

The Republic of the Philippines

Philippine-Japan Friendship Highway (Mindanao Section) Rehabilitation Project, Phase I and II

External Evaluator: Haruko Awano, IC Net Limited

1. Project Description



Project Site



Road expanded to four lanes

1.1 Background

Mindanao Island is the least developed region in the Philippines. The Government of the Philippines (GOP) has been assisting the development of Mindanao through the establishment of Brunei Darussalam-Indonesia-Malaysia-Philippines East Asian Growth Area, BIMP-EAGA¹. The Philippine-Japan Friendship Highway (Mindanao Section) which traverses the eastern part of the island from Davao City, the largest city of Mindanao, to the north through Agusan River Basin which was expected to be developed as a rice production area, constructed in 1979 with the assistance of Japanese ODA Loans and played an important role in regional development². However, as 17 years have passed since its completion, the pavements and shoulders of the highway have rapidly deteriorated due to the growing volume of traffic and natural calamities. Rehabilitation and improvement of the highway have become crucial in order to upgrade road efficiency and safety.

1.2 Project Outline

The objective of this project is to establish a safe and efficient road network by improving and rehabilitating the roads and bridges, thereby contributing to the development of Mindanao through its agricultural, industrial, fishing, commercial and tourism activities. The specific objectives of the two phases are as follows.

(1) Phase I

- Rehabilitate priority sections based on the extent of deterioration of the road surface and bridge, which are the Tabon-Tabon - San Francisco segment (about 67 km), Langkilaan

¹ In 1992, then President Fidel V. Ramos of the Philippines proposed BIMP-EAGA for the expansion of economic cooperation in the border areas with Indonesia and Malaysia with Brunei Darussalam. BIMP-EAGA was formally launched in 1994. Its goal is to increase trade, investments and tourism in the subregion by facilitating the (i) freer movement of people, goods and services; (ii) development of vital infrastructure in the subregion; and (iii) coordination of the management of ecosystems and common resources to ensure sustainable development.

² The Philippine-Japan Friendship Highway is the major national highway with total length of 2,100 km which connects the three islands of Luzon, Visayas, and Mindanao from North to South of the nation. The highway was constructed with the assistance of Japanese ODA Loans of 10.8 billion yen.

Monkayo segment (about 19 km), and Tagum-Carmen segment (about 12 km) in Mindanao.

- Improve the system of maintenance and management of the Executing Agency, Department of Public Works and Highway (DPWH), by supporting the study on national roads and plans for maintenance and management of the roads.

(2) Phase II

- Continue Phase I by paving and improving the roads, building bridges for the remaining sections which were highly prioritized for rehabilitation, which are the Alegria-Santiago segment (about 23km), the Sanfransisco – Langkitaan segment (about 70km), and Monkayo Bypass-Tagum segment (about 62km).

Approved Amount/ Disbursed Amount	<ul style="list-style-type: none"> ▪ Phase I: 7,683 million yen / 7,460 million yen ▪ Phase II: 7,434 million yen / 7,433 million yen
Exchange of Notes Date / Loan Agreement Signing Date	<ul style="list-style-type: none"> ▪ Phase I: March 1997 / March 1997 ▪ Phase II: December 1997 / December 1999
Terms and Conditions	<ul style="list-style-type: none"> ▪ Phase I: Interest Rate: 2.7%, 2.3% (consulting service) Repayment Period: 30 years (Grace Period: 10 years) Conditions for Procurement: General Untied ▪ Phase II: Interest Rate: 1.8%, 0.75% (consulting service) Repayment Period: 30 years (Grace Period: 10 years), 40 years (Grace Period: 10 years) for consulting service Conditions for Procurement: General Untied, Bilateral Tied (consulting service)
Borrower / Executing Agency(s)	The Government of the Republic of the Philippines / Department of Public Works and Highways (DPWH)
Final Disbursement Date	<ul style="list-style-type: none"> ▪ Phase I: June 2006 ▪ Phase II: March 2008
Main Contractor (Over 1 billion yen)	<ul style="list-style-type: none"> ▪ Phase I: MAC Builders; Persan Construction; Toledo Construction Corp.; EEI Corporation; DIMSON Inc.; J.M. Luciano Construction Inc. (Philippines) ▪ Phase II: China State Construction Engineering Corporation (China); Shinsung Engineering & Construction Co., Ltd. (South Korea); DAEWOO Engineering & Construction Co., Ltd. (South Korea)
Main Consultant (Over 100 million yen)	<ul style="list-style-type: none"> ▪ Phase I: Katahira Engineering International (Japan) ▪ Phase II: DCCD Engineering Corporation, DEMCOR Inc.; SCHEMA Konsult Inc. (Philippines); Katahira Engineering International (Japan)
Feasibility Studies, etc.	Feasibility Study and Detail Engineering (by JICA, 1995 – 1996); Implementation Plan (by DPWH, 1995-1996)
Related Projects (if any)	SAPS (1993 – 1994)

2. Outline of the Evaluation Study

2.1 External Evaluator:

Haruko Awano, Senior Consultant, IC Net Limited

2.2 Duration of Evaluation Study:

Duration of the Study: January 2010 – December 2010

Duration of the Field Study: March 7, 2010 – March 31, 2010;

May 25, 2010 – June 23, 2010;

September 7, 2010 – September 13, 2010

2.3 Constraints during the Evaluation Study:

None in particular

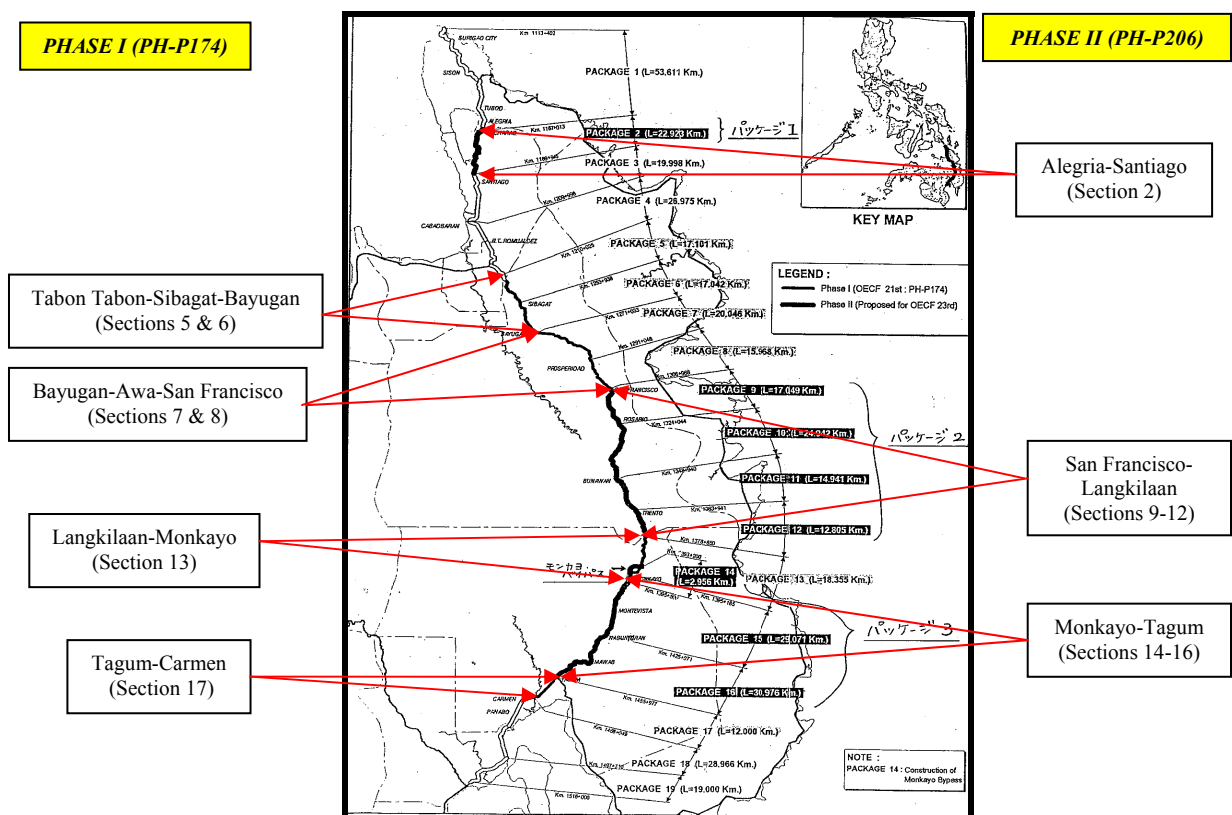


Figure 1: Project Map of PJHL-Mindanao Section

3. Results of the Evaluation (Overall Rating: B)

3.1. Relevance (Rating: a)

3.1.1 Relevance with the Development Plan of the Philippines

The Medium-Term Philippine Development Plan (MTPDP) 1993-1998 included improvement of the arterial road network which connects the northern and southern parts of the country as well as the eastern and western areas under the transport sector policy. It envisioned increasing the pavement rate of the arterial national roads to 85% by 1998 and

constructing as permanent structures all the bridges along the national roads³. The Mid Term Public Investment Plan 1994-1998, too, planned to improve 480 km of artery and secondary road networks in five regions including four regions in Mindanao, in order to expand the road networks connecting markets and regional growth centers. At the regional level, the Mindanao Development Plan 2000 (1996-2000) recognized that infrastructure to physically integrate the island was imperative for regional development and put the highest priority on pavement and improvement of a road network, because the poor quality of roads increased transportation costs for agriculture, the region's main sector.

At the time of the ex-post evaluation, the following are the development goals and strategies in the infrastructure sector of MTPDP 2004-2010: 1) improve access to domestic and foreign markets; 2) strengthen peace and order in conflict affected areas by providing efficient transportation and commerce; and 3) enhance national and family unity and promote tourism by enabling faster, cheaper and safer movement by people. DPWH also worked out the strategy of infrastructure improvement which includes maintenance of existing facilities, rehabilitation of damaged facilities, and improvement and expansion of existing roads, particularly the ones with heavy traffic. At the regional level, the draft Mindanao Peace and Development Framework Plan 2020 (2010-2030) which is being formulated points out the low pavement rate of roads as a major challenge for development in the region. The plan's targets include improvement of infrastructure which supports distribution channels.

3.1.2 Relevance with the Development Needs of the Philippines

The Mindanao Section of the Philippine-Japan Friendship Highway (PJHL) played a major role in regional development as an arterial road connecting the northern and southern parts of the eastern area of Mindanao through Davao, the largest city in Mindanao, and the Agusan River basin which was to be developed as a rice growing belt. The Annual Average Daily Traffic (AADT) was about 700 – 8,000 which were significantly varied according to sections in 1994. The highway has taken significant damage after 17 years since its completion and its rehabilitation and improvement have become crucial.

The PJHL Mindanao Section serves two regions in Mindanao⁴: Regions XIII (includes sections from Tabon Tabon to San Fransisco of Phase I, sections of Alegria to Santiago and San Fransisco to Langkitaan of Phaes II) and Region XI (includes sections from Langkitaan to Monkayo, Tagun to Carmen of Phase I and sections from Monkayo Bypass to Tagum of Phase II). Recently, the regions' industry and service sectors have seen high growth. Under this background, the AADT of the target sections of this project increased on average to 1,853 ~ 10,566 in 2009. The number of vehicles registered in Region XIII more than doubled from 27,253 in 2005 to 61,367 in 2008.

For this project, JICA conducted the Feasibility Study (F/S) and Detailed Engineering Design and the DPWH formulated the Implementation Plan between 1995 and 1996. Conditions of all the sections of the highway were reviewed in the F/S. Six sections which had serious damage were selected for rehabilitation in Phase I and eight sections with the next priorities were selected for Phase II. In the Monkayo area, it was decided to construct a new bypass road in lieu of rehabilitating the existing Kalaw Bridge to protect the road network from frequent flooding. This decision was made based on the cost analysis that

³ Bridges with permanent structures are constructed with reinforced concrete, stones, or steels to increase durability.

⁴ In Philippines' administrative divisions, there are 17 Regions under the national government and 79 Provinces under the Regions. In this project, the sections from Alegria in the north to Langkitaan in the central area of Mindanao are located in Region XIII and the sections from Langkitaan to Carmen in the southern area of Mindanao are located in Region XI.

considered the cost of alternative flood control measures such as cut-off channels and levee embankment. With a new bypass road, the old bridge of Kalaw which connected the Monkayo area and the south was to be abandoned. However, at the time of the Ex-Post Evaluation, the DPWH Regional Office XI decided to rehabilitate the Kalaw Bridge with a budget of PHP 114 million because there were strong demands by residents. The rehabilitation works for the Kalaw Bridge will begin in 2010. The Kalaw Bridge rehabilitation includes the raising of the bridge and its approaches and connecting roads above the maximum flood level with provision of at least one meter freeboard. The DPWH Regional Office XI observed that the flood will be prevented by the river training works done by this project and the river re-channeling by the DPWH District Engineering Office (DEO).

3.1.3 Relevance with Japan's ODA Policy

"Overseas Economic Cooperation Policy" issued by JICA (former JBIC) in 1999 included the strengthening of the economic structures of the GOP (Government of Philippines), poverty reduction which were considered as major constraints to the economic development of the country, and reducing the disparity among regions. In its Country Assistance Program 2000 for Philippine, the Government of Japan recognized the importance of improvement of economic infrastructure for sustainable growth. The program put emphasis on improvement of transportation infrastructure in view of economic development and reduction of regional disparity and proposed to review improvement and repair of road networks with a special focus on arterial and national roads.

As explained above, this project rehabilitated the trunk highway which connects the southern Mindanao to the north, which is the least developed area, and meets the policy of the GOP to improve the trunk road network, thus helps economic development and improvement of the peace and order in the conflict affected area. The needs for improvement of transport infrastructure, in particular the road network, have been high at the time of the appraisal and the ex-post evaluation. The project was also in line with the Japanese assistance policy for the Philippines to improve infrastructure thereby to decrease regional disparity. The scope and priorities of the project were fully reviewed at F/S and the selection of road sections to be reworked was deemed appropriate. Based on the above, it is evaluated that this project has been highly relevant to the country's development plan, development needs, and Japan's ODA policy. Thus the project's relevance is high. However, it is anticipated that the use of the new Monkayo Bypass Road constructed under the project may decrease after the old bridge of Kalaw is rehabilitated because many people will use the route of Kalaw Bridge in lieu of the bypass road⁵.

3.2 Efficiency (Rating: b)

3.2.1 Project Outputs

(1) Civil Works

Phase I is composed of four major road sections intermittently spread over the three provinces of Agusan del Sur, Compostela Valley and Davao del Norte. Phase II is composed of three major road sections also spread intermittently over the above three provinces and AGusan del Norte. The major works included improvement of the existing Portland Cement Concrete (PCC) pavement through re-blocking and Asphalt Concrete (AC) overlay, rehabilitation works on connecting bridges, improvement and construction of drainage

⁵ The DPWH DEO of Compostela Valley straightened the downstream river course from 1994 to 2007 and effectively reduced the flooding level at the Kalaw Bridge. Survey results revealed that the economic activity in the town proper of Monkayo was adversely affected by the bypass road since travelers no longer drop by the town proper and residents are clamoring for the restoration of the Kalaw Bridge as their main access to the town. Further consultations between PMO and DPWH DEO on the flood control measures could have been made but both of PMO and the consultant did not have the information on the measures done by DPWH DEO.

facilities, and slope protection works⁶, and flood control measures including embankment levee. The Table below shows the planned and actual outputs of civil works. Most of the outputs of civil works were delivered as scheduled, although there were several additional works such as increase from two lanes to four lanes in urban areas, increased number of rehabilitated bridges and slope protection, and expanded levee for flood control works. They were done based on either the current local status or requests from local governments and were deemed appropriate.

Table 1: Outputs of Phase I and Phase II of PJHL Project

Items	Phase I			Phase II		
	Plan	Actual	% of Plan	Plan	Actual	% of Plan
Road pavement improvement (km)	97.1	100.3	103%	155.6	155.7	100%
Rehabilitation bridges	24	20	83%	30	43	143%
Slope Protection	33	46	139%	29	37	128%
Flood Control (km)	7.5	9.5	127%	n/a	1.42	n/a

(2) Consulting Services

Man Month (M/M) for consulting services was significantly increased from 1,294 MM to 2,359 MM (182% of the plan) for Phase I and from 1,115 MM to 1,595 MM for Phase II (143% of the plan). The main reasons for increase were the need for a detailed study for additional scope of work, extension of the bidding and construction periods, and the prolonged Maintenance Management Study. The Maintenance Management Study under Phase I consisted of (a) a review of the O&M system of DPWH District Engineering Offices (DEOs) in charge of O&M of this project and recommendations, and (b) a study on the state of all the national roads where the DEOs are in charge and formulation of the Maintenance Management Plan. However, at the time of the ex-post evaluation, most of the DEOs and the Regional Offices of DPWH did not know about the Study Report and did not utilize it.

Table 2: Consulting Services

(Unit: Man-Month)

Category	Items	Phase I			Items	Phase II		
		Plan	Actual	% of Plan		Plan	Actual	% of Plan
Professional	Bidding / Supervision of Construction	596	1,054	177%	D/D Review / Bidding	38	66	174%
	Maintenance Study	91	139	153%	Supervision of construction	440	601	137%
Assistant Staff	Bidding / Supervision of Construction	527	1,024	194%	D/D Review / Bidding	35	94	269%
	Maintenance Study	80	140	175%	Supervision of construction	602	833	138%
Total	Bidding / Supervision of Construction	1,123	2,080	185%	D/D Review / Bidding	73	160	219%
	Maintenance Study	171	279	163%	Supervision of construction	1,042	1,435	138%

⁶ Slope protection is to cover the slopes artificially constructed by digging or embankment as done for road construction with stones, concrete blocks, or lawn-grass to protect slopes from land slide.

3.2.2 Project Inputs

3.2.2.1 Project Period

The implementation period of this project was significantly longer than planned. Phases I and II had been planned to be completed in 105 months: Phase I in 50 months from December 1996 to January 2001; and Phase II in 55 months from July 1999 to January 2004. However, the total actual duration of the two phases was 214 months (204 % of the plan) with Phase I taking 115 months (230% of the plan) and Phase II, 99 months (180 % of the plan). In particular, the actual duration of Phase I was more than double the planned one, and delayed by almost six years.

Table 3: Planned and Actual Project Implementation Schedule

Phase	Plan	Actual	% of Plan
Phase I	Dec. 1996 to Jan. 2001 (50 months)	Mar. 1997 to Sept. 2006 (115 months)	230%
Phase II	July 1999 to Jan 2004 (55 months)	Dec. 1999 to Feb. 2008 (99 months)	180%
Total	105 months	214 months	204%

The main reason for the long delay was the suspension of the construction in Sections 7 and 8 in 2002 because the contractor could not implement the work due to the undesirable economic conditions and the peace and order problem, which resulted in renegotiation with the original bidders. This issue led to suspension of the overall civil works in the sections for five years. Here are the other major reasons for the delay of Phase I: (a) prolonged process of qualifications of bidders in some sections (6 months); (b) significant increase in rainfall due to typhoons; and (c) additional scope of work requested by the local governments. Meanwhile, the major reason for the delay of Phase II is prolonged discussions between the DPWH and JBIC on the bidding process due to the changes in the procurement process of the GOP (delayed by 23 months).

3.2.2.3 Project Cost

The total project cost was estimated at JPY 19,190 million at the time of the appraisal, while the actual total project cost was JPY 17,942 million, or 93 percent of the estimated cost. In peso terms, the actual project cost was PhP 8,031 million or 145% of the PhP 5,543 million estimated cost. The appreciation of the yen was a major cause of the cost increase⁷. Here are the other reasons for the cost increase in peso: (a) increased cost for civil works and consulting services due to the changes in scope such as change from two to four lanes and increased number of bridges rehabilitated and slope protection which were done based on the traffic volume, actual situation, and request from local governments, and extension of the works; and (b) increased cost for land acquisition due to the expansion of road lanes and increased value of land (From PhP 24 million to PhP 64 million in Phase I and from PhP 10 million to PhP 36.6 million in Phase II).

Table 4: Planned and Actual Project Costs

Project	Cost (Unit: Million Yen)			Cost (Unit: Million Yen)			Loan Amount (Unit: Million Yen)	
	Plan	Actual	% of Plan	Plan	Actual	% of Plan	Loan Amount	Disbursed
Phase I	10,244	8,303	81%	2,561	3,688	144%	7,683	6,744

⁷ The yen appreciated from JPY4/peso (for Phase I) and JPY3/peso (for Phase II) at the time of the appraisal to an average of JPY2.25 and 2.22/peso during project implementation.

Phase II	8,946	9,639	108%	2,982	4,342	150%	7,434	7,842
Total	19,190	17,942	93%	5,543	8,031	145%	15,117	14,586

As explained above, although the project period was significantly longer than planned, the project cost was lower than planned, therefore efficiency of the project is fair.

3.3 Effectiveness (Rating: a)

3.3.1 Quantitative Effects

3.3.1.1 Results from Operation and Effect Indicators

(1) Annual Average Daily Traffic Volume (AADT)

In 2009, three to five years after the completion of the sections of Phase I, the AADT reached a total of 28,782, which is 129% of the estimated number. In Section 5 where heavy transport of lumber and agricultural products was observed, and Section 17 which is near Davao City, the AADT surpassed the target volume substantially. On the other hand, the volumes in other sections were 71-89% of the expected numbers. The AADT of Phase II reached a total of 23,083 in 2009, which is 106% of the total estimated number. A high growth of volume was observed in Section 16 which is close to Davao City. However, in the sections of 2, 9-12, and 15, the volume remained at 48-97% of the target.

Table 5: Annual Average Daily Traffic Volume of PJHL (Unit: Vehicles/Day)⁸

Phase I (Section Number, Section Name)		Plan				Actual	% of Plan
		1994	2000	2004 (3rd year)	2006 (5th year)	2009	
5	Tabon-tabon-Sibagat	847	1,388	1,817	2,031	5,821	287%
6	Sibagat-Bayugan	1,868	2,948	3,897	4,372	3,884	89%
7	Bayugan-Prosperidad	1,996	3,161	4,179	5,705	3,261	78%
8	Prosperidad-San Francisco	2,409	3,886	4,824	6,230	3,694	77%
13	Langkilaan-Monkayo	753	1,273	1,642	2,196	1,556	71%
17	Tagum - Carmen	1,691	2,725	3,552	4,793	10,566	220%
Total		9,564	15,381	19,911	25,327	28,782	129%
Total of estimate of target years for comparison					22,394		
Phase II (Section Number, Section Name)		Plan				Actual	% of Plan
		1994	2000	2006 (2nd year)	2008 (4th year)	2009	
2	Alegria-Santiago	1,640	2,518	2,959	3,842	1,853	48%
9	San Francisco-Rosario	1,856	2,978	3,449	4,391	3,261	95%
10	Rosario-Bunawan	1,217	2,007	2,308	2,910	2,238	97%
11	Bunawan-Kapatungan	1,476	2,399	2,768	3,505	2,238	81%
12	Kapatungan-Langkilaan	1,926	3,170	3,194	3,243	2,238	70%
14	Monkayo By-pass	914	1,525	1,750	2,199	2,112	121%
15	Monkayo - Nabunturan	1,228	1,992	2,294	2,897	2,112	92%
16	Nabunturan - Tagum	1,167	1,908	2,192	2,759	7,031	321%
Total		11,424	18,497	20,914	25,747	23,083	106%
Total of estimate of target years for comparison				21,796			

Source: PED, Planning Service

Note: Numbers include cars, jeeps, buses, tracks, and tricycles.

⁸ Volumes of AADT were compared based on the completion year of each section as follows. Phase I: For Sections 5, 6, 13, and 17 where civil works were completed in 2004, the volumes are compared with the target of the fifth year. For Sections 7 and 8 where civil works were completed in 2006, the volumes are compared with the target of the third year. Phase II: For Sections 2 of where civil works were completed in 2005, the volume is compared with the target of the fourth year. For remaining sections where civil works were completed in 2007, the volumes are compared with the target of the second year. The volumes to be compared are colored in grey in the table 5.

(2) Traffic Accident

The number of traffic accidents increased from 2005 to 2008 in Sections 13, 15, 16 and 17 that are close to Davao City, which is considered to be affected by a rapid increase of traffic. On the other hand, the number of accidents decreased in the remaining sections.

Table 6: Number of Traffic Accidents in Sections of PJHL Project

Phase I (Section)		Year					Phase II (Section)		Year					
		2005	2006	2007	2008	2009			2005	2006	2007	2008	2009	
5	Tabon Tabon - Sibagat	17	7	0	2	1	2	Alegria - Santiago	No Road Traffic Accident					
6	Sibagat - Bayugan	23	6	2	1	1	9	San Francisco - Rosario	14	6	1	0	2	
7	Bayugan - Prosperidad	18	7	2	0	1	10	Rosario - Bunawan	11	1	1	0	0	
8	Prosperidad - San Francisco	10	4	0	0	1	11	Bunawan - Kapatungan	4	2	0	0	0	
13	Langkilaan - Monkayo	0	0	12	12	4	12	Kapatungan - Langkilaan	1	0	0	0	1	
17	Tagum - Carmen	28	53	51	65	46	14	Monkayo Bypass	No data					
Total		96	77	67	80	54	15	Monkayo - Nabunturan	39	71	49	58	46	
								16	Nabunturan - Tagum	26	12	12	32	17
								Total		95	86	62	90	64

Source: DPWH

Traffic Accident Recording Analysis System (TARAS)

3.3.1.2 Results of Calculations of Internal Rate of Return (IRR)

The Economic Internal Rate of Return (EIRR) was re-calculated for both Phases I and II of the project, using the same conditions as at the appraisal⁹. EIRR increased from 21.6% to 23.5% for Phases I and from 25.6% to 35.9% for Phase II, presumably because the growth of the total AADT was more than expected and the benefit surpassed the negative effects of cost increase and schedule extension.

Table 7: EIRR of Phases I & II of PJLH Project

Phase	At Appraisal	At Ex-Post Evaluation
Phase I	21.6%	23.5%
Phase II	25.6%	35.9%

3.3.2 Qualitative Effects

To determine the effect and impact of the project, a beneficiary survey was conducted with the residents, commuters, passengers, and the business and transport sectors for a total of 462 samples¹⁰.

(1) Access, Traffic Volume, Travel Time and Accidents

Almost all the respondents (99%) reported that their access to places and facilities was improved after the project and there was a high frequency of road utilization. Of the total respondents, 40 % are using the roads daily and 29% weekly. Twenty six percent (26%) of the residents reported that they procured or started operating the vehicles after the project. The result was an increase in traffic volume as observed by 87% of the respondents. On the other hand, 95% said that their travel time decreased significantly, with about 40%

⁹ Since detailed calculation methods were used at the appraisal, a simple method was applied at the ex-post evaluation using actual costs, and benefit was calculated using DPWH base indicators.

¹⁰ The survey samples for both phases were divided into four major categories covering the residents with 302 samples, commuters or passengers with 39, the business sector with 101 and the transport sector with 20 for a total of 462 samples. The samples were distributed to all the sections of Phases I and II. More than 80% of the respondents have been either residing or operating business in the area since the year 2000 or earlier, and are very familiar with the situation of the area before the project.

reporting travel time cut by more than half¹¹. All the respondents said that the time reduction was mainly attributed to the project. However, 65% reported an increase of accidents after the project due to reckless driving and speeding partly caused by lack of road safety signs and lightings and overloaded trucks. There are gaps between the statistical data on accident and the results of beneficiary study, probably because many accidents were not reported to the proper authorities.

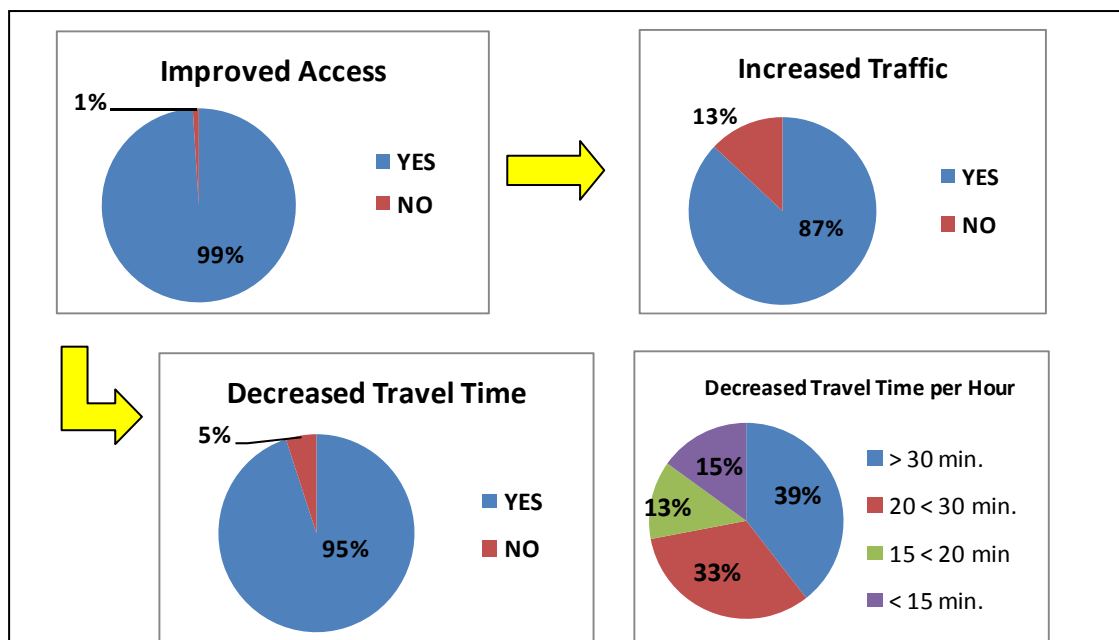


Figure 2:

Improved Access to Traffic, Increased Traffic and Time Savings for Phases I and II

In addition, most of the respondents reported other effects such as increased traffic loads, savings on vehicle maintenance cost, decreased floods and landslides, and improved comfort of transport. As for traffic loads, 98% of the respondents observed that heavier loads are now transported across the roads and bridges. Under Phases I and II, several flood control measures were undertaken, such as improvement of the drainage system of roads, raising of road and bridges, and construction of cut-off channel and embankment, as well as slope protections in all the sections. Many respondents reported the decrease in flood and landslides and blockages of roads due to those natural calamities, indicating that flood mitigating measures and slope protection works were effective. Improvement on comfort in traveling by land transportation is also an indication that the road surface has improved much and is in good condition, as well as the start of operation of large air conditioned buses.

Table 8: Other Effects Reported by Beneficiaries

Phase	Increased traffic loads	Savings of vehicle	Savings of fuel	Flood decreased	Decreased land slide	More confortability of
I	98%	78%	78%	92%	74%	87%
II	97%	80%	80%	88%	76%	91%

¹¹ Thirty nine percent (39%) of the respondents responded that time saved for the travel per hour was more than 30 minutes, 33% from 20 to 30 minutes, and 13% from 15 to 20 minutes.

As explained above, for this project, the total AADT of all sections surpassed the original plan and EIRR was increased. The results of the beneficiary survey also indicated improved access, reduction in travel time, and other effects such as reduction of floods and landslides for which several measures were implemented under the project. Thus, this project has largely achieved its objectives, therefore its effectiveness is high.

3.4 Impact

3.4.1 Intended Impacts

The project aimed to help improve market access by road rehabilitation and create an efficient distribution system, thereby developing the regional economy such as the increase of agriculture production, new businesses and investment, and employment creation. The table below shows the annual growth rates of Gross Regional Domestic Product (GRDP) and value added to the transport and agriculture sectors of Regions XI and XIII. The average growth rates of GRDP from 2005 to 2008 were steady at 5.4% and 5.9%, respectively. Region XIII achieved a high growth of 8.6% in 2007.

Table 9: Growth Rates of GRDP, Value Added to Transport and Agriculture Sectors

Sector	Region	2005	2006	2007	2008	Average
GRDP	XI	5.0%	5.3%	7.1%	3.8%	5.3%
	XIII	4.0%	6.0%	8.6%	3.0%	5.4%
	Mindanao	4.3%	5.4%	7.0%	4.0%	5.2%
Transport	XI	7.3%	6.3%	8.3%	4.2%	6.6%
	XIII	3.1%	6.7%	8.9%	1.9%	5.1%
Agriculture	XI	2.0%	3.8%	4.8%	3.2%	3.5%
	XIII	5.5%	-1.4%	3.8%	-0.5%	1.9%

Source: NSO

Note: At constant 1985 prices, the averages in the right column show the averages of annual average growth rates from 2005 to 2008.

The transport sector of Region XI where Davao, the biggest city in Mindanao is located, experienced higher average growth rate of 6.6% than the average growth rate of 5.3% of GRDP. It is presumed that the start of the operation of large buses and increased demand for transport of commodities such as lumber, bananas, and copra contributed to the growth of the sector. Although the growth of the agriculture sector is much lower than the average GRDP due to stagnant production of rice and corn in the area, such other major products as bananas experienced a rapid growth. For example, in the provinces of Compostera Valley of Region XI, the production of bananas increased by 17.5% and the production of palm oil grew by 50% on annual average from 2006 to 2009. In Region XIII, lumber production increased by 105% during the time. The provincial governments in the regions reported that the improved access to transportation after the project contributed to the increased production of these products. Gold mining in the municipality of Monkayo also reportedly expanded after the project.

Other positive impacts on business and investment were seen, such as newly established businesses and supermarkets in the cities along the highway. The number of businesses registered in Region XI and XIII increased on annual average by 8% and 11% from 2006 to 2009, while investments recorded a growth of 72% (Region XI) and 25% (Region XIII) during the period from 2006 to 2008. In particular, the provinces of Davao Del Norte and Agusan del Sur, where many sections of the project are located, experienced very high investment growth rates at 483% and 753%, respectively. The number of tourists also increased on annual average by 6-8% during the period in both regions. In three out of the four beneficiary provinces, tourists increased by 40-50% a year from 2007 to 2008.

Table 10: Investment Status of Region XI and XIII (Unit: Million Pesos)

	2006	2007	2008	Growth Rates from 2006-2008
Region XI	4,929	8,617	8,472	72%
Compostela Valley	162	228	173	7%
Davao Del Norte	515	1,329	3,004	483%
Davao City	3,727	6,226	3,811	2%
Region XIII	2,474	2,108	3,097	25%
Agusan del Norte	1,186	744	738	-38%
Agusan del Sur	131	338	1,117	753%

Source: NSCB and Provincial Governments

In the beneficiary survey, more than 90% of the respondents declared an increase of products, mostly agricultural and fishery, being transported to the local markets from other districts in the province, and products from other provinces and cities also started increasing, such as fish and marine products and household wares. Expansion of local agricultural products sold to outside markets was likewise observed by 90% of the respondents. Common destinations include the cities of Butuan, Cagayan de Oro, Davao and even as far as Cebu, Visayas and Manila. As a result, about 70% of the respondents stated that there was an increase in prices of local products due to these activities.

Table 11: Impact Reported by Beneficiaries

Phase	Increased Employment	Increased Income/Profit	Market Expansion		
			Products from the province	Products from outside of the province	Expansion of Market for Local Products
I	59%	83%	97%	92%	92%
II	58%	80%	93%	94%	88%

Job generation effect was also observed since residents started miscellaneous businesses such as retail stores and gasoline stations. The transport business also increased with additional units of passenger vans, small buses and motorcycles plying the highway. This was declared by about 60% the respondents in Phases I and II where these generated employment among the local residents. As a result, about 80% of the respondents declared that there was an increase in family income and business profit. Reasons for increase in income and profit ranges from business and market sites being more accessible, time and cost savings in mobility, expansion of market, and general increase in scale of business. However, only 20% reported that income and profits increased significantly.

3.4.2 Other Impacts

(1) Impacts on the Natural Environment

For Phase I, the Department of Natural Resources and Environment (DENR) of Region XI issued the exemption of Environmental Compliance Certificate (ECC) in 1997 and for Sections 13 and 17 ECC was issued by the DENR in 2000. DENR conducted ECC monitoring for Sections 5, 6, 7, and 8 in 2001 but no major problems were reported. For Phase II, the DENR conducted ECC monitoring for Section 2 in 2005, but no major problems were reported except the issue of garbage.

According to the beneficiary survey, about a half of the respondents in Phase I, and 78% and 65% of those in Phase II, respectively, stated that the air quality and the noise level worsened

during the construction. However, after the project, more than half of the respondents reported the improvement of air quality and noise level.

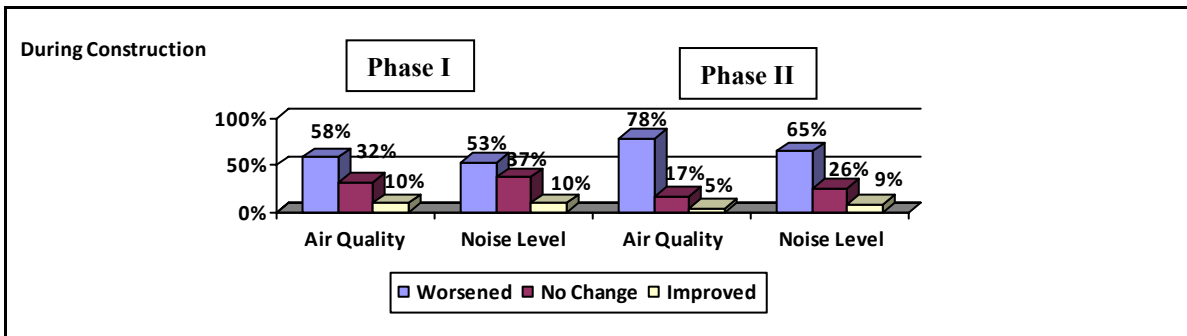


Figure 3: Responses on Environment Impact during Construction (Phases I and II)

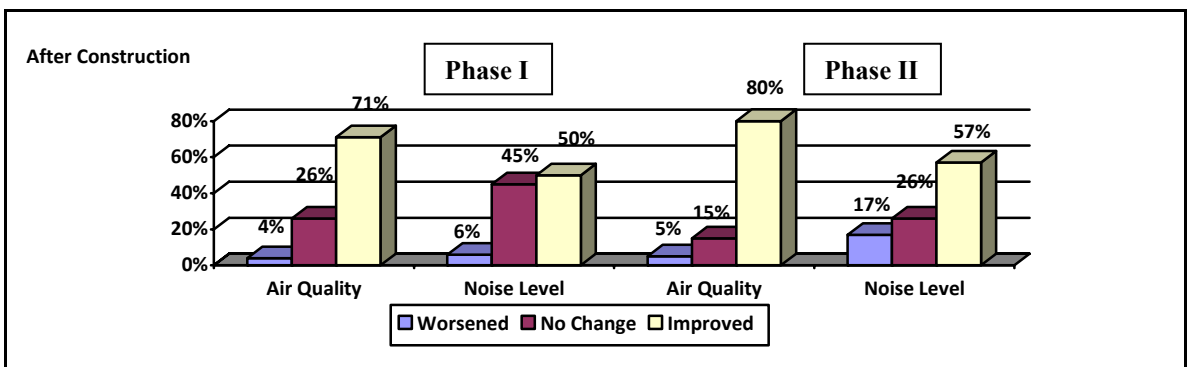


Figure 4: Responses on Environment Impact before and after Project Period (Phases I and II)

(2) Land Acquisition and Resettlement

The project was to rehabilitate the existing roads and bridges. However, a total of 94 households were to be relocated and a resettlement area was to be developed for reconstruction of bridges and construction of a new bypass road. It was planned to acquire the land of 22.3 ha for Phase I and 4.6 ha for Phase II. The resettlement area became subsequently unnecessary and was cancelled in Phase I. For Phase II, monetary compensation based on the market price was made to the residents who were relocated due to the construction of the new Monkayo Bypass. The beneficiary survey revealed that the residents that were said to be adversely affected by the road shoulder improvement. Since the areas were previously acquired and the residents were actually occupying the Road Right of Way (RROW), hence were simply required to move out from their existing occupancy. These residents were not compensated since they should have not resided in those locations¹². As a whole, there was no major problems were observed on the land acquisition and resettlement.

(3) Unintended Positive/Negative Impact: None in particular

This project was completed in September 2006 for Phase I and February 2008 for Phase II. Therefore, it is a little early to measure the impact based on available data. However, it is considered that the project contributed to the growth of the transport sector, increased the production of major agricultural products such as bananas, palm oil, and lumber, and increased investment. In the beneficiary survey, as economic impacts brought about by improvement of

¹² The DEO, particularly Agusan del Norte, observed that the squatters started to return and occupy the road shoulders again after project completion.

access by the project, a majority of respondents indicated the expanded market and improvement of income and business profit. No major problems were observed on the environment, resettlement and land acquisition.

3.5 Sustainability (Rating: b)

3.5.1 Structural Aspects of Operation and Maintenance

The responsible organization for the O&M of the PJHL is the District Engineering Offices (DEOs) and DPWH Regional Offices of Regions XI and XIII. DEOs are under the direct supervision of the DPWH Regional Offices. DEOs conduct daily O&M and small repair works with the cost of less than PhP 50 million, while the regional offices supervise the DEOs and also conduct repair works along these roads with the cost of PhP 50 – 200 million.

Table 12: Responsible DEOs of DPWH for Each Section of PJHL

Section	Region	Responsible DEOs of DPWH	Section	Region	Responsible DEOs of DPWH
2	XIII	Agusan del Norte DEO	13, 14-16	XI	Compostela Valley DEO
5&6, 7&8, 9-12	XIII	Agusan del Sur 1 st DEO	17	XI	Davao del Norte DEO

DEOs of the DPWH maintain a number of permanent staff members including four to six civil engineers and one to eight foreman, one to six operators, and 11-112 workers including part-time or casual workers. No major problems were observed in terms of staffing.

However, the system to properly regulate the overloaded trucks is yet to be established, although rampant overloading violations and significant damages on the roads were observed, particularly in Section 5¹³. There is an arrangement in which the DPWH operates the weighbridge to check overloaded trucks and reports to the Land Transportation Office (LTO) who penalizes the violators with fines. The Regional Office XIII recognizes the problems and consulted with the LTO and other stakeholders. However, neither the DPWH nor the LTO was able to take any specific measures to enforce the regulations against illegal overloading. Here are the major reasons for the difficulties for the DPWH and the LTO to take strict measures:

- 1) Political pressures from those engaged in transport and lumber industries
- 2) Difficulties in preventing too many unauthorized checkpoints from operating along the highway which increase the costs for transporters and leading to overloading to make up for the cost¹⁴.
- 3) The current penalty for overloading violations is so small as 300 to 500 peso per truck and affordable to truck owners that they simply pay the penalty and keep violating the regulations.

¹³ According to the Monthly Weighbridge Summary Reports at Weighbridge Station Ampayon, Butuan City, out of 3,480 vehicles checked, 2,308 vehicles (66%) were overloaded in March 2010. (DPWH Regional Office XIII)

¹⁴ Checkpoints are set up along roads by police or military to inspect vehicles in order to prevent trafficking of illegal products such as drugs and/or for security such as to control anti-government organizations. 12 transporters of lumbers interviewed in the area reported that there were 11 checkpoints between Bayugan and Butuan City. Total payment to these check points for one travel cost is in the range of 1,450 – 1,650 peso, which is about 8-14% of an ordinary transport fees by a large truck ranging from 12,000 to 18,000 pesos. When they carry illegal lumbers, which were reported between Sanfransisco or Prosperitad to Butuan City, the payment amounts to from 25,000 to 30,000 peso. All the transporters responded that the payments to checkpoints lead to overloading. Reasons for payment are forced payments, voluntary payment expecting for easy passage, and fear from penalty for overloading or carrying illegal lumbers. The checkpoints which issue the formal receipt was said to be only Provincial Tax Force Monitoring.

3.5.2 Technical Aspects of Operation and Maintenance

DEOs of the DPWH employ four to six civil engineers. DPWH Head Office and Regional Offices conduct training sessions regularly for the DEO officers. In addition, those offices are actively utilizing the Road and Bridge Information System (RBIA) developed and assisted by JICA for systematic management of road conditions. However, all the DEOs claimed an dilapidated equipment and insufficient quantity of equipment for maintenance works¹⁵. It is also reported that since As-Built Plan and other information on project design were not shared with DEOs, they had no detailed knowledge of rehabilitation works done in the project including related structures such as drainage that could have helped them in their maintenance activities.

3.5.3 Financial Aspects of Operation and Maintenance

The tables below show the O&M budgets for DPWH DEOs and Regional Offices of Regions XI and XIII, which are responsible for O&M of this project. The reduction of budget in 2010, in particular due to substantial decrease in the Motor Vehicle Users' Charge (MVUC), is observed. The budgets of Regional Offices of XI and XIII were decreased by about 65% from 2009, 350 million peso and 300 million peso, respectively. The budget for O&M for flood control and drainage system along the national highways from General Appropriation Act (GAA) has not been allocated since 2008. DEOs also reported the insufficient budget for O&M based on the Equivalent Maintenance Kilometerage (EMK) values of road sections under each region's jurisdiction¹⁶. The significant decrease of O&M budget is posing a risk to proper maintenance of their assets including PJHL by DPWH Regional and District Offices.

Table 13: Maintenance Budget of DPWH DEOs which are responsible for O&M of the project

DEO	2007	2008	2009	2010
Agusan del Norte	n.a	6,886	10,977	7,791
Agusan del Sur 1st	n.a	12,534	23,294	14,894
Compostela Valley	17,362	32,384	27,739	n.a
Davao del Norte	11,565	22,150	21,374	n.a

Source: DEOs (Unit: Thousand Pesos)

Table 14: Maintenance Budget of DPWH Regional Offices which are responsible for O&M of the project and Head Office (Bureau of Maintenance (BoM)) (Unit: Thousand Pesos)

Region	2007	2008	2009	2010
XI	455,755	509,868	537,570	187,406
XIII	582,874	684,061	453,932	154,357
BoM	20,255,750	22,453,520	25,831,900	n.a.

Source: DPWH Regional Offices and BoM

¹⁵ DEOs reported the shortage of equipment, especially in addressing emergency situations like landslides and erosions during times of calamity.

¹⁶ The DPWH Central Office Bureau of Maintenance (BOM) is the main office that releases O & M budget to DPWH regional and district offices. Its basis for allocating maintenance budget for each region depends on the Equivalent Maintenance Kilometerage (EMK) values of road sections under each region's jurisdiction. EMK is computed for specific road section. DPWH road and bridge maintenance is broken into the following three major categories: i) Routine Maintenance funded by GAA and MVUC; ii) Preventive Maintenance funded by GAA, MVUC and Foreign Funding Institutions (FAPs); and iii) Long Term Performance - Based Maintenance, funded by the World Bank.

3.5.4 Current Status of Operation and Maintenance

The following problems were observed at the time of the evaluation.

1) Phase I

Section	Problems and Causes
5 Tabon- Tabon – Sibagat – Bayugan	<ul style="list-style-type: none"> • Series of shattered pavement on right lane along Sibagat-Tabon Tabon section going to Butuan City due to high traffic volume of overloaded trucks. • Major reconstruction work is being done at Tabon Tabon road slip by DPWH Regional Office XI. The slip was triggered by run-off water passing through a dis-aligned old existing cross drainage structure¹⁷. The reworking is due for completion in August 2010.
13 Lankilaan – Monkayo	Early signs of deterioration (raveling, loss of texture, polishing) of Asphalt Concrete Overlay allegedly due to poor performance of the contractor ¹⁸ .
17 Tagum – Carmen	Continuing re-blocking works and transverse cracks on existing PCCP due to soft foundation along Bincungan mangrove road section. This is also attributed to the fact that, during re-blocking works, the foundation of the adjacent good block is disturbed by passing vehicles loosening its base, resulting in traffic load damage on the old blocks after a period of time from project completion.

2) Phase II

Section	Problems and Causes
2 Alegria – Santiago	Section along Brgy. Cuyago flooded up to knee deep from November to January due to overflowing of silted Puyo River and insufficient capacity of roadside flood drainage interceptor canal.
9 San Francisco –Rosario	Accident prone section at Brgy. San Isidro, San Francisco due to sudden reversal of transverse slope along super-elevated down sloping curve ¹⁹ .

It was also observed that some road sections have no appropriate warning and road safety signs and are prone to accidents. It was reported that many signs had been stolen after the completion of the project. The suggestions from beneficiaries include the provision of road traffic and safety signs and lightning in dangerous and very dark sections of the road.

Regarding the damage caused by overloaded trucks, DPWH XIII undertakes re-blocking works on damaged sections every time that a budget is available. At the time of the evaluation, many overloaded trucks carrying lumber and copra were observed. This will continue unless and until the proper authorities are able to address the violations effectively. It is estimated that annual costs for re-blocking of the damaged area in Section 5 will amount

¹⁷ It was mentioned that the project only rehabilitated the inlet and outlet sections of the existing cross drainage structure and further investigation could have been made to discover that the pipeline was dis-aligned and required replacement as well.

¹⁸ The PMO and the Interagency Monitoring Group (IMG) of the project considered that this was due to the fact that appropriate processes were not taken during the construction (such as works during rainy days and at night). (Based on the interview with PMO and Mindanao Development Agency which was the member of IMG of the project.)

¹⁹ The super-elevation along that section could have been extended further outside the carriageway to prevent overshooting passing vehicles to be thrown by centrifugal force.

to PhP 17.6 million, while the economic life of the road section without rework will be shortened from 15-20 years to seven years²⁰.

As explained above, some problems have been observed in terms of structural and financial aspects; therefore sustainability of the project is fair. In particular, there is the lack of an effective enforcement system against overloaded trucks although they were significantly affecting the O&M of the roads rehabilitated. Also, decreased budget for O&M is posing a risk for proper maintenance of the highway. Therefore the sustainability of the project is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project aimed to contribute to developing the regional economy in Mindanao, one of the least developed regions in the Philippines, by rehabilitating the deteriorated trunk highway. Therefore, the project meets the development policy and needs of the Philippines as well as Japanese assistance policy. At the time of the ex-post evaluation, both the total AADT of the sections rehabilitated and EIRR surpassed the target. It was observed that improved access by the project contributed to the growth of the market in the area. In terms of efficiency, while the project cost was within the planned budget, the project period was significantly longer than planned. For sustainability, there are concerns on a lack of system to restrict overloaded trucks and decreased budget for O&M for DPWH offices in charge.

In light of the above, this project is evaluated to be fairly satisfactory (B).

4.2 Recommendations

(1) Recommendations to Implementing Agencies

- It is necessary to establish an effective system to regulate overloaded vehicles, in order to sustain the development effects from the project, since overloaded vehicles accelerate the abrasion of roads. The DPWH should discuss the issue with other relevant agencies such as the LTO, Local Government Units (LGUs), and related industries and take actions. Raising the amount of penalty for overloading violations could serve as a deterrent to erring truck drivers/owners coupled with cancellation of vehicle registration²¹. Strict measures against unauthorized check points which are reported to relate to overloading also should be taken.
- DPWH PMO and Regional Office should provide As-Built Plans and other turn-over documents to DPWH District Engineering Offices (DEOs) to effectively monitor and maintain the facilities.
- The DPWH should secure a necessary road maintenance budget. This is a particularly pressing issue after reduction of the budget from the MVUC. Budget allocation system for road maintenance should be reviewed since the problems in fund allocation by MVUC was reported²².
- Conduct inventory check and provide traffic warning and road safety signs especially in accident prone areas.

²⁰ Estimate by the local civil engineer. The annual rework cost was calculated as follows. (a) Total length of the road section 5:13.27km, Length of 1 block: 4.50m, (b) Number of blocks on Right Lane going to Butuan City = $13,270/4.5 = 2,944$ blocks, (c) Number of blocks damaged each year = $2,944 \times .10 = 294$ blocks assuming only 10% of these (very conservative estimate) is damaged each year, (d) Re-blocking cost per block = PhP60,000 per block, (e) Re-blocking cost per year = $\text{PhP}60,000 \times 294 = \text{PhP}17,640,000$

²¹ On this issue, AusAid conducted a study and proposed the revision of a related act under the Partnership for Economic Governance Reform (PEGR). JICA also plans to assist through such as the provision of weighbridges.

²² For example, the parliament of GOP discussed on the issue of misuse and unequal budget allocation of MVUC fund in 2008.

(2) Recommendations to JICA

Considering the expected increase of traffic on the highway rehabilitated by this project, there are high possibilities that overloaded trucks will cause damage on the roads, resulting in the following consequences: reduction of road durability and useful economic life; obstruction of smooth traffic due to repeated reworking and trucks driving very slowly; increased traffic accidents; and above all, expensive reworking costs. Therefore, it is recommended that JICA help the DPWH and other related agencies establish a system to restrict overloaded trucks, by means such as strengthening coordination functions of related organizations, setting up a joint task force by DPWH/LTO/Philippines National Police (PNP), and strengthening crackdowns and highway patrol by PNP.

4.3 Lessons Learned

- In this project, several problems could have been avoided if DEOs of the DPWH and LGUs were more actively involved from the design stage²³. Therefore, in similar projects, full consultation with DPWH DEOs and LGUs from the planning to implementation stages is recommended. Such consultation will enable a project to obtain detailed information on the roads and the environment in the regions and reflect it in the project design. Further, additional requirements on the project scope from LGUs and the resulting cost increase and schedule extension could be reduced. DPWH DEOs may also be able to assist in project monitoring during project implementation to complement the PMO and the consultants. Any future project should also include the necessary costs to cover reproduction expenses of design documents, As-Built Plans and other turn-over documents for distribution to DEOs²⁴.
- The project was delayed significantly from the original plan. The most significant cause of the delay was the poor capacity of the contractors that led to the suspension of civil works. A strict Pre-Qualification (PQ) process is required to appraise the capacity of bidding contractors, in particular their financial capacity.

²³ The problems include possible decrease of users in a new bypass road after the rework of the existing bridge and additional scope required by LGUs. This issue was pointed by several DEOs of DPWH. For example, the consultation on flood control measures could have been done with DEO of DPWH when the construction of the new Monkayo Bypass was designed and constructed. However, the consultant in charge did not get the information on flood control works done by DEO of DPWH.

²⁴ PMO reported the shortage of cost for reproduction prevented them from distribution to DEOs.

Comparison of the Original and Actual Scope of the Project

< Phase I > Item	Original	Actual
1. Project Outputs		
1) Civil Works Road rehabilitation (km)	97.1	100.34
Briges rehabilitation	24	20
Slope Protection	33	46
Flood Control Measures (km)	7.5	9.5
2) Consulting Services (MM)	1,294 MM	2,359 MM
2. Project Period	Dec. 1996 - Jan 2001 (50 months)	Mar. 1997 - Sept. 2006 (115 months)
3. Project Cost		
Amount paid in Foreign	5,482 million yen	3,197 million yen
Amount paid in Local currency	4,762 million yen (1,191 million peso)	5,107 million yen (2,269 million peso)
Total	10,244 million yen	8,303 million yen
Japanese ODA loan portion	7,683 million yen	6,744 million yen
Exchange rate	4 peso = 1 yen (as of May 1996)	2.251 peso = 1 yen (Average between 1998 and 2006)

< Phase II > Item	Original	Actual
1. Project Outputs		
1) Civil Works Road rehabilitation (km)	155.6	155.69
Briges rehabilitation	30	43
Slope Protection	29	37
Flood Control Measures (km)	n/a	1.42
2) Consulting Services (MM)	1,115MM	1,595 MM
2. Project Period	July 1997 - Jan 2004 (55 months)	Dec. 1999 - Feb. 2008 (99 months)
3. Project Cost		
Amount paid in Foreign currency	4,740 million yen	5,581 million yen
Amount paid in Local currency	4,206 million yen (1,402 million peso)	4,058 million yen (1,828 million peso)
Total	8,946 million yen	9,639 million yen
Japanese ODA loan portion	7,434 million yen	7,842 million yen
Exchange rate	3 peso = 1 yen (as of Jan. 1999)	2.22 peso = 1 yen (Average between 2001 and 2008)

Third Party Opinion
Philippine Japan Friendship Highway
(Mindanao Section) Rehabilitation, Phase I and II

Dante B. Canlas, School of Economics, University of the Philippines

Introduction

This road project is crucial for enhancing economic integration of Mindanao. It raises the efficiency levels of firm production and household consumption. It allows even low-income families and small enterprises to share in the fruits of growth observed at the macro level.

The evaluation at hand is based on project completion reports, interviews with key informants, small ex-post project surveys, and on-site observations. This is helpful for assessing project outcomes, but for investigating long-term impacts on the ground, specialized multi-purpose surveys are needed. The GOP is well advised to adopt impact analysis in project monitoring and evaluation.

Main Findings

The external evaluation gives the project at hand a rating of B. This is above a rating of C (satisfactory) on a scale of A (highest) to D (lowest). I agree with this rating.

Overall, the high rating of the project stems from the high ex-post internal rates of returns (IRRs) for the two phases. The significant increase in traffic volume overcame the time delays and peso cost overruns of the project to post the B rating. The demands, however, of some local government units (LGUs) for additional scope posed a risk to the economic viability of the project. Acceding to such unplanned requests of LGUs could have delayed project completion and might have cause cost overruns without necessarily creating commensurate benefits.

In addition, the huge increase in traffic volume that raised the ex-post IRRs has downsides. One is the increase in traffic accidents, although this is not supported by official statistics. In any event, the GOP must ensure road safety and maintenance after project completion. The other is the accelerated depreciation of the highway amid the failure of road regulators and law enforcers to stop overloading.

Qualitatively, survey respondents expressed satisfaction with the time savings in travel, enhanced access of households to health clinics, schools, and centers of cultural activities, while firms were pleased with their improved access to markets and suppliers of raw materials.

Recommendations

- The time overruns highlight the importance of harmonizing country systems on government procurement. The GOJ and GOP, for instance, must agree early on about prequalification of potential bidders and design of bidding procedures. However, it may be noted that with the GOP's recent enactment of the *Government Procurement and Policy Act*, and subsequently, the reaching of an agreement between DPWH and JICA on implementing the project at hand, many of the causes of those time overruns may not be problematic anymore in the future.
- Cost overruns in pesos mandate the use of market-based hedging instruments against foreign-exchange risks. These instruments are not costless, but given the sizeable cost overruns, the price may be worth it.
- Local government units that demand additional scope of work must shoulder the added cost. This pricing instrument may be relied on to minimize excess demand for variation orders.
- Penalties must be increased for truckers with overloaded cargo and over speeding drivers. Enforcement of traffic rules on overloading and reckless driving must be strengthened. On the third violation, a driver's license should be suspended over a reasonably long period of time, penalized thereby by a significant amount of foregone earnings.