The Philippines

Rosario-Pugo-Baguio Road Rehabilitation Project

Field Survey: July 2003

1. Project Profile and Japan's ODA Loan

Project Site

Target road (Badiwan Bridge on Pugo-Baquio route)

1.1 Background

In July 1990, a strong earthquake with magnitude 7.7 on the Richter scale originated 130km north of Manila, severely damaging northern and central Luzon and leaving over 2,000 dead or missing. Damage was particularly bad in Baguio, an international tourist city located in northern Luzon, and buildings such as both big and small hotels, universities, movie theaters and factories collapsed, killing many people. All three main roads leading to the city (Kennon Road, Naguilian Road, and Marcos Highway) were destroyed. Naguilian Road and Marcos Highway were repaired in a relatively short time. However, Kennon Road, the shortest route, was blocked for as long as 14 months.

Although the Philippine Government performed emergency work to allow light trafficin September 1991, Kennon Road was seriously damaged by a typhoon in October of the same year, once again blocking traffic. It was difficult to take drastic disaster prevention measures for Kennon Road because of the topographic and geological features. As a result, mudslides and falling rocks were frequent. When the road was impassable, residents had to make a detour using Marcos Highway or Naguilian Road. Rosario-Pugo-Baguio Road,[*1] which could have provided the shortest detour, was not a major road because most sections were covered with gravel and the surface was poor. After the earthquake, it was paved with the funds of the "Emergency Commodity Loan" by the Japanese Government, and smooth

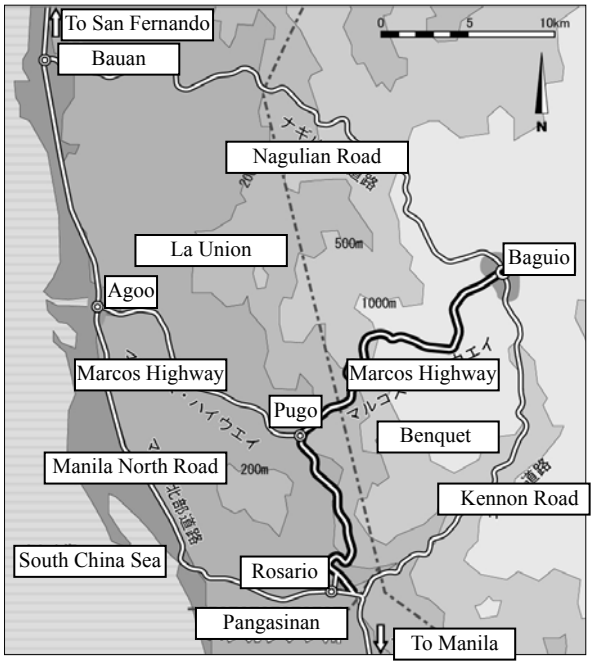


Fig 1. Road Map around the Project Site

[1] The Pugo-Baguio section of Rosario-Pugo-Baguio overlaps a section of Marcos Highway (see Fig.1 on page 1 for the location).

traffic was realized.[*2] However, the road was narrow near its starting point at a densely populated area in Rosario, causing an obstacle to traffic.

Baguio City's main source of income is tourism. However, the number of tourists to the city in 1990 dropped to 160,000, only one-third of 450,000 in the previous year, presumably due to the earthquake damage to the road. Also, transportation of vegetables grown in the city and the surrounding area and various industrial goods was prevented. As a result, the economy of Benguet Province, including Baguio, deteriorated.

1.2 Objectives

The objectives of this project were to carry out restoration and disaster prevention measures on the road connecting Rosario, Pugo and Baguio as a substitute for Kennon Road, which was severely damaged by the Northern Luzon Earthquake, and thereby improve the safety and convenience of road traffic from Metro Manila to Baguio, an international tourist city.

1.3 Output

a) Rosario-Pugo Road (total length: 13km): construction of bypass road at the starting point in Rosario (2.0km long, 2 lanes, 6.7m wide, cement-concrete pavement)
b) Pugo-Baguio Road (total length: 33km): repair of disaster-damaged sections (20 sections), disaster prevention measures (24km long), improvement of load alignment (a section of 2.0 km long, 2 lanes, 6.7m wide, cement-concrete pavement)
c) Consulting service: detailed design, construction management, assistance for bidding, etc.

1.4 Borrower/Executing Agency

Government of the Republic of the Philippines/Department of Public Works and Highways (DPWH)

1.5 Outline of Loan Agreement

Loan Amount / Loan Disbursed Amount	4,633 million yen / 3,968 million yen
Exchange of Notes / Loan Agreement	August 1993 / August 1993
Terms and Conditions - Interest Rate - Repayment Period (Grace Period) - Procurement	 3.0 % 30 yeas (10 years) General untied
Final Disbursement Rate	December 2001

2. Results and Evaluation

2.1 Relevance

2.1.1 Relevance of Project Plan at Appraisal Time

[2] The Loan Agreement was signed in December 1990.

Kennon Road, the shortest way to Baguio from Manila, runs through a steep mountainous area and was often damaged by mudslides or falling rocks in the rainy season or during typhoons. The road was closed to traffic several times a year. The Philippine Government requested the Japan Bank for International Cooperation (JBIC) to enter into an ODA loan agreement for the "Kennon Road Disaster Prevention Project," which it did in January 1988, prior to this project. Before the project started, Kennon Road had suffered heavy earthquake damage in 1990. The damage assessment of Kennon Road conducted with the project funds showed that the number of sections that needed disaster prevention work had increased from 42 to 471 and the estimated repair costs had increased from 1.1 billion yen at appraisal to approximately 16.2 billion yen due to the earthquake. Consequently, the disaster prevention project of Kennon Road using the ODA loan was cancelled. Based on the result of the damage assessment, the Philippine Government reduced the scale of restoration of Kennon Road to the minimum necessary for the daily lives of the residents along the road, and requested the Japanese Government to rehabilitate Rosario-Pugo-Baguio Road instead.

The Rosario-Pugo-Baguio Road project was one of the 3rd-stage projects of the 3-stage restoration/reconstruction plan drawn up by the Philippine Government following the earthquake (1. relief and aid activities, 2. emergency restoration and rehabilitation projects, 3. reconstruction and development projects) and was regarded as indispensable for reconstructing Baguio. Therefore, this project was relevant as it was in line with the policy of the Philippine Government at that time.

2.1.2 Relevance of Project Plan at Present

Kennon Road, which was severely damaged by the 1990 earthquake, was to be downgraded from a National Primary Road to National Secondary Road[*3] because it was in dangerous condition even after being repaired with Philippine Government funds. Although it was not downgraded, the road has been closed to vehicles weighing 10tons or more (large bus, truck, etc.). It is often blocked by mudslides in the event of typhoons and heavy rain. Moreover, falling rocks and landslides on the road have caused deaths. Thus, it is not always safe and passable. As Kennon Road is historically important with old mines nearby and many villages are situated along the road, the Philippine side has implemented maintenance and rehabilitation with its own funds in order to make it passable. However, a major disaster prevention project cannot be implemented due to topographic and geological restrictions.

As for Rosario-Pugo-Baguio Road covered by this project, no damage from mudslide, etc. has occurred since project implementation. It plays an important role not only as a safe substitute road for dangerous Kennon Road, which is often closed, but also as the shortest route for trucks and buses weighing over 10 tons. Considering these circumstances, the objectives of this project, which were consistent with the earthquake restoration/reconstruction plan at appraisal, have maintained relevance to date.

2.2 Efficiency

2.2.1 Output

Table 1 compares the planned project scope at appraisal and the actual implementation. Major changes were addition of disaster prevention work on the Rosario-Pugo section (12.1km) and increase in the

[3] In Luzon Island, where mountain ranges run north and south, most National Primary Roads including Kennon Road run north and south, while National Secondary Roads run east and west beyond mountain ranges and function as connecting roads between Primary Roads. Marcos Highway is a National Secondary Road.

sections repaired from disaster damage from 20 to 50. These changes were made because the number of sections requiring repair increased as a result of damage from typhoons, etc. during implementation. The repairs were considered necessary to achieve the project objective of improving the safety and convenience of road traffic.

Table 1: Comparison of Planned and Actual Project Scope

	Plan as of Appraisal Time	Results
A. Rosario-Pugo Road		
- Construction of a bypass around the densely populated area at the starting point in Rosario	2.0km long 6.7m wide, cement-concrete pavement	2.1km long 6.7m wide, asphalt-concrete pavement
- Disaster prevention work	-	12.1km
B. Pugo-Baguio Road		
- Repair of disaster-damaged sections	20 sections	50 sections
- ・Modification of the road alignment	2.0km	0.5km
- Disaster prevention work	24.0km	32.9km
- Rehabilitation and construction of bridges and debris barriers	Construction of Badiwan Bridge, etc.	Construction of Badiwan Bridge, Parina Bridge, etc.

Source: Data by JBIC and Department of Public Works and Highways of the Philippine Government

2.2.2 Project Period

The project was completed in December 2001, 3 years and 1 month behind the originally scheduled November 1998. The main causes of the delay in implementation were: 1) increase in the target sections resulting from the increase in damaged sections because of typhoons, and 2) changes and additions of work items due to unexpectedly difficult ground conditions.

2.2.3 Project Cost

At appraisal time, the total project cost was estimated at 6,177 million yen (foreign currency portion: 3,112 million yen; local currency portion 613 million pesos=3,065 million yen). The approved loan amount of 4,633 million yen was to cover the entire foreign currency portion and part of the local currency portion.

The actual project cost was 4,990 million yen (foreign currency portion: 3,790 million yen; local currency portion: 352 million peso=1,200 million yen), or 1,187 million yen less than estimated. The disbursed amount of the ODA loan was 3,968 million yen, or 665 million yen less than estimated. These amounts were below the estimates mainly because, in spite of the increase in the target sections, the competition from bidding made contracting efficient, substantially lowering the project cost.

2.3 Effectiveness

2.3.1 Safety of Road Traffic and Securing Driving Route in Disasters

Before the project, landslides occurred 20 times a year on the target Rosario-Pugo-Baguio Road, mainly in the Badiwan District between Pugo and Baguio. According to the Cordillera Administration Region (CAR) Office of Department of Public Works and Highways (DPWH) in charge of maintaining roads in mountainous areas where mudslides often occur, it usually took 2-3 hours to clear one lane after a

mudslide. Still, the road was closed for 5 days a year on average, and traffic was restricted to one lane for 2-3 months.

In the Badiwan District, a tunnel-like rockshed was constructed on the section where landslides most frequently occurred to protect the road and vehicles from falling rocks (Photo 1). In this section, it is difficult to prevent landslides themselves because of the soft ground. Photo 2 shows the traces of mudslides even today. However, since the rockshed has been completed, no damage has been caused to the road or vehicles from landslides or falling rocks. Also, the project built fences to prevent rocks from falling on the road (Photo 3) and reinforced the stone wall along the road with concrete spraying. In addition, the existing bridge, which was expected to be buried under debris, was replaced with an elevated bridge (see the photo on the front page). Thus, the overall safety of the road has been improved.

Photo 1: A rockshed on the Pugo-Batuio section

Photo 2: An aerial view of the rockshed

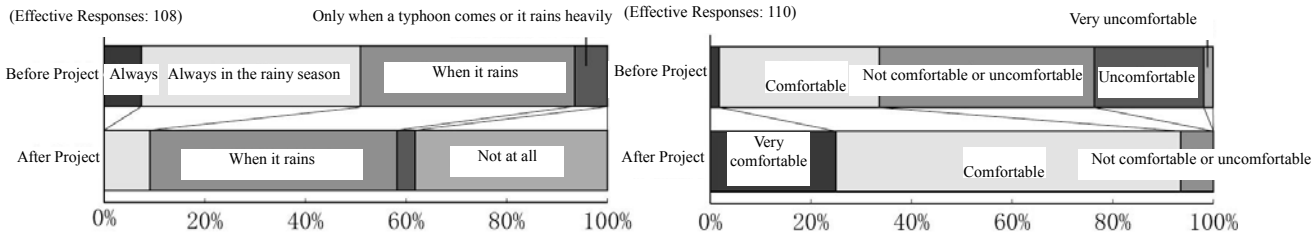
Photo 3: Fence for falling rocks in Tuba District

Meanwhile, as there have been no major improvements to Kennon Road, there are often falling rocks and landslides in the rainy season, and the road remains dangerous. Recently, Typhoon Feria destroyed more than 30 sections in 2001. The road was closed for 40 days[*4] and it took as long as 6 months before it was officially declared safe. Even today, Kennon Road is completely closed for an average of 25 days a year and traffic is restricted to one lane for 3 months a year. When heavy rain continues for 2-3 hours, the CAR Office of DPWH issues recommendations to close the road (45 days a year on average). In the 1970s, a Victory Liner bus was struck by a mudslide and went plunging off Kennon Road to the valley below, killing 20 among the 22 people on board. In September 2000, a minibus was hit by a mudslide, killing all 18 passengers. Besides, as the road has many sharp curves and few guardrails, 4 vehicles plunged off the road in 2 years of 1998 and 1999, leaving 13 dead or injured. The target road of the project is a safe substitute for this dangerous road.

For this evaluation, we surveyed road users and residents living near the target road to identify the effects and impact of this project (sample: 110 residents and 110 road users). In the survey of road users, when asked “When do you fear falling rocks or landslides?” before the project, 50% answered “always” or “always in the rainy season,” while after the project, the figure declined to 9%. The percentage of users who “feel no danger” increased from 0% to 39%. Also, the percentage of those who feel “very comfortable” or “comfortable” when driving on the target section increased from 34% to 94% after the

[4] According to the Gaguio Office of DPWH, some vehicles disregarded the danger after the road was opened for one-lane traffic.

project (Fig.2).



Do you fear falling rocks or landslides? Evaluation of comfortableness of driving

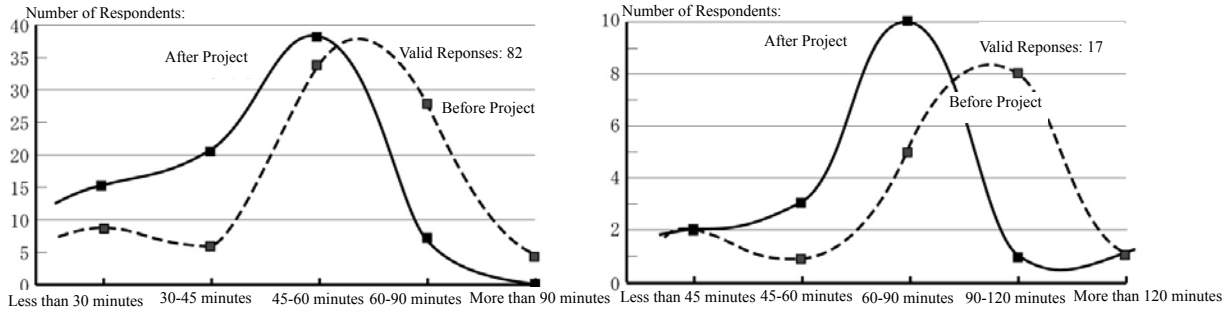
Source: Interview Survey of Road Users

Fig.2: Result of Survey of Road Users on Danger and Comfort Level

2.3.2 Reduction in Travel Time

The traveling time between Rosario-Pugo-Baguio decreased from 120 minutes before the earthquake to 80 minutes in 1992 after the Rosario-Pugo section was paved with the collateral funds of the Japanese Government's disaster restoration loan. It dropped further to 55-60 minutes after this project, which included repairing pavement, widening the road, and constructing a bypass at the starting point in Rosario.

Fig. 3 shows changes in the driving time of 2 sections covered by the project according to the road user survey. The respondents include drivers of large vehicles such as trucks and buses because the respondents were selected to reflect the percentage distribution by type of vehicle traveling on the road according to the traffic survey by DPWH in 1999. The result of this survey proves that driving time was reduced after the project.



Rosario-Pugo-Baguio Section Ago-Pugo-Baguio Section

Source: Survey of Road Users

Fig.3: Changes in Driving Time Before and After the Project

For large buses and trucks, which are the main means to transport tourists and freight, the target road of this project is the shortest route because Kennon Road has been closed to vehicles weighing over 10 tons since the 1990 earthquake. Before the project started, these large vehicles had to make a 2-hour detour using the Naguilian Road[*5] when the Pugo-Baguio section was closed due to mudslide or other reasons. Since the project, they have been able to drive on the target road even during heavy rains or typhoons. As a result, driving time has decreased substantially.

[5] The traveling distance from Rosario to Baguio is 34km via Kennon Road, 47km via Rosario-Pugo-Baguio Road, and 96km via Naguilian Road.

2.3.3 Traffic Volume

DPWH conducts a traffic survey on Rosario-Pugo-Baguio Road and Kennon Road, the shortest route to Baguio, once every five years. The latest survey was conducted in 1999. At that time, traffic on the Pugo-Baguio section was restricted to one lane because of construction in the Badiwan District. Therefore, the data do not show the traffic volume after the project. To measure the traffic volume after the project, we conducted 24-hour traffic surveys on the Pugo-Baguio section and Kennon Road on the 6th and 8th of September, 2003.

We found that the average daily traffic[*6] on Rosario-Pugo-Baguio Road in 2003 was 5,241 vehicles/day, or 109.6% of the estimate at appraisal, which was 4,784 vehicles/day for 2003.

Table 2: Changes in Daily Traffic Volume on Target Road and Kennon Road

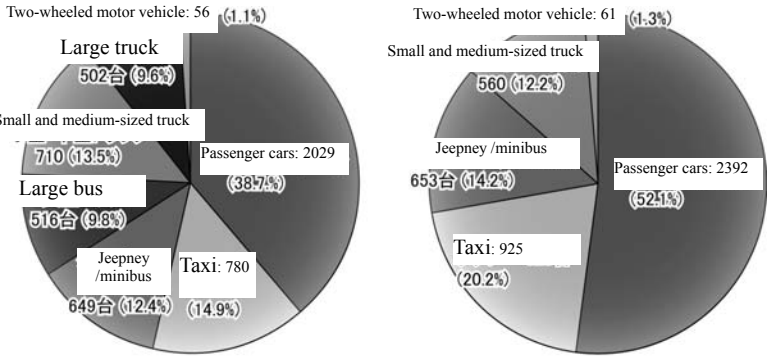
	1989	1994	1999	2003
Pugo-Baguio Road	332 vehicles	(12,282 vehicles)*	2,724 vehicles	5,241 vehicles
Kennon Road	3,867 vehicles	2,412 vehicles	4,442 vehicles	4,591 vehicles

Source: Data by DPWH (for 1989, 1994, and 1999) and the result of traffic survey conducted by the field survey commission on September 6 and 8, 2003 (for 2003)

* For 1994, the traffic volume was measured near the starting point at Baguio and therefore partially includes the traffic in the city.

As the flow of people and goods increased with Baguio's rapid economic development, not only the target road but also Kennon Road has a larger volume of traffic than predicted at appraisal (prediction 851 vehicles/day→actual figure 4,591 vehicles/day). This is because a large number of vehicles still take the shortest route, Kennon Road, despite the danger of landslides or falling rocks.

Fig. 4 shows traffic volume on the target road and Kennon Road by type of vehicle. In the case of Kennon Road, which is closed to vehicles weighing over 10 tons due to road specifications and safety reasons, passenger cars make up more than half of all vehicles on the road. Concerning the target road, large buses and trucks, which are the main means of transporting tourists and freight, respectively, account for around 10% of total traffic volume.



Source: Traffic Survey (September 6 and 8, 2003)

Fig.4: Traffic Volume on Target Road and Kennon Road by Type of Vehicle

2.3.4 Recalculation of Economic Internal Rate of Return (EIRR)

At appraisal, the EIRR of this project was 26.5%. The assumed benefit was the reduction of costs (vehicle operating cost＋fixed cost＋time cost) from shortening the roundabout route.

For this evaluation, EIRR was recalculated based on the assumptions that the benefits are the cost reduction from shortening the roundabout route, improving the road surface, and reducing the number of

[6] The traffic survey was conducted on Thursday, September 6 and Saturday, September 8 taking into consideration the difference between weekdays and weekends (it was cloudy both days). Traffic volume was calculated as follows: {(weekday traffic volume×5) + (holiday traffic volume×2)} ÷7

days of road closure, that the costs are the project cost and the difference in operation and maintenance costs "with" and "without" the project, and that the project life is 20 years. As a result, EIRR was recalculated as 15.6%.

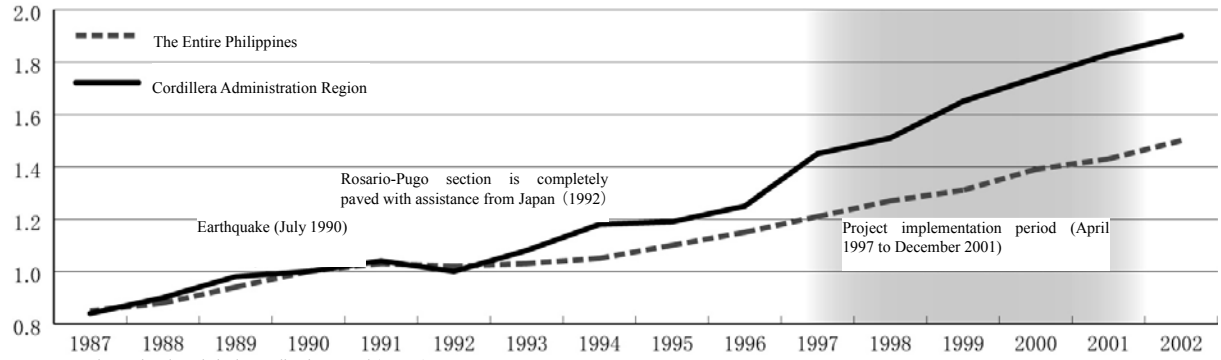
The recalculated EIRR is lower than the initial figure mainly because the project cost rose due to the peso's depreciation.

2.4 Impact

2.4.1 Contribution to Economic Reconstruction of Baguio and Cordillera Administration Region

Fig. 5 shows the growth of the Gross Regional Product (GRP) of the Cordillera Administration Region and the Gross Domestic Product (GDP) of the Philippines based on 1985 prices with the level in 1990 when the earthquake occurred as 1.0. The GRP of the Cordillera Administration Region, including Baguio, increased sharply after posting negative growth in the 1991-1992 period and was 1.9 in 2002, much higher than 1.5 for the GDP of the Philippines.

As the economy grows in this region, this project is contributing to the economic reconstruction of the Cordillera Administration Region (CAR)[*7] with Baguio at its center by rehabilitating Rosario-Pugo-Baguio Road, which functions as a substitute for Kennon Road when it is closed and also as the shortest route for large vehicles weighing over 10 tons. When we visited the project site for this survey, there were buildings that were new or under construction along the road. As we approached downtown Baguio, we saw many wholesale warehouses of construction materials and vegetables[*8] along the road. The reason is that, in addition to the fact that the target road is the shortest route for freight trucks as Kennon Road is closed to vehicles weighing over 10 tons, traveling time has been reduced and traffic reliability improved since the project. The increase in the flow of goods and efficiency seemingly support the economic reconstruction of Baguio and CAR.



Source: Data by National Statistical Coordination Board (NSCD)

Fig.-5 Changes in GDP/GRP of Cordillera Administration Region and The Entire Philippines（1990= 1.0）

2.4.2 Contribution to Tourism Industry

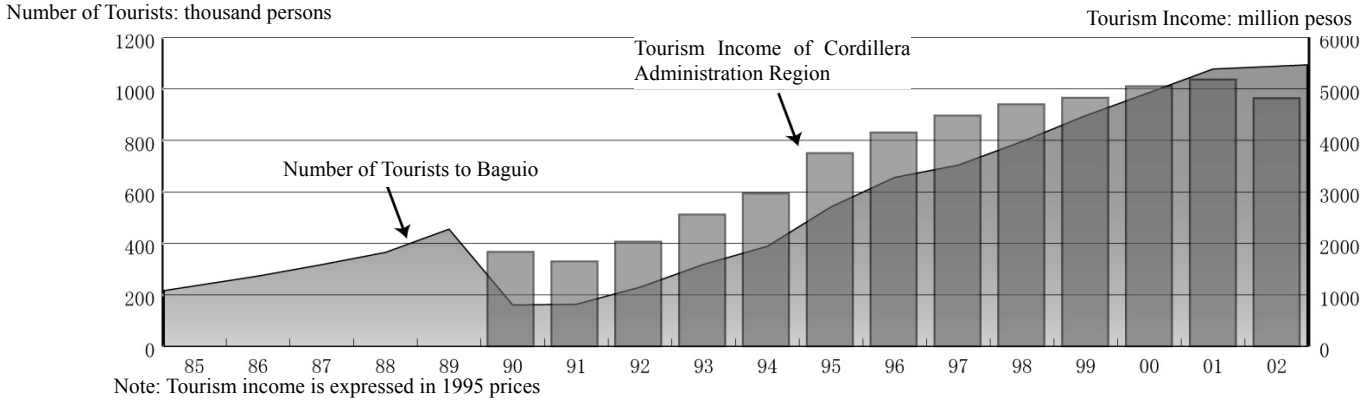
Tourism is an important industry for Baguio, which is a summer resort located 1,500m above sea level attracting tourists from home and abroad. The number of tourists, which exceeded 400,000 in 1989, decreased by half after the earthquake in 1990. In 1993, when the Loan Agreement for this project was

[7] Cordillera Administration Region is composed of the 6 provinces of Abra, Benguet, Ifugao, Kalinga, Apayao and Mountain Province located in Northern Central Luzon. 70% of the total area (1.83 million ha) is steep rolling mountains. Although the main industries are mining and manufacturing, 60% of the population engages in the farming of rice and highland vegetables.

[8] Cordillera Administration Region is one of the largest vegetable producing regions in the country. Harvested vegetables are transported to Metro Manila and other regions.

signed, the city had 319,000 tourists. Since then, the number has been increasing steadily. In 2002, about 1.1 million tourists visited Baguio. The tourism income of CAR has also been increasing with the increase in tourists to Baguio (Fig. 6).

As a means to get to Baguio, a private airline operates a daily flight by small aircraft, 6 days a week. However, the main means of transportation is land transportation by large bus. Large buses connecting Manila and Baguio use Rosario-Pugo-Baguio Road because vehicles weighing over 10 tons have been prohibited from using Kennon Road, the shortest route, since the earthquake in 1990.



Note: Tourism income is expressed in 1995 prices
Source: Data by Department of Tourism

Fig. 6: Changes in Number of Tourists to Baguio and Tourism Income of Cordillera Administration Retion

The biggest bus company, which operates a long-distance bus service between Manila and Baguio, is Victory Liner Inc. At present, it operates a bus service between Manila and Baguio 54-64 times a day in the rainy season and 107-115 times a day during the tourist season. Around 1995, bus service was available only once an hour, even at peak time. As the number of tourists to Baguio has picked up after decreasing following the earthquake, the frequency of the bus service has also increased. Now the bus departs once every 20 minutes.

According to the manager of the Baguio Branch of Victory Liner, the road in the Badiwan District located between Pugo and Baguio used to be hit by mudslides frequently. When a mudslide occurred, buses either waited in a safe place with passengers on board until the road was cleared or took a detour using Naguilian Road. Since the road was improved with the ODA loan, it has not been affected by landslides and access to Baguio has improved. This is one reason for the increase in tourists, the manager says.

Photo 4: Long-Distance Bus Terminal in Baguio

2.4.3 Increase in Employment Opportunities and Income Associated with Roadside Development

In the survey of roadside residents conducted for this evaluation, 62% of 105 respondents say that the project brought positive effects such as more employment opportunities and income. Vegetable farmers and wholesalers, who account for 31% of the respondents, think that the purchase prices of farm crops have stabilized as the flow of goods increased. 26% of the respondents created new income sources by opening general stores or restaurants or starting pedi cab businesses, taking advantage of more residents and traffic due to roadside development. Also, owners and employees of the existing general stores,

restaurants, and woodwork shops say their income and salaries have risen with the increase in customers (28 %).

In the survey, 81% of households said land prices increased after the project was implemented and 77% of them viewed favorably the increase in land prices resulting from roadside development. 17% of them gained a large amount of income by selling land. On the other hand, 23% of residents do not welcome the increase in land prices because rents have risen and other reasons.

2.4.4 Improvement of Access to Public Facilities such as Hospitals and Markets

In the interview, 88% of residents living along the road answered that access to public facilities such as hospitals and markets had improved. Fig. 7 presents the number of respondents who said that access has improved by place of destination. As it shows, access to markets (markets and wholesalers) where farmers sell their products has improved as has access to medical and educational facilities.

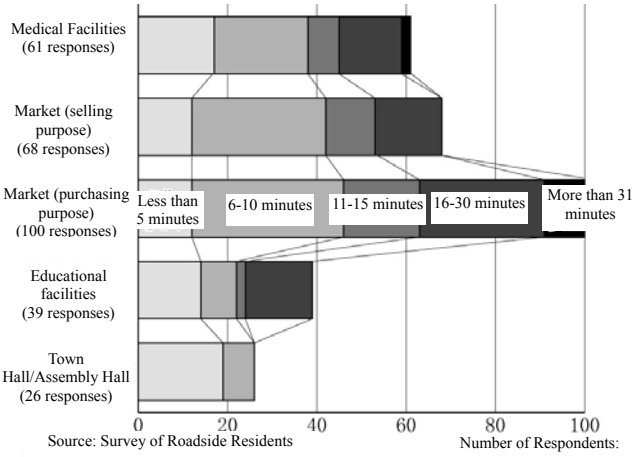


Fig.7 Improvement of Access to Public Facilitities

This is a direct effect of road rehabilitation under this project and is also due to the reduction in waiting time for minibuses and jeepneys as a result of the increase in these services following roadside development carried out after the project.

With the earthquake in 1990, all three major roads leading to Baguio were blocked by mudslides, preventing medical services and various aids from reaching the victims. This project was aimed at securing an access route in an emergency by constructing a disaster-resistant road. The rehabilitated road is expected to function as a lifeline for medical services and emergency supplies.

2.4.5 Relocation of Residents

In this project, land acquisition and resident relocation were necessary to construct Badiwan Bridge between Pugo-Baguio and to construct a bypass at the starting point in Rosario (Badiwan Bridge: 2 buildings; bypass: 48 residents). The former was settled without any problem. As for the latter, negotiations between DPWH and landowners over the amount of compensation took a long time. Finally it was agreed that the 48 landowners should receive compensation equivalent to estimated total value of the land, trees and structures they owned, 107.53 million pesos.

2.4.6 Environmental Impact

Although this project basically aimed to improve and perform disaster prevention work on the existing road, it involved construction of a 2.1km bypass at the starting point in Rosario. For this construction, an Environmental Impact Statement (ES) was prepared in November 1995 and, following the inspection by the Environmental Management Bureau, an Environmental Compliance Certificate (ECC) was issued.

Qualitative data is not uncertain after the completion of the road, since the environment monitoring has not been conducted. Although the traffic volume of this road has increased with the implementation of the

project, it is 5,000 automobile per day which is not deemed to have impact to affect the environment.*[9]

2.5 Sustainability

2.5.1 Executing Agency

Operation and maintenance of national roads, including the target road of this project, is managed by the Maintenance Division of Department of Public Works and Highways (DPWH). Under the supervision of the Maintenance Division, the target road is operated and maintained by La Union II District Office of the DPWH Region I and Baguio City District Office and the Benguet I and II Engineering District Offices of CAR.

(1) Technical Capacity

There is no specific problem with the executing agency's technical capacity for road maintenance. Maintenance activities of the target road are divided into Maintenance by Administration (MBA) directly conducted by each office named above and Maintenance by Contract (MBC) carried out by private companies. The MBC system was introduced in 1990 to realize low-cost efficient road management by using private companies. The percentage of funds for MBC has been raised to 70% since 1999 from the initial 40%.

(2) Operation and Maintenance System

There is no specific problem with the road operation and maintenance system of the executing agency.

(3) Financial Status

The annual maintenance budget allocated by the government is spent on routine maintenance (40%) and periodic and special maintenance (60%)[*10]. The amount of the maintenance budget is calculated by multiplying the equivalent maintenance kilometer (EMK) determined by the Bureau of Maintenance of DPWH based on road width, traffic volume, pavement type, total length, etc. with a fixed unit cost of EMK (pesos/km) regardless of district or road class. Fig. 8 shows changes in the amount of routine maintenance budget allocated to Region I and CAR. Except for the fact that the allocation to Region I was reduced in 1998 due to the EMK review, the budget allocation has been increasing and there seems to be no problem.

According to the interview we conducted in the field survey, the Region I Office has enough funds for ordinary maintenance expenses. However, the CAR Office told us that they cannot provide sufficient maintenance due to shortage of funds. We presume the reason is because the budget amount is calculated based on EMK, which is determined regardless of topographic, geological, and road surface conditions. As CAR is a mountainous region with heavy rain, roads tend to deteriorate quickly and therefore the budget amount is inadequate.

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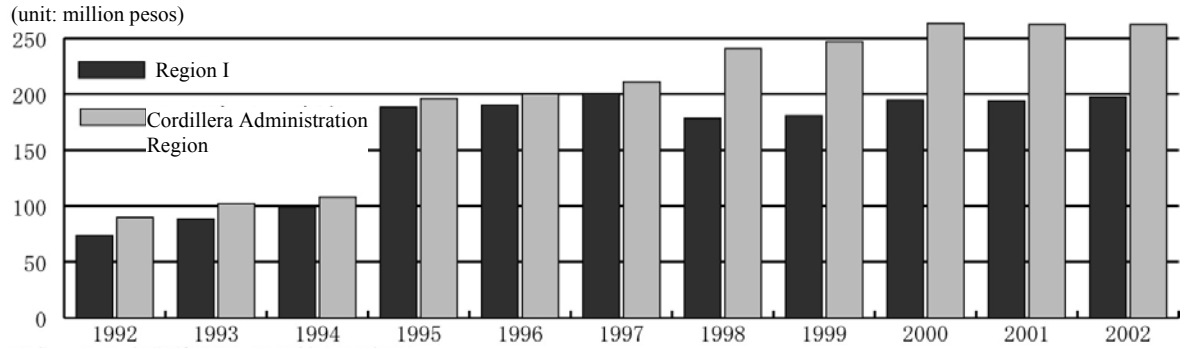
[9] In the questionnaire survey to residents along the road in this evaluation, 46%, 42% and 45% each of the respondents replied that air pollution, noise and odor was improved, while 54%, 58% and 55% each of the respondents replied that they got worsened. With respect to dust, the respondents who answered it was improved (59%) exceeds those who answered it was worsened (41%).

[10] Routine maintenance includes pothole patching, cleaning of drainage ditches and plant removal. Regular maintenance includes small-scale resurfacing, filling of holes, resurfacing of road shoulders and slope reinforcement. Special maintenance includes repainting of centerlines and replacement of guardrails, mirrors and road signs.



Source: Data by the Bureau of Maintenance, Department of Public Works and Highways

Fig.-8 Changes in funds for ordinary maintenance expenses to Region I and Cordillera Administration Region

2.5.2 Operation and Maintenance Status

We inspected the target road in the field survey for this evaluation. As it has not been long since completion, the road surface is in very good condition. Thanks to disaster prevention work under the project, no disaster such as mudslide has occurred.

DPWH is implementing various measures to improve road maintenance as described below with assistance from the World Bank and Asian Development Bank, etc. and further improvements are expected in the future.

a) Special purpose Motor Vehicle Users' Charge for road maintenance

In 2000, the Philippine Government decided to use a Motor Vehicle Users' Charge (MVUC) imposed on all automobile owners as a special revenue source for road maintenance. MVUC is collected by the Land Transportation Office every year and disbursed to DPWH as national road maintenance expenses, etc. via the Department of Budget and Management (DBM). Under the former system, road management expenses were appropriated from the general fund in accordance with the General Appropriations Act, which requires the budget to be deliberated and updated by the Congress, while MVUC does not.

It was planned to allocate 80% of MVUC to maintain national roads and provide 5% to local governments to maintain local roads. The remaining amount was to be provided to DPWH and the Department of Transportation and Communication, 7.5% each, as traffic safety expenses and automobile pollution control expenses, respectively.

MVUC was first used in FY2002 as a revenue source for road maintenance expenses as described above. However, DPWH guidelines have not been established, only a portion of the collected amount was disbursed and the rest came from the general budget as before. In 2003, it was decided to automatically distribute 80% of MVUC to DPWH as the ordinary maintenance budget. On the other hand, the portion from the general budget was reduced based on DBM policy. Therefore, the funds for road maintenance are not adequate.

b) Introduction of Road Information Management Support System (RIMSS)

DPWH is now preparing to introduce the Road Information Management Support System (RIMSS), which is a comprehensive database of traffic volume, road surface conditions and the specifications of each road as well as various social and economic conditions. DPWH is also defining the format for preparing reports and procedures for data collection. This system can be used in planning road construction and maintenance.

Under the existing system, the road maintenance budget is allocated based on pavement type, traffic volume and road width without taking into consideration the actual condition of each road affected by topography and climate conditions, etc. After the budget allocation system based on the RIMSS is introduced, road conditions will be taken into account when determining the amount of maintenance expenses. An increase is expected in the maintenance budget for mountainous roads in regions with heavy rain and soft ground as they are quick to deteriorate, including the target road of this project.

3. Feedback

3.1 Lessons Learned

None.

3.2 Recommendations

None.

Comparison of Original and Actual Scope

Item	Original Plan (At Appraisal by JBIC)	Actual
(1) Output		
a. Rosario-Pugo Road		
- Construction of a bypass around the densely populated area at the starting point in Rosario	2.0km long, 6.7m wide Cement-concrete pavement	2.1km long, 6.7m wide Asphalt-concrete pavement
- Disaster prevention work	-	12.1km
b. Pugo-Baguio Road		
- Repair of disaster-damaged sections	20 sections	50 sections
- Modification of road alignment	2.0km	0.5km
- Disaster prevention work	24km	32.9km
- Rehabilitation and construction of bridges and debris barriers	Construction of Badiwan Bridge, etc.	Construction of Badiwan Bridge, Parina Bridge, etc.
c. Consulting Service	Detailed designing, implementation management, bidding assistance, etc.	As planned
(2) Project Period		
- Selection of consultants	Jul. 1993 –Jun.1994	Sep. 1993 – Mar.1995
- Detailed designing	Jul. 1994 – Jun.1995	Apr. 1995 – Dec. 1996
- Land acquisition	Sep. 1994 –Aug.1995	Jun. 1997 – May 2001
- Implementation management	Sep. 1995– Nov.1998	Apr. 1997 – Dec. 2001
- Construction and civil engineering	Sep.1995–Nov. 1998	Apr. 1997 – Dec. 2001
(3) Project Cost		
Foreign Currency	3,112 million yen	3,790 million yen
Local Currency	3,065 million yen	1,200 million yen
	(613 million pesos)	(352 million pesos)
Total Project Cost	6,177 million yen	4,990 million yen
ODA Loan Portion	4,633 million yen	3,968 million yen
Exchange Rate	1 peso= 5.0 yen (as of January 1993)	1 peso= 3.41 yen ((1996-2001average)

Third Party Opinion on
Rosario-Pugo-Baguio Road Rehabilitation Project

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Relevance, Efficiency, Effectiveness and Impact

The overall assessment of the Rosario-Pugo-Baguio Rehabilitation Road Project has been positive.

When a major earthquake hit Baguio City, Philippines in 1991, the city was cut off from road traffic for weeks, its three major roads (Kennon, Maharlika, Rosario-Baguio) affected by landslides. The project's relevance is therefore utmost and is indispensable in the rehabilitation of Baguio City after the earthquake, the city being the prime city in the Cordillera Administrative Region and a major city in Northern Philippines. The project ensures that the city will have a "disaster free" road, open under all weather conditions.

The post evaluation results showed that project costs were lower (4,990 million Yen) than planned (6,177 million Yen). The output included (for the Rosario-Pugo Road) the construction of a 2.1 kilometer bypass and disaster prevention work (12.1 kilometers); output for the Pugo-Baguio Road included the repair of the 50 disaster damaged sections. Project costs were reduced due to more efficient contracting through competition. However, project completion time was 58% longer than planned due to various work program changes as well as work suspension during typhoon season. The project implementing agency, the DPWH is known for delays in projects completion and cost overruns, mostly due to unforeseen or overlooked project design problems.

Still, project objectives were achieved. Baguio City has now a "disaster free" road; open through the year under all weather conditions. Similarly, travel to Baguio City is now deemed safe; travel time reduced and increased traffic volume experienced. Even under unfavorable conditions, people now have access to a safe land route to Baguio City.

The project's impact to the region and its people has been commendable. Its contribution to the GRDP of the Cordillera Administrative Region has been considerable; specially since it is now the "disaster free" road to Baguio City. It is also critical to the tourism industry of the region. Baguio is the summer capital of the Philippines and experiences heavy tourism arrivals during the December holidays and the summer season. Tourism traffic is 1.1 million (2002), up from 230,000 in 1993. Residents along the road have also benefited. As road traffic increases so do increased business opportunities (restaurants, stores, lodging inns, auto mechanic shops); increase in property values and rentals; as well as improved access to public facilities, medical and educational institutions and markets. Because the road is critical to Baguio City, public expectations on the regular maintenance of the road will be high. This means that the government will ensure that regular budgetary sources will be identified for road maintenance.