before the project (2005) with that after the project (2012) showed an increase of the volume by 49% at Angoni Culvert, 36% at Nanyangu Culvert, 26% at Nankokwe Bridge and 5% at Luwadzi Bridge. Traffic closures used to happen at these four bridges but the problem was dissolved after the project. Maintenance and management costs for the four bridges were drastically reduced from 10% of NRA annual budget before the project to 0.5% at present. On the other hand, Comparison of number of traffic accidents before the project (2005) with that after the project (2008-2011) clarified the increase in the number of i) traffic accidents from 5.25 to 29.5, ii) deaths from 1.25 persons/year to 19.5 persons, and iii) casualties from 6.75 persons/year to 8.5 persons. However, source of information and data on traffic accidents which were obtained at the stage of BD in 2005, cannot be specified. Since similar data collected at the ex-post evaluation may not have the same pre-conditions with those in 2005; it is tricky to simply compare the figures before and after the project. According to hearing with residents along M5, it was recognized that the frequency of public traffic services (small-sized and large-sized buses) on M5 increased after the project. In addition, positive impacts such as improved access to hospitals, schools, churches and markets as well as activation of local economy were observed. The project didn't make any negative impacts in terms of the natural environment and no land acquisition and resettlement of residents were needed.

Therefore, effectiveness/impact of this project is high.

### Quantitative effects

Indicator (unit)	baseline value (2005)	target value (2007)	actual value (target year: 2007)	actual value (2012)
<b>Indicator 1</b> Increase in traffic volume (note1) (number of vehicles /12hours)	Angoni Culvert: 299 Nanyangu Culvert: 289 Nankokwe Bridge: 278 Luwadzi Bridge: 459	Increase	Data N/A	Angoni Culvert: 446 Nanyangu Culvert: 392 Nankokwe Bridge: 349 Luwadzi Bridge: 484
<b>Indicator 2</b> Reduction in the number of traffic accidents (note2)	Number of accident: 5.25 /year Number of deaths: 1.25 persons/year Number of casualties: 6.75 persons/year ※above figures are average of the last four years	decrease	Number of accident: 29.5/year Number of deaths: 19.5 persons/year Number of casualties: 8.5 persons/year ※above figures are average of four years (2008-2011)	
<b>Indicator 3</b> Reduction in traffic closures (note3)	Three times (period of closure: about one month) ※above figure is the number of times of closures for the last three years	No traffic closures happen	Two times (two days each time) ※causes include silt accumulation and fallen trees	Not happened
<b>Indicator 4</b> Reduction in maintenance and management costs	10% of NRA annual budget for maintenance and management was spent for target four bridges	Budget for maintenance and management is reduced	2% of NRA annual budget for maintenance	0.5% of NRA annual budget

Source: RA

Note 1: traffic volume except bicycles and motorcycles

Note 2: resource of information regarding actual value in 2005 is unknown. The figure is the number of accidents that happened between Salima and Balaka.

Note 3: The number of yearly traffic closures around target four bridges

Note 4: The number of beneficiaries of this project is 1.1 million people (about 11% of the entire population of Malawi) in Salima District, Dedza District and Ntcheu District along M5.

### From 3 Efficiency

Although the project cost was within the plan (ratio against the plan: 100%), the project period slightly exceeded the plan (ratio against the plan: 116%), because the first bid did not reach an agreement and the second bid was conducted. Outputs have been changed but were appropriate. More concretely, as a result of unsuccessful first bid, a scope of cooperation was reviewed and reconstruction of only three bridges was conducted. Nanyangu Culvert was excluded from the new scope and was reconstructed by the Malawian Government's own finance. As mentioned, the scope of the project was reduced from four bridges to three bridges, however, exchange rate at the stage of the second bid rose compared to that in 2005 when BD study was conducted. Accordingly, the actual project cost was the same amount as the planned cost even without the cost of Nanyangu Culvert reconstruction. Therefore, efficiency of this project is fair.

#### 4 Sustainability

While regular inspections and minor repairs of bridges reconstructed by the project are directly conducted by RA, major repairs are carried out by private companies. RA was institutionally strengthened by increasing its staff in 2012 and a sufficient number of technical staff is allocated. Therefore, the project has no problems in structural aspect. Technical staff of RA regularly attend training courses regarding construction management, contract/procurement management, road maintenance and management, technical equipment, etc. and conducted operations, maintenance and management according to road maintenance and management manuals, bridge manuals and guidelines prescribed by the Ministry of Transport and Public Works. Major repairs carried out by outsourced agencies are mainly contracted by major private international companies and such repairs are conducted with satisfactory level of technology. All the trunk roads in Malawi are monitored and managed by utilizing Highway Data Management System. Road sections are prioritized for repair and annual maintenance, and management plan, including estimation of maintenance and management costs, is established also by using the system. The project has no problem in technical aspect. Although priority of budget for maintenance and management is supposed to be put on major trunk roads as well as on restorations of damaged roads, in reality, due to insufficient budget, regular inspections are not properly conducted and only ad-hoc based inspections are carried out even for trunk roads. It cannot be said that roads are properly maintained and managed and therefore, the project has some problems in financial aspect. At present, there are no major problems at three bridges reconstructed by the project except clogs of 3-4 drainage pipes.

In this way, the project has some problems in financial aspect of the executing agency. Therefore, sustainability of this project is fair.

### III. Recommendations & Lessons Learned

#### Recommendations for Implementing agency

- It is desirable to secure sufficient budget for maintaining and managing bridges targeted by this project. In addition, it is desirable to frequently update information, based on regular inspections, of Highway Data Management System that justifies budget request.

#### Lessons learned for JICA

- Recognition of importance of the project was shared with the recipient government, which led to the reconstruction of Nanyangu Culvert by the recipient government's own budget. It can be said that this is attributed to the establishment of system in which both the Japanese and Malawian sides cooperate to deal with one specific problem. In the future, it is necessary to foster common recognition to generate positive effects by having adequate communication among consultants, contractors, JICA office and recipient government.



Nankokwe Bridge



Luwadzi Bridge