Republic of the Philippines

Ex-Post Evaluation of Japanese ODA Loan

"Central Mindanao Road Project"

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0. Summary

The Project upgraded existing rural roads of southwestern Mindanao with the aim of securing a safe and efficient road network in the surrounding areas. The project objective - to stipulate and revitalize local economy as well as to ensure stability of the region by improving connectivity through facilitation of movement of goods, services and people between rural communities in the major cities and towns of the central Mindanao – is consistent with the development policy of the Philippines and with the development needs both at the time of the appraisal and ex-post evaluation, as well as Japan' ODA policy at the time of appraisal. Besides, from the viewpoint of peacebuilding, the timing of the implementation of the project was appropriate; thus, the relevance of the project is high. Annual average daily traffic far exceeded the target and travel time was reduced as expected. A beneficiary survey confirmed that the benefits of the project (improving the access to markets and hospitals, reduction of transport cost, improving security and safety) were recognized by local residents. Furthermore, the project contributed to the improvement of the standard of life of local residents through agriculture promotion, one of the main industries of Mindanao, and revitalization of economy as a result of the improvement of efficiency of distribution; thus, the project's effectiveness and impact are high. On the other hand, both project cost and project period exceeded the plan; thus, efficiency is fair. In regard to operation and maintenance, no major problems have been observed. However, there is room for improvement on institutional and technical aspects such as establishment of training system to upgrade technical skills for the staff in the Autonomous Region in Muslim Mindanao (hereinafter referred to as "ARMM"[1]); thus, sustainability of the project is fair.

In light of the above, the project is evaluated to be satisfactory.

[1] ARMM: Autonomous Region in Muslim Mindanao. ARMM region was created in 1989 through Republic Act of 1987. As a result of the referendum, 4 provinces (Sulu, Tawi-Tawi, Maguindanao, Lanao der Sur) won autonomy. In addition, Province of Basilan and city of Marawi joined ARMM region after the 2001 referendum.

1. Project Description

Project Location

Project Road（Section 2: North Upi – Maguindanao/ Sultan Kudarat Boundary）

1.1 Background

Mindanao, an island in southern Philippines, has high development potential, being endowed with abundant natural resources and vast stretches of arable land. The island, however, experienced localized armed conflict for more than 30 years (note: information at the time of appraisal in 2003). As the fighting was fiercest in the southwestern part, the project area, its economy was devastated and this region remained one of the poorest in the country. The Arroyo administration (at the time of appraisal), which had committed itself to poverty reduction, has accorded the highest priority to economic development in Mindanao. The main agenda of the government in the Medium-Term Philippine Development Plan (2001-2004) included further progress in consolidating peace and stability as well as sustainable development. Nevertheless, basic infrastructure development such as roads which becomes the foundation of development has been delayed.

The target area of the project was situated in the mountainous area. Most of the part of the existing roads was narrow and unpaved; even there was a disused part due to the damage caused by the past fighting. Local farmers along the road had limited access to the market. In addition, the night travel was very dangerous due to the bad condition of the roads and security. Therefore, the project roads had not fulfilled to play an important role for the regional development. It became an urgent and important issue to establish safe and efficient roads in order to promote economic development and revitalization, as well as contribute to a stable regional security by facilitating movement of goods and people through improvement of intra-regional links.

1.2 Project Outline

The objective of the project is to improve intra-regional links, particularly the access of farming villages to the regional road network, increase human and freight movement, and

increase the efficiency of as well as cut costs of transport in Cotabato and surrounding areas, thereby contributing to a stable regional security situation. Under this project, the existing roads between Cotabato, the core city in southwestern Mindanao, and Kalamansig in the Sultan Kudarat Province would be widen and improved, together with replacement of temporal bridges along the roads to permanent ones.

Loan Approved Amount/ Disbursed Amount	3,717 million yen / 3,165 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	March 2003 / December 2003
Terms and Conditions	Interest Rate: 2.2% Repayment Period: 30 years (Grace Period: 10 years) Condition for Procurement: General Untied
Borrower/ Executing Agency(ies)	The Government of the Philippines / The Department of Public works and Highways (DPWH)
Final Disbursement Date	January 2012
Main Contractor (Over 1 billion yen)	【Section 1】Junction Awang – North Upi Road: R.D. Interior, Jr. Construction (Philippines) 【Section 2】North Upi ‐ Maguindanao/Sultan Kudarat Boundary Road: Hanjin Heavy Industries and Construction Co., Ltd. (Korea) 【Section 3】Maguindanao/Sultan Kudarat Boundary ― Lebak ‐ Kalamansig: P.L. Sebastian Construction (Philippines)/Wee Eng Construction (China) (JV)
Main Consultant (Over 100 million yen)	Katahira & Engineers International (Japan)/ Engineering and Development Corporation (Philippines)/ Cebu Engineering and Development Corporation Inc. (Philippines)/ Perk Technical Consultants Corporation (Philippines)/ Inter-Structure System Inc. (Philippines)/ Woodfields Consultants Inc (Philippines) (JV)
Feasibility Studies, etc.	・DPWH “Central Mindanao Road Project” F/S (July 2001) ・DPWH “Master Plan on Regional Road Network in Visayas and Mindanao” F/S (February 1999)
Related Projects	＜Yen Loan Project (L/A date)＞ ・Philippine-Japan Friendship Highway Rehabilitation

	Project (I) (II) ((I) March 1997, (II) December 1999) ＜Technical Cooperation Project＞ ・ The Study on Infrastructure (Road Network) Development Plan for the Autonomous Region in Muslim Mindanao (ARMM) (2010) ・Improvement of Quality Management for Highway and Bridge Construction and Maintenance (Phase I: February 2007 – February 2010, Phase II: October 2011 – September 2014) ＜Grant Aid (E/N Date)＞ ・The Project for Construction of Bridges along Rural Roads（Phase I (April 1988), Phase II (October 1988), Phase III (April 1990 and February 1992), Phase IV (January 1993 and July 1993) ＜International Organizations＞ 【World Bank】National Roads Improvement and Management Program Phase 2 (NRIMP 2) 【Asia Development Bank】Road Improvement and Institutional Development Project 【USAID】 Maitum - General Santos Road Project

2. Outline of the Evaluation Study

2.1 External Evaluator

Keiko Watanabe, Mitsubishi UFJ Research & Consulting Co., Ltd.

2.2 Duration of Evaluation Study

Duration of ex-post evaluation study was conducted as follows;

Duration of the Study: November, 2013 – December, 2014

Duration of the Field Survey: April 27 – May 8, 2014, July 13 – July 25, 2014

2.3 Constraints during the Evaluation Study

Due to the change of security situation of Mindanao, the face to face interviews were conducted only in Manila. Therefore the coverage of the interviewees was limited and the actual field survey at the project site could not been conducted by the external evaluator. The efforts were made to cover this obstacle by collecting information through the questionnaires, inviting a key official to Manila for interview, and utilizing the results from the project survey conducted by the local consultant. However, the evaluation study had constraints to a certain

extent for the field survey and access of information.

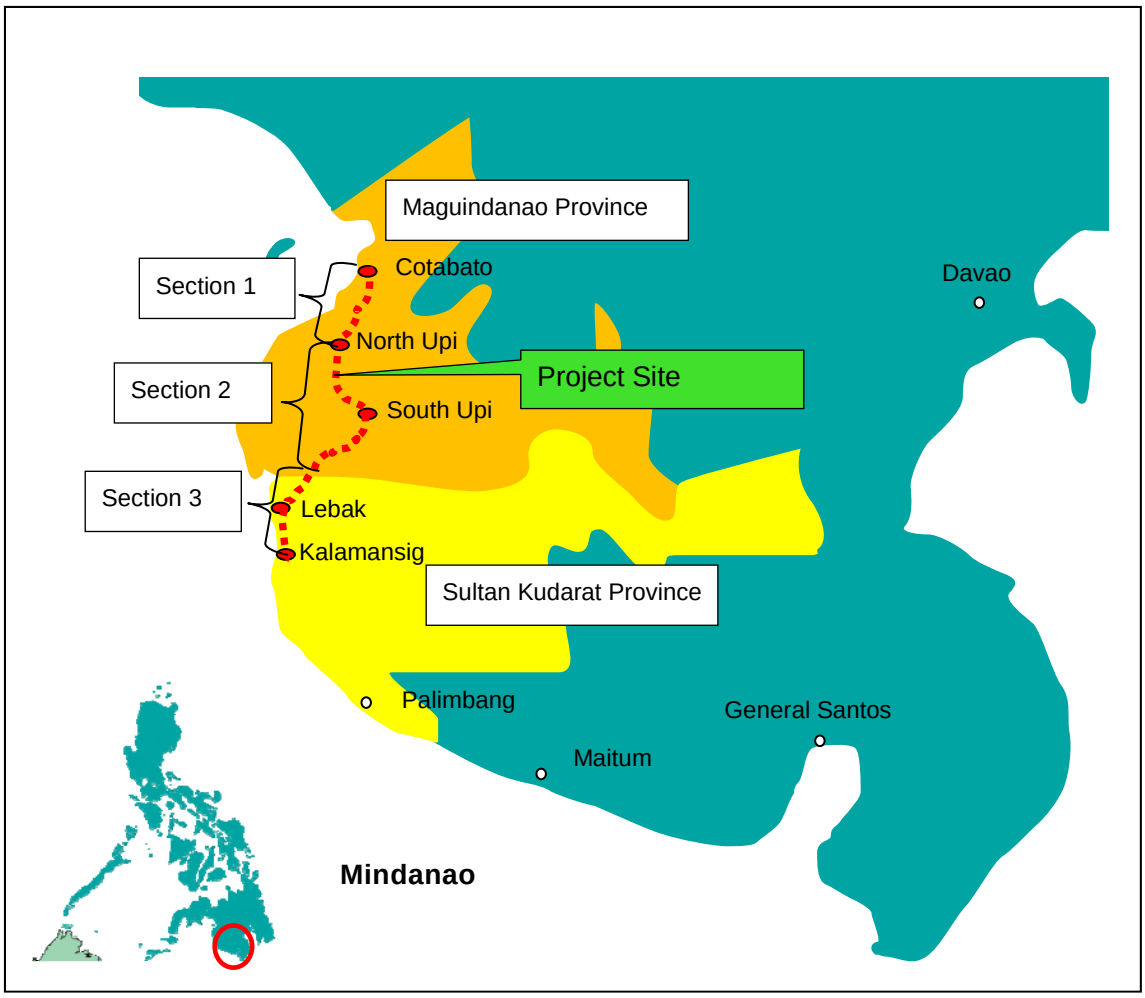


Figure1: Location Map of the Project Roads

3. Results of the Evaluation (Overall Rating: B[2])

3.1 Relevance (Rating: ③[3])

3.1.1 Relevance to the Development Plan of the Philippines

The Arroyo administration at the time of the project appraisal formulated "Medium-Term Philippine Development Plan (2001-2004)", in which "supporting Philippine's socioeconomic development through the provision of safe and reliable transport service" was listed as one of the development goals concerning the transport sector. In particular, the plan set the target of the paved road ratio to be achieved by 2004 through appropriate construction and maintenance. It said that 90% of the entire national arterial roads should be paved (70% paved as of 2000), and that 65% of the national secondary roads should also be paved (51% paved as

[2] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[3] ③: High, ②: Fair, ①: Low

of 2000). As a priority task to achieve the target, the plan pointed out the development of higher-standard arterial roads (increase ratios of pavement and widening of roads) which link between local cities, which become regional economic centers, and neighboring areas. Furthermore, conflict affected Mindanao and impoverished areas were targeted as priority in the plan. The project is aligned with this policy since the project roads connect between the regional municipalities and Cotabato, the core city of southwestern part of Mindanao.

In addition, "Mindanao 2000 Development Plan (1996-2000)" put the highest priority on pavement and improvement of a road network since the poor quality of road increased transportation cost for agriculture, main industry of the region, and lost competitiveness.

At the time of the ex-post evaluation, "Mid-Term Philippine Development Plan (2011-2016)" also prioritizes infrastructure development of roads and bridges as they reduce transport cost in the agricultural area and revitalizes the economy. Current Aquino government sets target to achieve all national arterial roads to be paved by 2016. Furthermore, "promoting development of transport network in conflict-affected and highly impoverished areas" is recognized as priority areas since it contributes to opening up economic opportunities and helps solve peace and order problems. In addition, "Mid-Term Development Plan (2011-2016)" formulated by the Department of Public Works and Highways (hereinafter referred to as "DPWH"), the executing agency of the project, emphasized the importance of strategic development and operation & maintenance of transport infrastructure. In particular, the plan prioritizes the development of Mindanao as part of countermeasures of "Affirmative Action for Peace and Development".

3.1.2 Relevance to the Development Needs of the Philippines

As mentioned in "1.1 Background", the project is targeting one of the most underdeveloped and poorest areas in southwestern Mindanao[4]. The project was to improve and widen the existing roads. The section starts from Cotabato city, the core city of the southwestern Mindanao, to its southern province of Sultan Kudarat through ARMM region. Due to bad condition of the roads, the local residents along the roads, mostly farmers, suffered from limited access to market, which affected their income. There were many overloaded trucks to reduce the times of travel, which could damage road conditions. Besides, a disused part of the roads caused by the past conflicts prevented smooth traffic. The night travel was also limited due to the existing road condition and security. Therefore, the needs of improvement of the existing roads at the time of the project appraisal were high in terms of safety and security.

At the time of ex-post evaluation, "Mindanao Strategic Development Framework (2010-2020)" requires addressing the poverty situation in Mindanao and harnessing the full

[4] According to the Poverty Statistics in 2000, the poverty ratio of Maguindanao Province (ARMM region) was 67.8% and the Sultan Kudarat Province was 57.0%, both of which were far behind 33.7% of the average rate of the total Philippines.

potential of its resources for economic growth. The Aquino administration emphasizes that there is no growth in the Philippines without peace in Mindanao. Establishment of roads network which connect agricultural area with the growth centers plays the important role for this purpose. At the time of the ex-post evaluation, the peace process for Mindanao was progressing and a comprehensive peace deal was signed between the Government of the Philippines and Moro Islamic Liberation Front (hereinafter referred as to "MILF") in March 2014. In order to further facilitate the consolidation of peace, economic development of ARMM region including the project sites were indispensable. Thus, continuous high development needs exist to secure roads network to promote movement of goods and people which contributes to economic development.

3.1.3 Relevance to Japan's ODA Policy

According to the appraisal reports, in April 2002, Japan International Cooperation Agency (hereinafter referred to as "JICA") prepared the "Mid-Term Strategy for Overseas Economic Cooperation Operations" based on the development issues of the Philippines and the Japan's assistance policy to the Philippines. In this document, sustainable growth and overcoming constraints of poverty reduction associated with it was put as one of priority areas. In order to achieve this, assistance in economic infrastructure development in the transport sector was set as strategy. In addition, establishment of major arterial roads in rural areas as an approach to overcome constraints for sustainable growth was listed in the "Country Assistance Strategy for Philippines" in October 2002. Thus, the project is in line with the Japan's two strategies mentioned above, which raised overcoming constraints for sustainable growth, poverty reduction and narrowing gaps among regions as important issues.

Furthermore, "Building of Peace" is placed as one of priority issues in both ODA Charter in 2003 and Medium-Term Policy on ODA in 2005. The President Abe (at that time) announced J-BIRD (Japan-Bangsamoro Initiatives for Reconstruction and Development), which aims to promote peace in Mindanao and reconstruction and development of ARMM region, at the "50th Anniversary of the Japan-Philippines normalization of national diplomatic relations" in 2006. Thus, the project is highly relevant in terms of contributing peacebuilding.

Besides, the timing of the project was appropriate. The peace process of Mindanao has been moved forward since 2001. The ceasefire agreement was concluded in 2003 and international monitoring mission was decided to be dispatched from 2004. In this way, the project started during the progressive time of peace process and it would serve as commitment that would contribute to acceleration of consolidation of peace. In addition, the project was the first donor financed investment project for ARMM, and that it was the first project for Japan to assist infrastructure development for ARMM region.

This project has been highly relevant to the country's development plan, development needs, as well as Japan's ODA policy. Therefore its relevance is high.

3.2 Effectiveness[5] (Rating: ③)

3.2.1 Qualitative Effects (Operation and Effect indicators)

(1) Operation Indicators: Annual Average Daily Traffic (AADT)

Table 1 shows the baseline and target which were set at the appraisal, and actual figure of annual average daily traffic (hereinafter referred to as "AADT"). Since the completion of the project delayed about one and half years, comparison cannot be made using the actual figure of 2010, which was originally set the target value (2 years after completion). However, it can be observed that the actual figure of 2013, after 2 years of completion of the project in December 2011 greatly exceeded the target set forth at the time of appraisal, therefore, it can be regarded that the original goal has been achieved.

Table 1: Operation Indicator

Indicator	Road Section*1	Baseline*1 (2001)	Target After 2 years of completion (2010)	Actual*1 (2013)
Annual Average Daily Traffic (vehicle/day)	Junction Awang, Cotabato (starting point) – Kalamansig, Sultan Kudarat Province (end point)	648	1,055	1,868

Source *1：Information from JICA at the time of appraisal *2：DPWH Planning Section

(2) Effect Indicators: Reduction of Travel Cost and Time

Table 2 shows baseline, target, and actual value of entire sections of project roads regarding Vehicle Operating Costs Savings (hereinafter referred to as "VOSC") and time saving. Actual recent figure of VOSC could not be obtained or estimated since the VOSC was not measured in the sections of ARMM region (Section 1 (Junction Awang – North Upi) and Section 2 (North Upi – Maguindanao/Sultan Kudarat Boundary) by DPHW under ARMM (hereinafter referred to as "ARMM/DPWH" [6])) and also DPWH Headquarters[7] did not have data of roads under the jurisdiction of ARMM. The internal report of JICA which was formulated

[5] Sub-rating for Effectiveness is to be put with consideration of Impact

[6] Since ARMM is the autonomous, there is an organization (ARMM/DPWH) to undertake operation and maintenance of road of their areas under ARMM government. However, ARMM/DPWH has not always measured basic road information of neither AADT nor VOSC of their roads. Besides, a mechanism to share such road information between DPWH and ARMM/DPWH has not officially been established. Yet the relation between DPWH and ARMM/DPWH has been strengthened through the seconded arrangement of Undersecretary of DPWH to Secretary of ARMM/DPWH since January 2011.

[7] The calculation of VOSC requires Basic Vehicle Operating Cost (BVOC) which has several variables such as costs of car, registration, fuel, labor, etc. However, at the time of the appraisal in 2003, BVOC was not available in DPWH and it is not clear how the target value of BVOC was calculated at the time of the appraisal. Therefore, it is not possible to compare actual figure with the set target, even if the actual figure can be calculated.

after the completion of the project, however, indicated VOSC figure as 789.59 million pesos/year in 2012, which exceeded the target. Although it is a reference figure, it is assumed that the effect of reduction of cost is realized.

Regarding time savings, travel time was 2.5 hours[8] according to the actual measurement by travelling whole sections by the local consultant and the information received from the DPWH. Accordingly, the set indicator achieved the target and it can be said that travel time reduced significantly compared to the baseline of 8 hours.

Table 2: Effect Indicators

Indicators	Baseline*1 (2001)	Target After 2 years of completion (2010)	Actual*1 (2013)
VSOC (million pesos/year)	—	372.39	N/A
Travel time (hours)	8	2.5	2.5*2

Source *1：Information from JICA at the time of appraisal *2：DPWH Planning Section

Junction Awang, Cotabato City

Section 1: Junction Awang - North Upi, Maguindanao

Section 2: Traffic Sign of winding (North Upi - Maguindanao/Sultan Kudarat Boundary)

Section 3: Maguindanao/Sultan Kudarat Boundary - Kalamansig

[8] According to the relevant officials from DPWH、the travel time may vary within 1.5 – 2.5 hours according to the weather condition and traffic congestion.

3.2.2 Qualitative Effects

A beneficiary survey was conducted to assess effectiveness and impact by the project. The survey targeted local residents, farmers along the project roads and road users such as truck and bus drivers[9]. The number of the sample was 118.

(1) Improvement of access, reduction of transport cost, and improvement of convenience and safety of travel

Figure 2 shows the results of the beneficiary survey in terms of improvement of access, convenience and safety. All respondents (n=118, 100%) felt the improvement of the access after the project. It was also found that most of them raised "travel time reduction", "increase in public transport" and "comfortable travel" as main reasons for that. Regarding the reduction of travel time, 73.5% (85 respondents) answered the travel time to go to major destinations such as hospital and market reduced about half compared to the time before the project[10]. The officials of DPWH also pointed out a great improvement effect on the access to hospital since after the project patients who had to be treated in district hospitals due to bad road conditions could be transferred to the larger regional hospital in Cotabato by ambulance. In addition, 76.3% (90 respondents) raised "reduction of travel cost" was one of reasons that they think the project improved the accessibility. Furthermore, a high percentage of respondents felt the improvement of "comfortable travel" (97.5%) and "traffic safety" (88.1%) because of improvement of road surfaces. On the other hand, 85 respondents (73.9%) answered that the traffic accidents increased. It is understood that speeding drivers have increased due to the improvement of the road surface by the project, although appropriate measures such as putting traffic signs was done by the project as well as DPWH maintenance team. Besides, the project roads have many curves, even sharp ones since they are situated in the mountainous areas.

[9] A beneficiary survey was conducted at the three sections of the project. A total of 118 samples (Male: 71 (60.2%), Female: 47(39.8%)) was collected at random; 39 samples (M:28, F:11) from Section 1(Junction Awang –North Upi), 39 samples (M:23, F:16) from Section 2 (North Upi – Maguindanao/Sultan Kudarat Boundary) and 40 samples (M:20, F:20) from Section 3 (Maguindanao/Sultan Kudarat Boundary – Kalamansig). Data was collected through face to face interview. The age groups of the respondents were; 20s (19, 16.1%), 30s (33, 28.0%), 40s (34, 28.8%), 50s (20, 16.9%), and 60s and above (12, 10.1%). The occupation groups were; farmers (21, 17.8%), Day workers (18, 15.3%), Office workers (13, 11.0%), Retired (2, 1.7%), Housewives (6, 5.1%), Shop owners (29, 24.5%), Drivers (18, 15.3%), and Others (students, civil workers, teachers, etc.) (18, 15.3%).

[10] More than 70% of each section answered the travel time reduced to half.

Ambulance heading to Cotabato City

Winding roads in the mountainous area (Section 2)

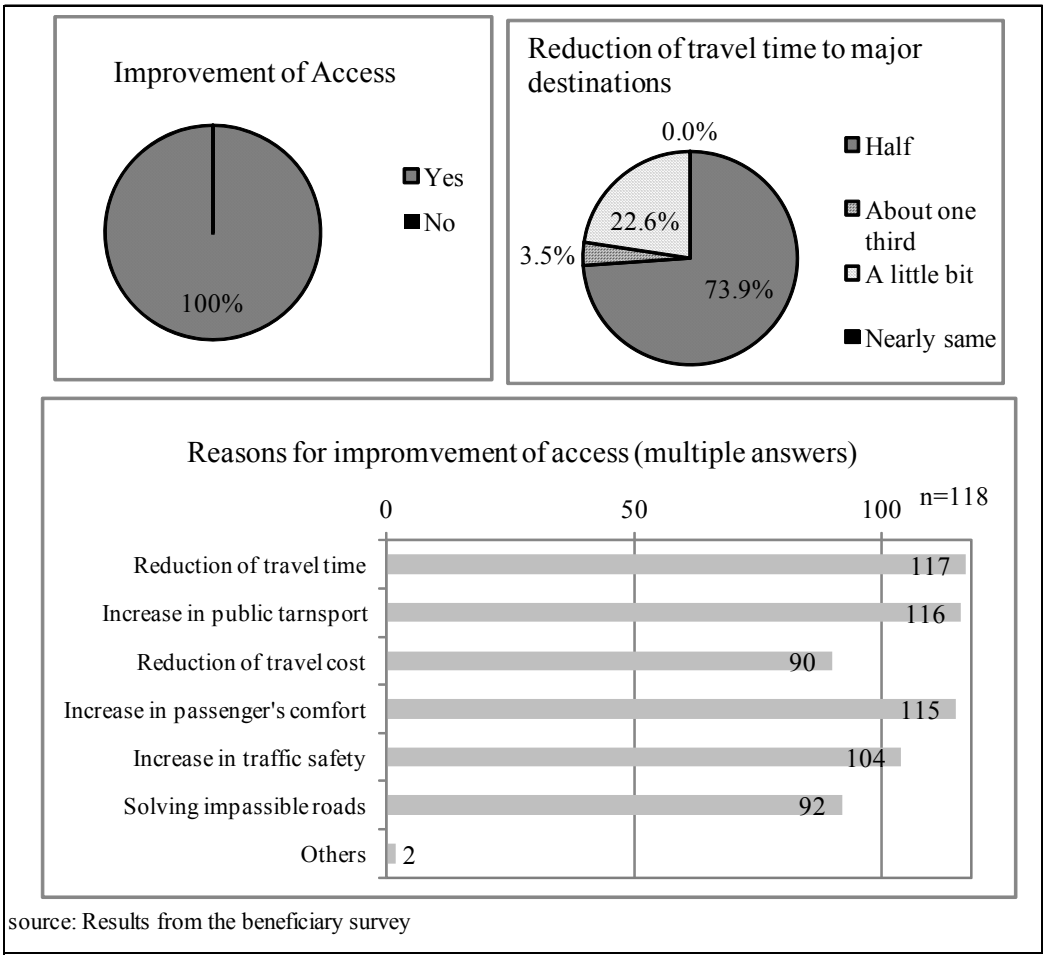


Figure 2: Improvement of access, convenience and safety

As seen in Figure 2, almost all the respondents answered “public transport increased” after the project. According to the interview to public transport drivers at the Cotabato bus terminal by the local consultant, number of public transports increased significantly as seen in Table 3. Before the project, the means of transport were limited between Cotabato and

Lebak and ferries were operated to cater for the demands of local residents. However, the level of convenience of ferries was as bad as the roads since it also took 7-8 hours to travel as well[11]. After the improvement of the project roads, the operating vehicles per day increased significantly from 4 to 75. The frequency of travel increases more for Christmas and long holiday seasons. Thus, it was confirmed that the project contributed to enhancing the level of convenience for local residents and road users.

Table 3: Increase in Public Transport

Type of Car	Before	At the time of Ex-Post Evaluation
Double Tier Jeep (three kinds: 37, 41, 52 seats)	4 vehicles	20 vehicles (One round trip every day between Cotabato and Lebak)
Van (8-10 seats)	0	50 vehicles (One round trip every day between Cotabato and Lebak, Two round trips for the busy seasons)
Mini bus (54 seats)	0	5 vehicles (One round trip between Cotabato and Lebak)

Source: Results of interview to drivers of public transport at the bus terminal in Cotabato

Enhancing accessibility also contributed to the safety. About 8 km of the project roads was identified as bottleneck of the traffic and almost impassable due to damages caused by the past conflicts. This section was located in the mountain valley with poor visibility, so the cars could not pass through with normal speed. Then, the cars and people passing this section became easy targets for ambush by bandits and rebels[12]. According to the interview to the local residents along the section, for the sake of security they used to avoid this 8 km and take a detour, even it took more than 12 hours. After the project rehabilitated the section, the section was connected as road network. The local residents commented to the beneficiary survey that solving problems of disused part contributed to improvement of their lives by reduction of travel time, enhancement of safety and easy transport of agricultural products and people.

Accordingly, the project produced great improvement in the lives of local residents in terms of reduction of travel time and cost, improvement of safety and convenience.

(2) The roles of roads at the time of natural disasters

According to the questionnaire results from relevant District Engineer Offices (hereinafter referred to as “DEO”) in charge of operation and maintenance of each section of project roads, the project roads played vital roles as immediate access to rescue, rehabilitation, and transport of relief and basic services at the time of serious flood near South Upi in September 2013. It

[11] Currently no ferries are operated since there is no demand.
[12] In fact, there were several incidents such as burglary attempts and ambush for military high ranking officials.

is confirmed, therefore, that the project roads becomes very useful and serves as important life line at the time of disasters.

Accordingly, it was confirmed that the project promoted movement of goods and people, improved access, and enhanced convenience by reducing travel time and cost. The project also contributed to improving security along the roads. The project road is also effective in terms of its role at the time of natural disasters, since the transportation of rescue and relief goods and people are vital especially in the areas susceptible to natural disasters such as floods and typhoons. A slight problem on traffic safety was identified, however, it was also confirmed that the executing agency has taken appropriate measures.

3.3 Impact

3.3.1 Intended Impacts

3.3.1.1 Promotion of Regional Economic Development and Revitalization

In order to confirm promotion of regional economic development and revitalization, the beneficiary survey to local residents and farmers were conducted. In addition, questionnaire survey to DEOs in each section under either ARMM/DPWH or DPWH was conducted. Table 4 shows the results of beneficiary survey on impact on regional economy[13].

Table 4: Impact on Regional Economy

Questions	Responses (n=118)
Do you observe the enhancement of economic activities of the project area in general?	(1) Very much enhanced (72, 61.0%) (2) Enhanced (44, 37.3%) (3) Same as before (2, 1.7%) (4) Slow down (0%) (5) I do not know (0%)
Why do you think so? (n=98)	• New business and new shops (large supermarket and hardware shops) were emerged (30, 30.6%) • Distribution of goods including agricultural products became easier (24, 24.5%) • People's movement (tourists and consumers) were increased (21, 21.4%) • Convenience of transport was improved thorough increasing traffic (17, 18.0%) • Population was increased. (4, 0.51%) • Others (2, 0.02%) Opportunities were expanded in every aspects Income from agricultural products was increased due to the time saving of transport.

Source: Results from the beneficiary survey

Almost all respondents (116, 98.3%) answered that regional economy was either "very

[13] GRDP (Gross Regional Development Production), growth rate of agriculture and transport sectors and major production (rice, corn and coffee) in the project regions were surveyed. However, the data indicating the changes after the completion of the project were not available. Therefore, the study(it が何を指しているのか明確でない) could not extract clear impacts from these indicators quantitatively.

much enhanced" or "enhanced" after the completion of the project. 30.6% (30 respondents) pointed out that "new business and new shops (large supermarket and hardware shops) were emerged", 24.5% (24 respondents) for "increase in distribution of goods including agricultural products", and 21.4% (21 respondents) for increase in "movement of people and tourists" as reasons for the revitalization of regional economy.

Table 5 exhibits the increase in business permits in the major municipalities of the project sites. Although it is not an impact only from the project, however, it can be thought that the project roads attracted the establishment of major business in particular, agricultural traders and retailers which have to secure freight routes. Therefore, it is considered that the increase in business permits is the contribution of the project.

Table 5: Increase in Business Permits

Municipality	2008	2014	Increase rate	Major Business
North Upi	250	316	+26.4%	・Retailers ・Communications ・Finance (Bank, Money Transfer)
South Upi	76	118	+55.2%	・Retailers ・Agriculture Traders
Lebak	309 (2010)	522	+68.9%	・Retailers ・Agriculture Traders ・Finance (Micro Finance)

Source: Records and interview results from three municipalities

Regarding agriculture development, 108 respondents (91.5%) answered either "Very much enhanced" or "Enhanced" as shown in Table 6. Many respondents raised the reasons why they think the project promoted the agricultural development, such as "agriculture products could be easily transported in higher volume" (37 respondents) and "much more products are available in the market" (34 respondents). The DEOs of ARMM/DPWH and DPWH also felt that the project contributed to enhancement of regional development according to the questionnaire results. They have pointed out the reasons for the above such as "farmers could bring their products directly to urban market where they can charge higher prices", "24 hours distribution became available by improvement of roads", and "transport of agricultural and fishery products from coastal villages to major inland towns became possible".

In this way, economic effect has been realized by improving access of the project roads. The project roads made it possible for farmers to transport their products easily in higher volume, which contributed to increase of the production. Besides, those agricultural products can be sold at urban markets with higher prices. It is also understood that the attainment of 24 hours transport enhanced the effect, while the transport at night time was very limited before

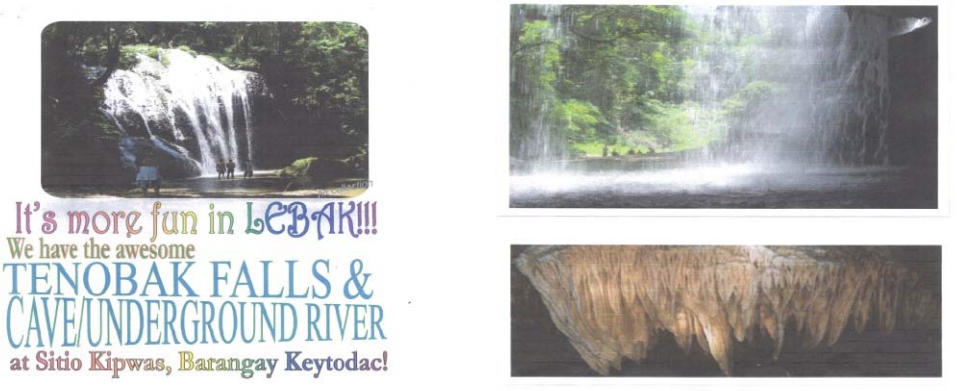
due to a safety standpoint (road surfaces and security issues).

Table 6: Impact on Agriculture Development

Questions	Responses (n=118)
Do you observe the effects on agriculture activities of the project areas after the project?	(1) Very much enhanced (67, 56.8%) (2) Enhanced (41, 34.7%) (3) Same as before (2, 1.7%) (4) Slow down (1, 0.8%) (5) I don't know (7, 5.9%)
Why do you think so?	• Agriculture products could be easily transported in higher volume (37, 31.4%) • More agricultural product produced (22, 18.6%) • Increased number of trucks for transporting products (8, 6.8%) • More variety of products is seen in the market (34, 28.8%) • Reduced cost to produce agriculture product (due to the reduction of transport cost) (3, 2.5%) • Others (Increased number of buyers of agricultural products, Introduction of new variety, etc.)

Source: Results from the beneficiary survey

Furthermore, the interview to the Lebak Local Government Unit (hereinafter referred to as "LGUs") revealed that the attraction of tourists was one of priority issues for Lebak after increase in movement of people due to the improvement of roads. The posters have been developed by Lebak LGU and distributed to tourist companies and major towns such as Cotabato, South Upi and North Upi. The sample of posters is seen below.



Posters displayed at Lebak Municipality Office

When the project roads connects with General Santos city, the 8th most populous city in the Philippines[14] after the completion of paving between Kalamansig and Palimbang, a road network among large cities, connecting Cotabato, the core city of southwestern Mindanao would be established. Then, further economic effect will be expected and the network will contribute to regional vitalization[15].

[14] Population of General Santos is 538,000. (Census in 2000)
[15] At the time of the project appraisal, it was expected that the road network from Cotabato to General

3.3.1.2 Contribution to poverty alleviation

Table 7 indicates poverty incidence ratio among population in the province where the project locates. The impact on poverty reduction could not be assessed precisely with those available data since the latest figure was only 2012, which could not assess the trend after the completion of the project. Nonetheless, trends for poverty alleviation in the project provinces can be observed, though slowly, compared to that in the average of the Philippines.

Table 7: Change in Poverty Incidence among Population (%)

Area	2000	2012
Maguindanao Province	67.8%	63.7%
Sultan Kudarat Province	57.0%	48.5%
Philippines average	33.7%	19.7%

Source: National Statistics Authority

From the beneficiary survey results, 74.3% of the local residents along the project roads answered their income level has either "largely improved" or "improved" after the project as seen in Table 8. A variety of reasons to support the answer was raised. 86 respondents raised increase in agricultural production, while 85 respondents pointed out the efficiency of transport. As stated in the above, after the project farmers are able to transport agricultural production easily and in larger volume to the local as well as urban markets in the far distance, which led to the increase in production. It is, therefore, assumed that the project contributed to raising local farmers' the income level by reduction of transport cost as well as increase in their production.

The beneficiary survey revealed that 97% of the respondents believed that the project either "very much promoted" or "promoted" the expansion of employment opportunities. In particular, employment opportunities for construction works were recognized as major opportunities by the respondents since construction projects including housing projects by the government were increased after the improvement of logistic aspects in terms of material transport.

Santos would have been established by the completion of the project. It was found that the construction works between Kalamansig and Palimbang had not been finished at the time of the ex-post evaluation. Therefore, it was not possible to assess the impact of the project as a road network connecting large cities. The pavement construction between Kalamansig and Palimbang (about 70km) has been undertaken by Region XII of DPWH Sultan Kudarat Province. At the time of the ex-post evaluation, there were still 36km more to be paved.. According to the DPWH, it will be completed by 2015. The section between Maitum and General Santos has been paved in 2011 with the financial assistance from United States Agency for International Development (USAID).

Table 8: Improvement of Income and Employment Opportunities

Questions	Responses (n=118)
Has the income level of your family improved compared to before the project?	(1) Largely improved (41, 35.0%) (2) Improved (46, 39.3%) (3) Same as before (25, 21.2%) (4) Decreased (6, 5.1 %)
What factors do you think affect most on improvement of income level? (multiple answers)	(1) Increase of agricultural production (86, 72.9%) (2) Price hike of production (70, 59.3%) (3) Improvement of efficient distribution (85, 72.0%) (4) Others (7, 5.9%) Success in small scale business（2） Increase employed drivers (2)
Do you observe the effects on increasing employment opportunities by the project?	(1) Very much promoted (54, 45.8%) (2) Promoted (60, 50.8%) (3) Same as before (1, 0.8%) (4) Slow down (1, 0.8%) (5) I do not know (2, 1.7%)

Source: Results from the beneficiary survey

3.3.2 Other Impacts

3.3.2.1 Impacts on the natural environment

The Environmental Compliance Certificate (herein after referred to as "ECC") was issued by the Department of Environment and Natural Resources (herein after referred to as "DENR") for all three sections of the project[16], and the Environment Management Plan was complied with during the project implementation period.

During the implementation period, environmental monitoring was conducted by the monitoring team composed of DPWH, DENR, and LGUs of concerned province and municipalities, and project consultants. The monitoring activities were conducted every quarter and the results were compiled in the quarterly reports. During monitoring activities, the monitoring team conducted random interviews to local residents regarding environmental impact. It was confirmed that appropriate measures were taken by the project to minimize the environment effects during the construction. The project used equipment which had devices to mitigate air dust and noises. When carrying earth and sand, the trucks were covered by the tarpaulin, even splashed water to sands during the windy days. At the construction sites, enough number of sprinkler trucks was allocated for dust control. Interviews to the executing agency and the project consultant confirmed that no major complaint from the local community was recorded.

According to the beneficiary survey, on the contrary, 74.1% of local residents (86 respondents, n=118) answered that they felt adverse effects on environment. 86 respondents raised air pollution (including dust) and 87 respondents named noises during the construction. It was also noted that many pointed out adverse effects on environment even after the project. However, as stated above, it was confirmed that the appropriate measures were taken during

[16] ECC was issued in October 2002 for Section 1 and Section 2, and in January 2003 for Section 3.

the construction. Judging from the interviews to DPWH and the project consultant as well as the report from the local consultant who conducted the field survey, it seems unlikely that there was adverse environment effect as revealed in the beneficiary survey. It is assumed that the answers of the beneficiary survey resulted from the impression of the difference in the surrounding environment before the project and during the project. It is because the project site was very quiet mountainous area without much traffic, particularly at night time. Therefore, it was concluded that there was no serious impact on environment.

3.3.2.2 Land Acquisition and Resettlement

The project did not have to acquire new lands, however, the acquisition of land required the widening of roads as well as removal of fruit trees along housing boundaries. Therefore, the compensation was paid by the executing agency to those houses and shops which were affected by the project[17] (Project Affected Families (hereinafter referred to as "PAFs"). In the process for payment of compensation, the executing agency formulated a Resettlement Action Plan (hereinafter referred to as "RAP") in August 2006 in accordance with the DPWH guideline (Infrastructure ROW Procedural Manual, April 2003), which is based on the Philippines Law.

The actual process for compensation for all three sections of the project including Section 1 and Section 2 under ARMM was implemented by the DPWH Regional Office XII which was in charge of Section 3 in Sultan Kudarat Province. Before the project implementation, multiple community consultation meetings were held for the PAFs both at the level of LGUs and barangay, the smallest administrative division. It was also understood that the complaints were handled in an appropriate manner by setting up claim desks with providing claim acceptance period and taking enough time for discussion. As a result, the amount of compensation was agreed with each PAF without much difficulty. The situation was the same in ARMM region. Public hearing and consultation meetings with the community were organized in cooperation with LGUs in ARMM. Instead, a strong cooperation with ARMM was built throughout the process such as Mayor of Maguindanao Province himself initiated public hearing for this purpose.

Therefore, it was confirmed that the project took appropriate processes for compensation and there were no particular problem.

Table 9 shows the actual compensation in each section.

[17] Compensation was paid for belongings of project affected families such as their buildings, fences and fruit trees.

Table 9: Actual Compensation

Province	Municipality	Households of compensation
Maguindanao	Datu Odin Sinsuat	20
	North Upi	17
	South Upi	30
Sultan Kudarat	Lebak	45
Total		112

Source: Resettlement Action Plan

3.3.2.3 Impact on Peace and Security of the project area

The project was also implemented from the viewpoint of assistance of the post-conflict region. It was expected, therefore, to produce effect on peace and security in the region. According to the beneficiary survey as seen in Table 10, almost all respondents (113 respondents, 96.8%) answered that the project contributed to enhancing peace and security in the region. Half of the respondents who answered the above raised "improvement of access to military and police" as the main reason. Others also pointed out the reasons include "crime incidences such as ambush and hold-ups were reduced" (15.9%) and "24 hours transport became possible" (8.9%). In addition, 93.2% (110 respondents) replied that they thought the project contributed to promoting confidence building between ARMM and the Philippines government.

As seen from the above, many local residents felt the project was effective for security improvement and peace recovery in the region. It is considered the reason why they felt this was because local residents realized dividend of peace as a result of revitalization of local economy and security improvement which were brought by the project. In addition, the ARMM government stated in the questionnaire that the project was recognized as a proof of commitments from the Philippines government. Since many people in ARMM region thought they were left out from development by the Philippines government, it is understood that the project which also targeted ARMM region contributed to gaining the trust for the Philippine government from people in ARMM region. Accordingly, the project produced large impact on security of the project sites as well as contributed to restoration of peace in a certain degree.

Table 10: Impact on Safety and Security

Questions	Respondents (n=118)
Do you think the project roads have contributed to enhance peace and security in the region?	(1) Yes (113, 95.8%) (2) No (3, 2.5%) (3) I do not know (2, 1.7%)
Why do you think so?	＜Yes＞ (n=113) ・Access to military and police became easier. In case something happen, reporting to police also became easier and they could come quicker. (63, 55.7%) ・Travel anytime even at night (10, 8.9%)

	・Reduced incidents such as hold-ups and ambush (18, 15.9%) ・Others (Increase in people movement, NGO activities, immigrants from other provinces, and tourists, Installed street lights) (22, 19.5%)
Do you think the project contributed to promote confidence building between ARMM and the Philippines government?	(1) Very much (74, 62.7%) (2) To some extent (36, 30.5%) (3) No (1, 0.8%) (4) I do not know (7, 5.9 %)

Source: Results from the beneficiary survey

This project has largely achieved its objectives. Therefore its effectiveness and impact is high.

3.4 Efficiency (Rating: ②)

3.4.1 Project Outputs

（1）Civil Works

Comparison of planned and actual project outputs is summarized in Table 11.

Table 11: Comparison of Planned and Actual Project Outputs

Section*		Planned	Actual
1	Junction Awang, Cotabato - North Upi, Maguindanao	Widening and Pavement of total length of 27.5km i) AC Overlay*** on existing 14.6km ii) PCCP** on existing 12.9km gravel	PCCP and widening on 30.13km
2	North Upi - Maguindanao/Sultan Kudarat Boundary	Widening and Pavement i) PCCP on existing 32.6km gravel out of total length of 41.25km ii) Replacement of 1 temporary bridge with permanent bridge (24m)	i) PCCP and widening on 31.79km ii) No implementation
3	Maguindanao/Sultan Kudarat Boundary - Kalamansig, Sultan Kudarat	Widening and Pavement i) PCCP on existing 27.5km gravel out of total length of 36.11km ii) Replacement of 2 temporary bridges with permanent bridges (15m each)	i) PCCP and widening on 42.47km ii) Replacement of 3 temporal bridges with permanent bridges (total length of 42.96l.m.)
Total sections		- Widening and pavement of 87.62km out of total length of existing 104.86km. - Replacement of 3 temporal bridges with permanent bridges	- Widening and pavement of 104.39km. - Replacement of 3 temporal bridges with permanent bridges

* Section 1 was financed by own financial source of the Government of the Philippines, Section 2 and Section 3 were financed by Japanese ODA loan.
**PCCP：Portland Cement Concrete Pavement
***AC：Asphalt Concrete
Source: Information from JICA at the time of appraisal, results from questionnaire survey of executing agency, and interview survey results from the field survey

The main scope of the project is to widen and improve existing roads (including ditches and slope protection) and to replace temporal bridges to permanent ones along the roads. As

seen in Table 11, the total length to be improved was increased by 16.77km from the original 87.62km to the actual 104.39km. The main reason for the difference is aging degradation of the road surfaces from the time of the appraisals. Originally, the only necessary road sections were targeted for improvement (87.62 km out of total length of 104.86km). Since the actual implementation (2008) was made after five years from the appraisal (2003), the situation of the roads had been changed. In order to have an effective road network, there was a need to include sections which were deteriorated during that period. In addition, some sections which were damaged by the project construction were also included. In regard to a temporal bridge of Section 2, as seen in the photo below on the left, the project responded to construct a box culvert[18] instead of replacing the temporal bridge[19]. Then, one more bridge was included in Section 3 because that had been deteriorated by aging. Accordingly, the changes of outputs are deemed appropriate for enhancement of effectiveness as a road network, in light of the actual situation at the start of the construction.

An old bridge on the left was abolished and the roads were rerouted with installment of a new box culvert (Section 2)

Rehabilitated Bridge 1, Section 3

（2）Consulting Services

The consulting services were implemented as planned. However it was noted that the actual man months (herein after referred as “M/M”) of the local consultant increased as shown in the Table 12. The main reason for the increase is because Section 1 was decided to be implemented with the finance from the Philippines government. The detail is explained in the next section of “Input”. Planned assignment for foreign consultants for Section 1 was, thus, transferred to local consultants with some increase of M/M. In addition, due to safety management, local consultants resided at the construction sites instead of foreign consultants. Accordingly, the changes of inputs of consulting services are deemed appropriate in light of

[18] Box culvert is structure of corridor for water flow and drainage that is buried under a road, railway, and dike.
[19] The actual construction was implemented two years after the detailed design.

the actual situation at the start of the construction.

＜Planned consulting services＞

- Detailed Engineering Design, Assistance in tendering, Construction supervision
- Environment monitoring necessary for environmental consideration
- Assistance to DPWH in review, preparation and implementation of RAP and its monitoring
- Assistance to DPWH in coordination activities with the concerned Provincial Government, the ARMM government and LGUs
- Technical Transfer (design for slope protection works in mountainous areas and supervision)

Table12: Comparison of Planned and Actual Inputs of Consulting Services (M/M)

	Plan	Actual	Comparison
Foreign	49	55.34	Increased by 6.34
Local	822	1,462.7	Increased by 640.7
Total	871	1,518.04	Increased by 647.04

Source: Information from JICA at the time of appraisal, results from questionnaire survey of executing agency, and interview survey results from the field survey

3.4.2 Project Inputs

3.4.2.1 Project Cost

Total project cost was initially planned to be 4,956 million yen (out of which 3,717 million yen was to be covered by Japanese ODA loan). In reality, the total project cost was 4,996 million yen (out of which 3,165 million yen was covered by Japanese ODA loan), which is higher than planned (101% of the planned amount).

The main reason for project cost overrun was due to inflation (cost of basic construction inputs increased throughout the project implementation period despite a depreciation of local currency (Philippines peso)). The increased portion was covered by the DPWH budget and there was no particular problem.

3.4.2.2 Project Period

The overall project period was planned as 79 months, from December 2003 (conclusion of Loan Agreement) to June 2010 (completion of civil works). In reality, the overall project period was 97 months, from December 2003 (conclusion of Loan Agreement) to December 2011 (completion of civil works), which was longer than planned (123%).

Table 13 shows the comparison of planned and actual project period.

Table 13: Comparison of Planned and Actual Project Period

Item	Planned(At Project Appraisal)	Actual (At Ex-post Evaluation)
1. Selection of consultants	Jan. 2003 – Dec. 2003	Sep. 2003 – Sep. 2004
2. Detailed design	Jan. 2004 – Dec. 2004	Sep. 2005 – Sep. 2006
3. Bidding process	Aug. 2004 – Oct. 2005	Sep. 2006 – May 2009
4. Civil works	Oct. 2005 – Jan. 2008	Nov. 2008 – Dec. 2011
5. Land acquisition	Jul. 2004 – Sep. 2005	N.A.
6. Consulting Services	Jan. 2004 – Jan. 2008	Sep. 2005 – Dec. 2011

Source: Information from JICA at the time of appraisal, results from questionnaire survey of executing agency, and interview survey results from the field survey

The main reasons of delay are listed below.

- Due to growing budget deficits in the Philippines government at that time, the budget allocation to the executing agency was delayed[20]. As a result, the selection of consultants was delayed (for 11 months).
- It was the first project for the division in charge of the project[21] to implement RAP. More time was required, therefore, to coordinate with different divisions of DPWH for selection process of RAP consultant (delayed for 6 months).
- Selection of contractors took more time (delayed for 12 months). Initially, tendering of contractors for each section was made as 3 packages. However, as a result of tendering, it was found that the overall bidding price was exceeded the total budget of Japanese ODA loan. It was decided, therefore, that one of three sections was excluded from the finance by Japanese ODA loan. Instead the section was financed by the Philippines government. However, it took more time to decide which package should be taken by the own finance. It was settled that Section 1 was excluded from the finance of Japanese ODA loan. Other than this, the Japanese side delayed to provide consent for the selection of contractors because it took more time than usual for thoroughly review of the results of pre-qualification of contractors.
- The start of the construction of Section 2 was delayed since it took extra time to select a contractor due to withdrawal by the first awarded contractor and to renegotiate with the second lowest bidder (delayed for 17 months).
- Since there were more rainy days than initially envisioned, it affected the construction works (delayed for 1 month).

3.4.3 Results of Calculations of Internal Rates of Return (Reference Only):

Economic Internal Rates of Return (EIRR)

At the time of the appraisal, EIRR was calculated by considering reduction of travel cost and time, and saving on maintenance cost as benefits, construction cost and maintenance cost

[20] According to the executing agency, the effect from the austerity policy at that time affected the delay in budget allocation.

[21] Rural Road Network Development Project: RRNDP

as costs, and with the project life of 20 years. As a result, EIRR was calculated as 34.46%.

On the other hand, it was difficult to recalculate EIRR at the time of ex-post evaluation because neither DPWH nor ARMM/DPWH have Basic Vehicle Operating Cost (refer to reduction of travel cost in "effectiveness") after the project completion which is essential for the calculation.

Both project cost and project period exceeded the plan. Therefore, efficiency of the project is fair.

3.5 Sustainability (Rating: ②)

3.5.1 Institutional Aspects of Operation and Maintenance

The actual operation and maintenance (hereinafter referred to as "O&M") for each section of the project roads is undertaken by each DEO under ARMM/DPWH for Section 1 and Section 2, and DPWH for Section 3. In concrete, 1) Maguindanao 1st DEO is in charge of Section 1 (Junction Awang, Cotabato - North Upi, Maguindanao), 2) Maguindanao 2nd DEO is in charge of Section 2 (North Upi - Maguindanao/Sultan Kudarat Boundary), and 3) Sultan Kudarat 2nd DEO is in charge of Section 3 (Maguindanao/Sultan Kudarat Boundary - Kalamansig, Sultan Kudarat)[22].

At the national level, Bureau of Maintenance (hereinafter referred to as "BOM") in DPWH Headquarters is responsible for formulating overall policy and objectives of O&M of roads and bridges. At the regional level, Regional Office of DPWH is responsible for its respective roads and bridges. DEO is supervised by respective Regional Office. Sultan Kudarat 2nd DEO for Section 3 is under supervision of DPWH Regional Office XII. While, in the areas covered by ARMM, Maguindanao 1st and 2nd DEOs are under direct supervision of ARMM/DPWH.

Table 14 shows the number and category of O&M staffs in each DEO.

Table 14: O&M Staffs in each DEO

DEO	**i) Maguindanao 1st DEO**	**ii) Maguindanao 2nd DEO**	**iii) Sultan Kudarat 2nd DEO**
Section / Category	**Junction Awang, Cotabato - North Upi, Maguindanao**	**North Upi - Maguindanao/Sultan Kudarat Boundary**	**Maguindanao/Sultan Kudarat Boundary - Kalamansig, Sultan Kudarat**
Engineer III, II	3	5	2
Construction and Maintenance Foremen・Capataz	3	4	4
Draftsman	-	1	-
Mechanical Engineer	-	-	1

[22] The covering road length of each DEO is 1) Maguindanao 1st DEO: 143km, 2) Maguindanao 2nd DEO: 136km and 3) Sultan Kudarat 2nd DEO: 265km.

Engineering Assistance	2	-	-
Mechanic II	-	-	1
Heavy Equipment Operator	-	-	4
Total	8	10	12
Maintenance Crew	38	29	N.A.

Source: Results from questionnaire survey of each DEO, and interview survey results from the field study

Two DEOs in ARMM region, Maguindanao 1st and 2nd DEOs, were actually established after separation of one DEO since the covering areas were too large. At the time of ex-post evaluation, both offices were in the process of strengthening organization structure. Several permanent posts of staff were awaiting approval. Therefore, some unapproved posts were filled by the contracted employees. According to the results from questionnaire to Maguindanao 2nd DEO, they require 8 Engineers and 4 Assistant engineers but the actual numbers at the time of ex-post evaluation were 5 and 0 respectively, which indicated the shortage of staff. However, the trend toward improvement of the situation has been observed by confirming that the recruitment of new permanent staff has been started for the approved posts.

It was uncertain at the time of ex-post evaluation regarding the administration structure of ARMM/DPWH after 2006. ARMM is going to replace to "Bangsamoro", new administration after 2016 which was resulted from the comprehensive peace agreement concluded in 2014.

The number of permanent posts of Sultan Kudarat 2nd DEO for Section 3 was decreased due to the government streamlining policy[23]. In order to fill gaps of the shortage of staff, temporal staff is being recruited so that the O&M activities are not affected. For example, one out of two engineers and one out of four heavy equipment operators in Sultan Kudarat 2nd DEO were temporal employees.

Regarding site workers in charge of actual routine/periodic maintenance work for roads and bridges (responsible for cleaning, vegetation control, road repair etc.) have been employed from the local residents as Road Maintenance Crew (herein after referred to as "RMC"). This RMC system has been utilized as a part of social welfare approach for poor families (employment creation and household income support) under collaboration between DPWH and Department of Social Welfare and Development. The number of RMC[24] in the Table 14 at the time of ex-post evaluation is generally considered as enough.

Accordingly, there are some concerns in organizational stability for the two DEOs under

[23] Since 2013, DPWH is conducting "Rationalization Plan" at all levels by streamlining staff through encouraging early retirement at nationwide. According to the interview to Bureau of Human Resources and Administrative Services, the approval for new posts will be very difficult under this plan.

[24] Number of RMC was not confirmed by the questionnaire to Sultan Kudarat 2nd DEO since it stated that they recruited RMC according to the needs.

ARMM/DPWH. Additionally, the number of staff for O&M found to be limited in a certain degree in all three DEOs.

3.5.2 Technical Aspects of Operation and Maintenance

The main works of maintenance conducted by DEOs are vegetation control (weeding on road shoulders), ditch cleaning, repair of small cracks of road surface, removal of landslides, culvert cleaning, etc. The maintenance is done in accordance with the standard manual of "Philippine Highway Maintenance Management System".

Regarding training of the DEO O&M staff, on the job training (OJT) is the most common practices in all three DEOs. On top of OJT, DPWH has a training program at the national level for DEO staff organized by the Bureau of Human Resources and Administrative Services. The trainings are conducted every year inviting 2-3 DEO officers to the DPWH Headquarters based on the annual training program[25]. On the contrary, DEOs in ARMM are different situation. They do not have a regular training system. O&M manuals were not appropriately equipped in Maguindanao 2nd DEO. These circumstances become constraining factors to implement O&M activities fully since there is request to upgrade and renew their skills to cope with new O&M demands. Since the recruitment process for permanent staff has been on-going at the Maguindanao 1st and 2nd DEOs, it is expected that an institutionalized training system be established[26].

Regarding O&M equipment, all three DEOs answered to the questionnaires that necessary equipment was rented from the Regional office or LGUs since the equipment in DEOs was either aging or lacking. It was confirmed, however, the equipment of all three DEOs was expected to be renewed within 2014. For equipment of DEOs under DPWH, with the initiative of "Equipment Procurement Program[27]", aged essential equipment such as heavy machinery of all DEOs is to be replaced. Currently the assessment study of each DEO has been underway and the replacement has been started. New equipment for Sultan Kudarat 2nd DEO will be put in place by the end of 2014[28]. However, since the new equipment is the latest model, it should be noted that the DEO has to secure or train staff members for operation and maintenance of the new equipment.

Maguindanao 1st DEO will also receive new equipment for O&M within 2014. The equipment will be shared with Maguindanao 2nd DEO for the time being[29].

Staff members in all three DEOs have appropriate level of technical skills to conduct O&M

[25] If there is a specific subject to be trained, DEO can place a request to DPWH Headquarters through its Regional Office. The approval will be depending on availability of budget and lecturer.
[26] According to DPWH, they can share syllabus and send a paid resource persons if ARMM/DPWH requests.
[27] Program period is for 5 years from 2012 to 2016.
[28] Normal dumper truck, Wheel loader, Excavator, etc.
[29] Offices of Maguindanao 1st DEO and 2nd DEO are located in the same compound in Cotabato. Therefore the coordination of sharing equipment can be arranged easily.

activities. However, it should be noted that there is room for improvement in general to provide the staff members with new skills and establish a training system in two DEOs under ARMM/DPWH.

3.5.3 Financial Aspects of Operation and Maintenance

Table 15 shows the budget of three DEOs in the year of 2013 and 2014.

Table 15: O&M Budget of each DEO (2013, 2014)

(Unit: Peso)

DEO	Year	Planned (2012)	Actual	Difference (%)
Maguindanao 1st DEO	2013	4,911,791	2,774,322	56.4%
	2014	5,010,026	2,774,322	55.4%
Maguindanao 2nd DEO	2013	5,182,404	6,793,048	131%
	2014	5,286,052	6,793,048	129%
Sultan Kudarat 2nd DEO	2013	6,971,433	9,062,863	130%
	2014	7,180,575	9,334,749	130%

Source: Results from questionnaire survey of each DEO, and interview survey results from the field study

The budget for O&M is calculated by multiplying Equivalent Maintenance Kilometer (hereinafter referred to as "EMK")[30] by basic cost (cost required to operate and maintain one kilometer of road for one year). According to BOM of DPWH, the budget calculated using EMK is found to be the minimum amount for routine maintenance. The extra budget is usually required for periodic maintenance and major repair. The request for the extra budget is placed to either Regional Office or DPWH Headquarters. In addition, the unit costs used to determine EMK have not been updated, as a result, the amount of budget becomes lower than actually amount required[31].

As seen in Table 15, two DEOs received more amount of budget than planned. However, as the unit costs which is the basis for calculation of EMK, do not fit the current reality, it cannot be said, therefore, that there is enough O&M budget. Besides, it was found that EMK of ARMM/DPWH was different from that of DPWH. EMK of ARMM/DPWH (74,685 pesos) is only 70% of EMK of DPWH (109,000 pesos). This means that the maintenance unit cost for Section 1 and Section 2 is lower than that for Section 3 despite all sections are continuous roads under the same project[32].

Although it cannot be said that enough budget has been allocated for O&M to the

[30] EMK is calculated based on several variables such as road length, surface type, AAVT, etc.
[31] According to DPWH and JICA experts dispatched to DPWH, for example, the unit cost for weeding is still based on the manual weeding, although the actual practice of weeding is done by weeding machine.
[32] It is assumed that ARMM/DPWH is using older unit costs when calculating EMK, but it could not be clarified.

concerned DEOs, this does not prevent conducting required works for O&M[33]. At the time of ex-post evaluation, however, there is a concern in terms of different amount of EMK between ARMM/DPWH and DPWH. The coordination efforts from both organizations are required.

Accordingly, it is admitted that there is concern to a certain degree for O&M budget of this project (financial aspect).

3.5.4 Current Status of Operation and Maintenance

Each DEO formulated its annual maintenance plan and conducted maintenance activities based on the plan. It was confirmed from the answers to questionnaires to each DEO, interview results from the officers of DPWH who were in charge of the project, actual observation by the local consultant, and photos of the project sites, that there was no serious damage that affects smooth traffic on the roads and bridges which were improved by the project. However, some damages on the road surface (breakage, dent, cracks, etc.) were observed in all sections, although they were small scales (within 5 km wide in a larger size). It was confirmed that repair of the serious damaged road sections had been promptly undertaken by relevant DEOs with secured finance. It is expected that other parts of damaged should be responded in the same manner.

Damage on the Road Surface (Section 1)

Maintenance Activities (Section 2)

Some problems have been observed in terms of institutional, technical and financial aspects. Therefore, sustainability of the project is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The Project upgraded existing rural roads of southwestern Mindanao with the aim of securing a safe and efficient road network in the surrounding areas. The project objective - to

[33] BOM has well recognized the budget deficiency for DEOs.

stipulate and revitalize local economy as well as to ensure stability of the region by improving connectivity through facilitation of movement of goods, services and people between rural communities in the major cities and towns of the central Mindanao – is consistent with the development policy of the Philippines and with the development needs both at the time of the appraisal and ex-post evaluation, as well as Japan' ODA policy at the time of appraisal. Besides, from the viewpoint of peacebuilding, the timing of the implementation of the project was appropriate; thus, the relevance of the project is high. Annual average daily traffic far exceeded the target and travel time was reduced as expected. A beneficiary survey confirmed that the benefits of the project (improving the access to markets and hospitals, reduction of transport cost, improving security and safety) were recognized by local residents and road users. Furthermore, the project contributed to the improvement of the standard of life of local residents through agriculture promotion, one of the main industries of Mindanao, and revitalization of economy as a result of the improvement of efficiency of distribution; thus, the project's effectiveness and impact are high. On the other hand, both project cost and project period exceeded the plan; thus, efficiency is fair. In regard to operation and maintenance, no major problems have been observed. However, there is room for improvement on institutional and technical aspects such as establishment of training system to upgrade technical skills for the staff in ARMM; thus, sustainability of the project is fair.

In light of the above, the project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency[34]

- Institutionalization of cooperative relations between DPWH and ARMM/DPWH

The relations with ARMM/DPWH have been strengthened since Undersecretary of DPHW was seconded as Secretary of ARMM/DPWH in January 2011. Annual meeting is held and discussions are made, but as needed basis, between the two. However, the cooperation relations have not been institutionalized yet. There is no mechanism to share basic road information such as AADT and VOC, although those data are not measured in the ARMM region. In addition, ARMM/DPWH is using different value of EMK from that of DPWH. Basic data on roads and bridges in ARMM region are also important for DPWH to promote road development and conduct various analyses. A different standard of maintenance by road section in the same project roads should be avoided. It is desirable to institutionalize cooperative relations between ARMM/DPWH and DPWH for establishing closer coordination mechanism and implementing effective road development and O&M, although it depends on the new arrangement of Bangsamoro administration scheduled to start after 2016.

[34] Executing agency of the project is DPWH. However, recommendations to ARMM/DPWH are included since O&M of Section 1 and Section 2 of the project road is conducted by the DEOs under ARMM/DPWH.

・ Implementation of necessary repair for damaged road sections in an early manner

Some damages on the road surface (breakage, dent, cracks, etc.) were observed in all sections, although they do not require major repair. However, it is recommended to implement necessary repair as soon as possible before affecting smooth traffic.

・ Establishment of a mechanism to maintain and enhance technical skills of DEOs in ARMM/DPWH

In DEOs under ARMM/DPWH, trainings on O&M are basically conducted by OJT and skills and knowledge have not been updated to cope with new methodologies. Since the new recruitment for permanent officers are on-going, a training system to maintain and strengthen skills and knowledge on O&M should be established without delay in ARMM/DPWH. Utilization of resources from DPWH would be one of the options.

・Consideration of institutionalizing "Advance Procurement System" into DPWH

Delay of most road and bridge projects in the Philippines stems largely from the delay in selection process of consultants and contractors. The project also experienced delay in selecting consultants. In order to cope with the situation, currently JICA and DPWH have been implementing "Advance Procurement System" as a trial basis. As soon as pledge is made by the Government of Japan, DPWH starts procuring process of consultants for detailed design. After formally signing a Loan Agreement, DPWH awards the consultant, so that the consultant can commence works within 6 months after signing of Loan Agreement. If this system can be applied to loan projects finance by other donors, institutionalizing it into DPWH is worth considering.

4.2.2 Recommendation to JICA

・ Enhancement of support systems to compliment O&M capacity of ARMM/DPWH

O&M capacities of DEOs under ARMM/DPWH, in particular, in technical aspects is found lower compared to that of DEOs under DPWH. Considering the fact, it has been assumed by the project that the support would be provided from DPWH (either Region XII office or Headquarters) to relevant DEOs under ARMM/DPWH in terms of technical and financial aspects of O&M. However, it is difficult in practice to establish such cooperative relations without having an institutionalized cooperative mechanism between the two.

Therefore, it is desirable to enhance support system to compliment O&M capacity of ARMM/DPWH by including a supplementary component of technical assistance into loan project, or cooperating with JICA technical cooperation projects to obtain advice from the experts when conducting road improvement projects in ARMM region, although it is

depending on the new administration structure of ARMM/DPWH under Bangsamoro administration after 2016.

4.3 Lessons Learned

・ Roads can play important roles for improvement of security and restoration of peace in the region

Before the project, cars and trucks were used to drive slowly on the project roads since the roads were rough and winding in the mountainous situation, which attracted bandits and rebels to commit crimes. The project brought large impact not only on accessibility but also on security aspects. Improvement of security as a result of reduction of incidents of crimes and attacks enhanced feeling of safety among local residents and contributed to recovering peace and security in the region in a certain degree. It is vital to consider such impacts that roads can produce when selecting and formulating projects conducted in conflict affected and poor security areas. However, it should be reminded that appropriate measures should be fully taken to ensure safety during construction period.

END

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Project Outputs	1) Civil Works 1. Junction Awang, Cotabato - North Upi, Maguindanao: Road (27.5km widening, 14.6km on PCCP、12.9kmon AC) 2. North Upi - Maguindanao/Sultan Kudarat Boundary: Road (32.6kmon PCCP) , Bridge: (1, 24m) 3. Maguindanao/Sultan Kudarat Boundary - Kalamansig, Sultan Kudarat: Road (27.5km on PCCP), Bridge (2, 15m each) 2) Consulting Services a) Detailed Engineering Design b) Assistance in tendering c) Construction supervision d) Environment monitoring necessary for environmental consideration e) Assistance to DPWH in review, preparation and implementation of RAP and its monitoring f) Assistance to DPWH in coordination activities with the concerned Provincial Government, the ARMM government and LGUs g) Technical Transfer (design for slope protection works in mountainous areas and supervision)	1)Civil Works 1. Junction Awang, Cotabato - North Upi, Maguindanao: Road (30.13km on PCCP) 2. North Upi - Maguindanao/Sultan Kudarat Boundary : Road (31.79km on PCCP)、Bridge (0) 3. Maguindanao/Sultan Kudarat Boundary - Kalamansig, Sultan Kudarat : Road (42.47km on PCCP), Bridge (3, 42.96m) 2) Consulting Services Necessary tasks have been implemented as planned, however, the services targeted Section 1 was managed directly by the executing agency utilizing GOP fund.
2. Project Period	December, 2003 – June, 2010 (79 months)	December, 2003 – December, 2011 (97 months)
3. Project Cost Amount paid in Foreign currency	1,946 million yen	3,165 million yen
Amount paid in Local currency	3,010 million yen (1,254 million pesos)	1,831 million yen (924 million pesos)
Total	4,956 million yen	4,996 million yen
Japanese ODA loan portion	3,717 million yen	3,166 million yen
Exchange Rate	1 peso＝2.4 yen (As of August,2002)	1 peso＝1.92 yen (Average between 2002 to 2011)

Column: Contribution from the Perspective of Peacebuilding

The project was also implemented from the perspective of assistance for post-conflict region although it was not clearly mentioned in its objective. Reviewing the project again from the perspective of peacebuilding, the following three points were extracted as contribution to peacebuilding.

(1) Relevance:

The evaluation of the project conducted in conflict affected countries/regions confirms the appropriateness of the timing of the project commencement considering the relations with progress of peace process, and local political, security and social situations. Besides the relevance of the timing, the contribution to political and diplomatic policy of recipient country and Japan is also assessed since it is highly expected in the project related to peacebuilding.

The year that the project conducted appraisal and signed a loan agreement is the same year that a cease-fire agreement was concluded as a result of peace negotiation between the Philippines government and the MILF which started 2001. The International Monitoring Team has been dispatched since 2004. Accordingly, the commencement of the project is matched with the timing in which the peace process was in progress. The timing was also appropriate in a sense that the Philippines government could show a proof of commitment to MILF through implementing the project since it started just after the peace agreement.

In addition, Prime Minister Koizumi (then) announced “Support Package for Peace and Stability in Mindanao” when President Arroyo (then) visited Japan in December 2002. Its particular emphasis was placed on the ARMM, a region seriously affected by local strife, and thereby delayed in its development. The project served as the output of the above package. Furthermore, the project enhanced the reputation of Japan and produced diplomatic impact since the project was the first donor assisted tangible investment project in ARMM which would realize “peace dividend”. On the other hand, the modality which was taken for the project was thought to be appropriate since no other scheme was accommodated at that time.. It was the first infrastructure development project for Japan to implement in ARMM region where security was not fully restored. Considering unstable situation, the project used a loan assistance modality which can utilize local resources without Japanese consultants residing at the construction site.

(2) Impact 1: Changing from “Crossing Kamataya” to “Road of Peace”

As seen in the ex-post evaluation report, improvement of security of the project area was observed as one of impacts of the project. It is also considered as an impact from the

perspective of peacebuilding.

Before the project, the target roads were rough dirt roads in mountainous area. There was no slope protection and frequent land slide was experienced. Cars could only travel at the speed of 5-10 km/h and there were robbery and attacks by bandits and rebels. According to the local residents along the roads, they could not travel at night by car because the road condition was bad and they feared possible attacks. As stated in the report, in particular, there was a section in the southwest of Cotabato city that traffic was almost impossible due to damages caused by the past conflicts. According to the field survey conducted by the local consultants and interview to DPWH, this section was located in the mountain valley with poor visibility, so the section became "ambush point" by bandits and rebels who were hiding in the bush or waiting on the top of the hill. In fact, tragic incidents also occurred twice. Several military officers including high ranking officers from the Philippines government were killed at this section. Therefore, this section was named "Crossing Kamataya" (crossing death) by local residents. Many people avoided this section and detoured even if it took 12 hours. The roads of this section were paved and slope protections were also constructed for dangerous parts. Currently there is no obstacle for visibility and traffic can move with normal speed without fear of attacks (refer to a photo above).

The beneficiary survey to the local residents and road users revealed that 95.8% (113 out of 118 respondents) answered "yes" to the question, "Do you think the project roads have contributed to enhancing peace and security in the region?" The following reasons were raised for the answer; "In case something happens, military and police became able to come without delay, or, local residents became able to report to them" (55.7%), and "Incidents such as holds-ups and ambush were reduced" (15.9%). Accordingly, such improvement effect on security by the project also contributed to mitigation of destabilizing factors for security such as "conflict between clans" and "armed conflict by revels" which had been happened in the region. It was confirmed that the project brought impact from the perspective of peacebuilding since the local community felt safety after the project and the project contributed to realizing peace dividends. Some of local residents call the project roads as "Road of Peace". The project contributed to eliminating the fear of local residents and remains in the hearts of people.

(3) Impact 2: Enhancement of Trust to the Philippines government

Another impact that was observed is enhancement of trust to the Philippines government. One of the factors of Mindanao dispute is the economic disparity at the national level as well as at the regional level of Mindanao. It is also understood that factors for underdevelopment of Mindanao are government policy towards Mindanao and security issues caused by prolonged civil conflicts[35]. In addition, the Philippines government promoted plantation in Mindanao through encouragement of immigration from Visayan and Luzon islands based on the immigration preference policies[36] since the colonial era. Accordingly, the indigenous inhabitants and Muslim people were droved from fertile lands to remote areas where agriculture productivity was low. Muslim people who had lost their lands had to lead hard life. Accordingly, poverty rate in the regions where many Muslim and indigenous reside, especially ARMM region, became higher than other regions. Despite this situation, Mindanao has not received appropriate amount of public funds from the Philippines government. As a result, there had been delay in development of basic infrastructure including access roads to markets, and decline in agriculture productivity and farmers' income. Accordingly, feeling of distrust and dissatisfaction towards the Philippines government has been growing, and this became one of causes of the conflict.

Both DPWH and ADB analyze that the project contributed to restoring trust to the Philippines government from ARMM people who had felt marginalized from the development. Although the project was financed by Japan, it was acknowledged that the project has been implemented as a development project by the Philippines government and brought economic vitalization in the region. In addition, as seen from the above, the project was commenced just after concluding the peace agreement, therefore, it is believed that the commitment of the project became an indication of seriousness of the Philippines government towards promoting reconstruction of Mindanao.

On the other hand, the project enhanced trust between ARMM government and Philippines government according to the interviews to DPWH officers. The project was executed mainly by DPWH but activities such as compensation issue was implemented in cooperation with LGUs in ARMM region, which strengthened the relations between the two. In fact, Mayor of Maguindanao Province in ARMM region was very cooperative such as by explaining the project from his initiative at the consultation meetings. Local residents also found that the

[35] According to the JICA internal material, four reasons are pointed out for underdevelopment of Mindanao referring to the analysis done by Professor Adria. 1) Mindanao serves as supplier of materials and agriculture products, 2) the Philippines government had not responded to needs of infrastructure development, 3) the government continued agriculture centered policy, and 4) security deterioration by the conflict.

[36] Immigration into Mindanao from Visayan and Luzon islands was initiated by the policy under colonial government since 1920 and associated with plantation business headed by the US originated multinational companies. Even after the independence from the United States, the Philippines government continued to encourage impoverished people in Visayan and Luzon to immigrate into Mindanao under immigration preference policy in order to ease social unrest of them.

relations between the two governments have been strengthened by the project according to the results from the beneficiary survey. In total 99.1% of the respondents either “very much” for 66.7% or “much” for 32.4% thought the project contributed to building ties between the two, (total number of sample is 118). Traffic movement between the provinces under two governments became active by the project and cooperation between provinces has been enhanced.

There is no standard of evaluation of the project in conflict-affected countries/regions since causes of conflicts are different from country to country so as the environment surrounding of the project. It is also difficult to measure to what extent one project contributed to peacebuilding. However, the project produced impacts at the level of community on peace and stability through the improvement of security, and restoration of trust in the Philippines government. In addition, the timing was highly appropriate to commence the project from the viewpoints of peacebuilding.