Ex-Post Project Evaluation 2015: Package I-2 (the Philippines, Viet Nam)

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JAPAN INTERNATIONAL COOPERATION AGENCY

Octavia Japan, CO., LTD.

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Republic of the Philippines

FY2015 Ex-Post Evaluation of Japanese ODA Loan

"Metro Iligan Regional Infrastructure Development Project"

External Evaluator: Kenichi Inazawa, Octavia Japan Co., Ltd.

0. Summary

This project rehabilitated and widened existing roads in the Metro Iligan Regional Agri-Industrial Center (hereafter referred to as "MIRAIC") located in the province of Lanao del Norte in Mindanao Island, with a view to smoothing traffic flow. It is consistent with the regional economic development policy such as the Cagayan de Oro-Iligan Corridor Initiative and the Northern Mindanao Regional Development Plan. It is also in line with the development needs for extending road networks and with Japan's assistance policy. Thus, relevance is high. Regarding efficiency, the development of a small-scale hydropower facility which was part of original plan was deleted from the project scope. As a result, the actual project cost was lower than planned. It can be judged that scale of project's inputs related to road construction was appropriate considering the change in route during the project implementation. However, the project period was significantly longer than planned due to delays in budget allocation from the Philippine government as well as delays in construction caused by addressing higher security risks near project sites. Thus, efficiency is judged to be fair. Through field visits and interviews with Lanao del Norte District Engineering Offices and district engineering offices of the Department of Public Works and Highways (hereafter referred to as "DPWH") during this ex-post evaluation study, it was confirmed that the traffic volume increased and traffic access improved after the completion of the project as a result of the road rehabilitation and shortening the travel time to 15-20 minutes in all road sections. In addition, positive impacts were confirmed through a beneficiary survey, which showed beneficiaries' satisfaction with the roads, improvement of access and convenience, increase in transportation of agricultural products and employment opportunities. However, considering the fact that no private companies have yet invested in MIRAIC at the time of the ex-post evaluation, the effectiveness and impact are fair. No particular problems are observed in the institutional, technical and financial aspects of the operation and maintenance of this project; thus, sustainability of the project's effects is high.

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

1. Project Description

Project Location

Road Developed by this Project
(Kauswagan－Delabayan－Munai Section)

1.1 Background

The provinces of Lanao del Norte and Misamis Oriental in the northern part of Mindanao, the Philippines, are not only famous for agriculture and fishery but also an industrial complex known for food processing, the steel industry and the metal-processing industry. The government of the Philippines formulated the Cagayan de Oro-Iligan Corridor Initiative in 1991, which aimed for regional development of Cagayan de Oro City, Iligan City, which are located at the both provinces, and 19 surrounding towns. Before the start of this project, the Department of Trade and Industry (hereafter referred to as "DTI") regarded MIRAIC as one of the industrial parks that represented the above-mentioned initiative in Linamon, a suburb of Iligan City, the province of Lanao del Norte, and it was expected to be developed by the private sector. In order to attract foreign and domestic investment which the region could be benefited from, there was a need to develop infrastructure such as roads and power-generating facilities in accordance with the development of MIRAIC.

1.2 Project Outline

The objective of this project is to realize smooth traffic flows, stabilize power supply and reduce electricity costs by rehabilitating and expanding existing provincial roads and constructing small-scale hydropower plant in and around MIRAIC, the province of Lanao del Norte, thereby contributing to the promotion of industry establishment in the industrial center (MIRAIC) and to the development of local economies in the Northern Mindanao.

Loan Approved Amount/ Disbursed Amount	4,328 million yen / 3,068 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	September 1998 / September 1998
Terms and Conditions	Construction: Interest Rate 2.2% / 0.75% Repayment Period 30 years / 40 years (Grace Period 10 years) / (Grace Period 10 years) Conditions for Procurement: General Untied / Partial Untied Consulting Service: Interest Rate 0.75% Repayment Period 40 years (Grace Period 10 years) Conditions for Procurement Partial Untied
Borrower / Executing Agency(ies)	Guarantor: Government of the Republic of the Philippines / Provincial Government of Lanao del Norte
Final Disbursement Date	June 2010
Main Contractor (Over 1 billion yen)	Hanjin Heavy Industries & Construction Co., Ltd. (South Korea)
Main Consultant (Over 100 million yen)	Oriental Consultants Co., Ltd. (Japan), Pacific Consultants Co., Ltd. (Japan) / Tokyo Electric Power Services Co., Ltd. (Japan) / DCCD Engineering Corporation (the Philippines) / Filipinas Dravo Corporation (the Philippines) (JV)
Feasibility Studies, etc.	Feasibility Study on North Lanao Road Development (World Bank, December 1993) Feasibility Study on Small-Scale Hydropower Plant (USAID, March 1995)
Related Projects	None

2. Outline of the Evaluation Study

2.1 External Evaluator

Kenichi Inazawa, Octavia Japan Co., Ltd.

2.2 Duration of Evaluation Study

Duration of the Study: August 2015-September 2016

Duration of the Field Study: 31 October-14 November 2015 and
9 February-13 February 2016

2.3 Constraints during the Evaluation Study

As mentioned in Section 3.3.1 Quantitative Effects (Operation and Effect Indicators), quantitative indicators were not set during the appraisal and when the project scope was modified in this project. It should be noted that the project was evaluated based on in dicators developed during the ex-post evaluation.

3. Results of the Evaluation (Overall Rating: B[1])

3.1 Relevance (Rating: ③[2])

3.1.1 Relevance to the Development Plan of the Philippines

Before the start of this project, the government of the Philippines formulated the Cagayan de Oro-Iligan Corridor Initiative in 1991. This initiative aimed for regional development through establishing industrial parks and developing infrastructures, targeting Cagayan de Oro City, Iligan City and 19 surrounding towns.

At the time of the ex-post evaluation, the Philippine government has identified Northern Mindanao－a logistic hub for agriculture and fishery－as a center for regional economic growth and has viewed MIRAIC as a major industrial area, which is stipulated in the Northern Mindanao Regional Development Plan (2010-2020), formulated in 2009. The Philippine central government and the provincial government of Lanao del Norte has identified the development of MIRAIC and surroundings as a major task in the Northern Mindanao Updated Regional Development Plan (2011-2016), aiming to make MIRAIC a gateway for agriculture and fishery in Mindanao.

As such, the central and the provincial governments of Lanao del Norte place importance on economic development of Northern Mindanao and promotion of MIRAIC at the time of the appraisal and also at the time of ex-post evaluation. Thus, this project was consistent with the national policies and sectoral plans at the time of appraisal and also at the time of ex-post evaluation.

3.1.2 Relevance to the Development Needs of the Philippines

Before the start of this project, the DTI formulated a plan to develop MIRAIC in Linamon, a suburb of Iligan City, the province of Lanao del Norte, as a national project. At that time, MIRAIC was viewed as one of the industrial parks for the above-mentioned Cagayan de

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

Oro-Iligan Corridor Initiative. On the other hand, infrastructure such as roads, bridges and power-generating facilities were underdeveloped in MIRAIC. Thus, there was a need to pave and extend provincial roads and to stabilize power supplies through establishing power plants, thereby attracting local and foreign investment for economic benefits.

During the implementation of this project, the development of MIRAIC stagnated for political reasons[3], budget shortages of central government and deterioration of security in and around the project sites[4]. While it is difficult to say that MIRAIC is in fully fledged development at the time of the ex-post evaluation, the provincial government of Lanao del Norte has been gradually developing industrial facilities. For example, a corn drying facility (Photo 1 and Photo 2) is under construction, financed by the provincial government. This facility is expected to dry and merchandize corn produced by farmers in the surrounding areas with a view to increasing sales and profits at market places. In addition, DPWH-funded extension work is on-going for the roads constructed by this project[5]. Thus it is expected that access to other areas will further improve, promoting people's interactions and goods movement. Moreover, the provincial government of Lanao del Norte is planning to construct the hydropower plant, which was deleted from this project[6], in response to the pressing situation surrounding power supply and demand in the province[7]. The provincial government also formulated the Investment and Incentive Promotion Program in 2014 for the promotion of MIRAIC. Under this program, the introduction of privileges such as corporate tax exemption and provision of land for companies interested in setting up new businesses in MIRAIC are being considered.

The above confirms that there was a need to develop infrastructure such as roads and power facilities in MIRAIC and the province of Lanao del Norte at the time of the project appraisal and the ex-post evaluation. Therefore, it can be judged that this project is consistent with the development needs of the country both at the time of the appraisal and the ex-post evaluation.

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[3] The government of Lanao del Norte Province recognizes that the central government's support for MIRAIC, which was viewed as a flagship regional development project promoting employment before the start of this project during the Ramos Administration (1992-1998), gradually weakened following the change in administration.

[4] This is elaborated on in Section 3.2.1 Project Outputs, under Efficiency.

[5] At the time of the ex-post evaluation, a road connecting to the province of Lanao del Sur is under construction.

[6] At the time of the ex-post evaluation, a Chinese company is interested in the small-scale hydroelectric power plant facility that was excluded from this project (refer to Project Outputs under Efficiency). At present, the provincial government of Lanao del Norte and this Chinese company are jointly working on the plan. The provincial government has indicated that it would operate the facility and supply power in public-private partnership (PPP) in the near future.

[7] Refer to Section 3.3.1 Quantitative Effects under Effectiveness for data on power demand and supply in the province of Lanao del Norte.

3.1.3 Relevance to Japan's ODA Policy

The ODA Charter approved by the Cabinet in 1992 before the start of this project said that urging "attention to recipient accomplishments in democratizing, establishing market-oriented economic systems, and assuring basic human rights and freedoms" was one of the principles. It also said that priority would be placed on assisting infrastructure improvement, as this is a prerequisite for socioeconomic development. Furthermore, it was said that Japan would aim to strengthen economic institutions and to overcome constraints for sustainable growth, focusing on the need to develop economic infrastructure and strengthen industrial structures in the Country Assistance Record 1991-1998 (the Philippines).

Since this project was aimed to attract foreign and domestic companies to MIRAIC through developing infrastructure such as provincial roads and power-generating facilities it can be said that the project was in line with Japan's assistance policy including the ODA Charter.

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

Photo 1: Corn Drying Facility inside MIRAIC (being constructed by the provincial government of Lanao del Norte)

Photo 2: Inside the Corn Drying Facility

3.2 Efficiency (Rating:②)

3.2.1 Project Outputs

Table 1 shows the planned and actual outputs of this project.

Table 1: Planned and Actual Outputs of this Project

Plans at the Time of Appraisal	Actual at the Time of Ex-Post Evaluation
① Paving and widening of provincial roads, renewal of a bridge (two-lane) a. Patag－Tagoloan－Balo-i section (17.1km) (Segment 1) b. Pantao Ragat－Balo-i section (10.9km) (Segment 2) c. Kauswagan－Delabayan－Munai section (26.4km) (Segment 3)	① Paving and widening of provincial and national roads, renewal of a bridge (two-lane) a. Changed to Fatima－Tagoloan－Balo-i section (15.5km) (Segment 1) b. Changed to Linamon－Matungao－Balo-i section (19.1km)→ (New Segment 2) c. Kauswagan－Delabayan－Munai section (19.1km) (Segment 3)
② Small-scale hydropower facility (Liangan) a. In-flow type with the capacity of 11.9MW b. Facilities: power-generating facilities, diversion weir, intake facility, water pipes, surge tank, headrace, transmission line, substation and access roads	② Small-scale hydropower facility (Liangan) a. and b. → Out of the project scope[8]
③ Monitoring equipment a. Vehicles and communication equipment	③ Monitoring equipment a. Cancelled[9]
④ Consulting service a. Review of the detailed design, assisting tendering processes and supervising construction concerning the provincial roads b. Formulation of land use and development plans for the province of Lanao del Norte c. Training in Japan for officials of the provincial government of Lanao del Norte and surrounding municipalities d. Reviewing detail design for the small-scale hydropower facility, assisting tendering processes and supervising construction	④ Consulting service a. Implemented (M/M reduced) b. Implemented (M/M reduced) c. Implemented d. Only detailed design was implemented

Source: Document provided by JICA (plans at the time of appraisal), answers to the questionnaires (actual at the time of ex-post evaluation).

As shown in Table 1, the actual outputs were different from the plan at the time of the appraisal of this project. Below are the explanations of the differences for each project output:

① Paving and Widening of Provincial and National Roads, Renewal of a Bridge (Two-Lane)

[8] Although this component became out of the project scope, its implementation is being discussed under another project.

[9] Cancelled means this component was not implemented as part of this project.

One of the points of route a. (segment 1) changed from Patag to Fatima. This is because Patag, was the town of Tagoloan, and transferred to Fatima after the start of this project and the construction site changed slightly. Accordingly, the length of the road was reduced (it was approx. 1.6km shorter than planned).

Regarding b. the Pantao Ragat－Balo-i section, the plan at the time of the appraisal was changed due to: 1) this road was expected to connect to the eastern entrance of MIRAIC with a bridge, Balo-i Bridge. Although the DPWH planned to construct the bridge, it was not expected to start soon due to issues related to land acquisition along this section. 2) Observing significant dalay in MIRAIC development, the provincial government of Lanao del Norte requested the central government to prioritize the Alternative Fuel Investment Project (AFIP[10]) and received approval. Then, the provincial government put more importance on its development priority. As a result, the Linamon－Matungao－Balo-i section was judged to be a promising route because of its direct connections to AFIP site in addition to MIRAIC[11], as access roads were seen as important for AFIP promotion.

With regard to around 7km reduction in output of c. Kauswagan－Munai section, it is explained that the Philippine National Army and an anti-government armed group of Mindanao[12] began fighting around the project sites during the project implementation, which made it difficult to carry out construction. It was extremely difficult to implement the extension work beyond 19km. Thus, it excluded from the project scope. At the time of the ex-post evaluation, the DPWH is carrying out the construction of the out of the project scope's section (approx. 7km) with its own funds and the construction will complete soon.

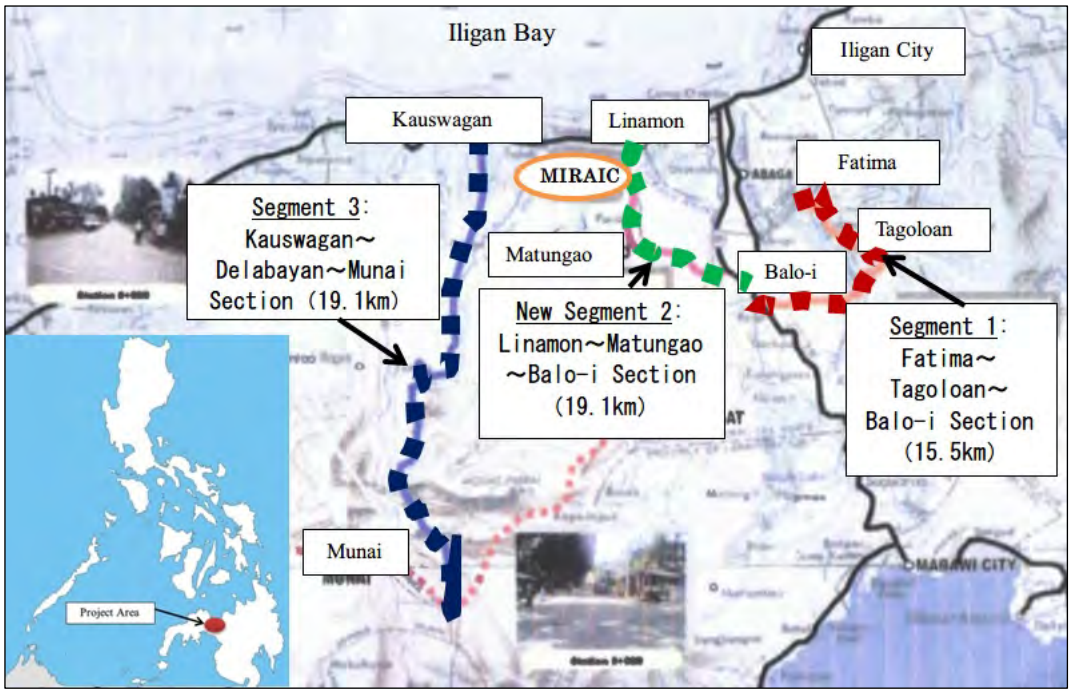
In terms of the total length of road under the project, there is not much difference between the plan at the time of the appraisal and the actual output at the time of the ex-post evaluation. (approx. 54km and 53km respectively.) Approximately 41km of road under the section a., b., and part of c., was recategorized from provincial roads to national roads before the completion

[10] While the development of MIRAIC was delayed, decisions were made to promote AFIP (in 2007) because Congress passed the Biofuel Act and the Renewable Energy Act while energy prices were shooting up. More specifically, as situations surrounding fossil fuel security were not stable in the Philippines, the need was recognized to utilize renewable and sustainable energy sources available in the country, thereby becoming less dependent on oil imports, reduce greenhouse effect gas, increase employment and improve livelihoods in the region, and to introduce alternative and/or renewable energies that do not affect ecosystems and food supply. Plantation of Jatropha (Jatropha curcas) as a biofuel material was then planned. However, at the time of the ex-post evaluation, the priority given to AFIP within the provincial government of Lanao del Norte was not as high as before. This is because energy prices gradually came down after 2007, when AFIP was very much talked about (e.g., the diesel price of 2007 was about 50 pesos per liter, which was about 30 pesos per liter at the time of the ex-post evaluation), and stable supply of fuel has become possible without planting Jatropha through the purchase of low-price fuels.

[11] When the project scope changed, it was expected that surrounding areas would benefit from further economic effects had MIRAIC and AFIP materialized.

[12] More specifically, it is the Moro Islamic Liberation Front (MILF).

of this project (June 2010). Accordingly, the operation and maintenance for the relevant roads were being managed by the DPWH and not by the provincial government of Lanao del Norte after the completion of this project. The remaining section under c (approx. 12km) is categorized as a provincial road, and the provincial government of Lanao del Norte continued to be responsible for the operation and maintenance. This arrangement was a result of discussion and mutual understanding between the provincial government of Lanao del Norte and the DPWH. It was agreed that the DPWH, having more staff and financial resources, should take on more responsibility for the necessary and timely operation and maintenance of the completed sections[13] .



Source: The provincial government of Lanao del Norte.

Figure 1: Locations of Project Sites

② Small-Scale Hydropower Facility (Liangan)

The small-scale hydropower facility became out of the project scope based on the agreement between Japanese and Philippine governments in March 2006. The reasons were as follows: 1) although its detailed design was completed in January 2006, it took longer than expected to finalize necessary documentation at the Philippine side and to build consensus among relevant

[13] According to the DPWH and the provincial government of Lanao del Norte, there was no problem with the transfer of responsibility for the 41km section and that the process went smoothly.

institutions; and 2) the Philippine government faced financial difficulty at that time and was unable to allocate necessary budget in a timely manner to complete the construction of this facility within the loan disbursement period.

③ Monitoring Equipment

This component was cancelled because the provincial government of Lanao del Norte faced financial difficulty and needed to prioritize road construction over procurement of monitoring equipment.

④ Consulting Services

As a result of the changes and reduction of the project scope described above, the inputs became less than the initial plan.

3.2.2 Project Inputs

3.2.2.1 Project Cost

While the total project cost was estimated to be 5,567 million yen at the time of the project appraisal (of which Japanese ODA Loan was 4,333 million yen), the actual total project cost was 3,650 million yen (of which Japanese ODA Loan was 3,068 million yen); thus the actual cost was 66% of the plan[14]. As mentioned earlier, the construction of small-scale hydropower facility was out of the project scope. Monitoring equipment were cancelled from this project, while the road component was partially changed and input for the consulting service was reduced. Although the road scope changed its routes during the implementation period, the output is almost as planned. Therefore, it can be said that efficiency in terms of project cost is high, considering the inputs (project cost) versus the outputs[15].

3.2.2.2 Project Period

At the time of the appraisal, the project period was planned as six years and 10 months (82 months) from September 1998 to June 2005. The actual project period was 11 years and 10

[14] Since actual land acquisition and administration cost are not clear, the total of main contract amount and consulting services fee is compared only.

[15] Since total project planned cost was not revised at the time of scope change, comparison was made between the originally planned project cost and the actual cost. The attempted calculation of planned project cost based on the revised scope is 4,333 million yen. Even in this case, the actual project cost became within the planned project cost. (84% as of plan)

months (142 months) from September 1998 to June 2010[16], which was longer than planned (173% of the plan). The main reasons for the delay are: 1) the Asian financial crisis began right after the start of this project and affected the budget approvals within the Philippine government, causing delays in selecting consultants and procurement processes; 2) the security situation of some road project sites deteriorated due to the conflict between the Philippine National Army and a guerrilla organization, which delayed construction; and 3) negotiations with landowners near the road project sites were prolonged, causing delays in land acquisition. Although the project was influenced by unpredictable factors such as revisions in the project scope, it can be said that the project lacked efficiency in terms of project period considering the outputs, particularly, in the situation that there is no major changes in total length of road under the project.

3.2.3 Results of Calculations of Internal Rates of Return (Reference only)

Economic Internal Rate of Return (EIRR)

At the time of the project appraisal, 1) the economic internal rate of return (EIRR) for the provincial road paving and widening was calculated as 16.1%, taking the reduction in automobile driving costs and the increase in agricultural production as benefits, and construction cost and maintenance cost as costs, with a project life of 20 years. 2) The financial internal rate of return (FIRR) of the small-scale hydropower facility was calculated as 16.4%, taking sales of electricity as a benefit and construction cost and maintenance cost as costs, with the project life of 50 years. At the time of ex-post evaluation, internal rates of return were not re-calculated for the following reasons: 1) the project scope significantly changed during the project implementation and EIRR is not calculated thus comparison with original and actual EIRR is meaningless, for no initial rate exists for the newly identified section; and 2) the small-scale hydropower facility became out of the project scope.

Although the project cost was within the plan, the project period exceeded it. Therefore, efficiency of the project is fair.

3.3 Effectiveness[17] (Rating:②)

3.3.1 Quantitative Effects (Operation and Effect Indicators)

[16] The completion of the project was defined as the date of completion of road construction (June 2010).
[17] Sub-rating for effectiveness is to be put with the consideration of impact.

1) Annual Average Daily Traffic Volume

Since no baseline and target were set at the time of the project appraisal, it is not possible to conduct comparative analysis of target and outcome[18]. On the other hand, Table 2 shows data on annual average daily traffic volume for the sections targeted by this project. Actual figures are available from 2012 as measured by the Lanao del Norte Provincial Engineering Office (PEO) from the provincial government of Lanao del Norte and the DPWH's District Engineering Offices, responsible for the operation and maintenance of these sections.

Table 2: Baseline, Target and Actual for Annual Average Daily Traffic Volume

(Unit: No. of vehicles per day)

Target Section	Baseline	Target	Actual		
	1998		2012	2013	2015
a. Fatima － Tagoloan － Balo-i section (15.5km)	No data	Not set	15,114*	12,478*	N/A
b. Linamon － Matungao －Balo-i section (19.1km)	No data	Not set	1,615**	1,655**	N/A
c. Kauswagan － Delabayan － Munai section (19.1km)	No data	Not set	1,851	N/A	2,018 ***

Source: Lanao del Norte Provincial Engineering Office (PEO), the DPWH's First and Second Lanao del Norte District Engineering Offices.
Note*: The point at which traffic volume was measured by the DPWH intersects with the national road near Balo-i (which is not targeted by this project and where traffic volume is large); thus these figures may not accurately reflect the traffic volumes of the sections targeted by this project.
Note**: Traffic data for the 10.8km out of this section.
Note***: Traffic data measured only for this section in 2015.There is no data for 2014.

Out of the three sections targeted by this project, it was impossible for vehicles to pass Section a. and Section c. before the start of the project. According to the DPWH's Lanao del Norte District Engineering Offices responsible for these sections, the roads were narrow, unpaved and muddy, and not like standard roads; they were mainly used by horses and cattle for transporting goods with not many vehicles seen. On the other hand, through the interviews with the provincial government of Lanao del Norte and the DPWH's District Engineering Offices and a beneficiary survey, which is discussed later in this report, it was confirmed that traffic volumes increased on all of these sections after the completion of the project in 2010.

The traffic volume of the section a. (actual) was measured where it intersects a national trunk road[19] near Balo-i; thus strictly speaking, it cannot be taken as a traffic volume of this project. Traffic volumes were not measured in the project sites. According to the DPWH's District

[18] Meanwhile, substitute data such as "changes in the number of registered vehicles" was utilized as indicators to be analyzed.
[19] National trunk road was not covered by this project. The section has relatively heavy traffic.

Engineering Office, the traffic volume reduced from 15,114 vehicles per day in 2012 to 12,478 vehicles per day in 2013 because construction was underway along the surrounding roads that connected to the national trunk road and vehicles were making a detour. Although traffic volume was not measured in 2014, the DPWH's District Engineering Office observed a 10-15% increase in traffic volume compared to 2012. According to the Office the traffic volume will continue to increase, in accordance with the population increase and economy growth in the surrounding areas.

It was confirmed through interviews with the above-mentioned offices that traffic volumes have also been increasing every year in sections b. and c. As described in Section 3.4.2.3 under Impacts, the population has been gradually increasing in the areas near the targeted sections since the completion of this project, as with more people who wished to engage in agriculture. Interviews with residents and drivers also confirmed that freight transportation of daily goods as well as agricultural products was improving, as was the access to public facilities; thus traffic volumes is expected to keep increasing.

Table 3 shows changes in the number of registered vehicles (total) and industrial trucks in the Northern Mindanao (Region X), which includes the province of Lanao del Norte, after the completion of this project. The number of registered vehicles has increased every year, and it can be presumed that the number of passing vehicles also increases. Considering the fact that the figures and trends shown in Table 3 include the number of registered vehicles in the areas targeted by this project, traffic volumes of the targeted roads are also thought to be increasing. Furthermore, taking account of the fact that the number of registered industrial trucks has also increased according to the same table, it can be presumed that an increase in traffic volumes will vitalize the social economy of the region, thereby supporting the improvement of productivity in agriculture, as one of the main industries.

Table 3: Changes in the Number of Registered Vehicles in Northern Mindanao (Region X)

(Unit: No. of vehicles)

	2011	2012	2013	2014
Registered Automobiles (Total)	219,946	226,354	246,880	264,139
Of which, Industrial Trucks	16,499	17,354	19,016	19,802

Source: The Land Transportation Office, Northern Mindanao (Region X), the Department of Transportation and Communications.

2) Travel Time

No baselines and targets were set regarding the travel time. The actual values at the time of the ex-post evaluation are shown in Table 4. Before the start of this project, it was not possible for vehicles to pass along a. Fatima－Tagoloan－Balo-i section. After the completion of the project, vehicles could travel the section in 15 minutes. As for b. Linamon－Matungao－Balo-i section, although vehicles were able to pass this road before the project, it used to take about two hours. After project completion, vehicles could travel the section in 20 minutes. Regarding c. Kauswagan－Delabayan－Munai section, it took two hours to travel from Kauswagan to Delabayan, and it was not possible for vehicles to pass along the Delabayan－Munai section. At the time of the ex-post evaluation, vehicles could travel the entire section in 15 minutes. Therefore, it can be said that vehicle accessibility has significantly improved by the road construction of the Project. All in all, it can be judged that travel time has significantly reduced in each of the targeted sections.

Table 4: Baseline, Target and Actual

(Unit: Minutes)

Targeted Section	Baseline	Target	Actual
	1998		After 2011
a. Fatima － Tagoloan － Balo-i section (15.5km)	No data.	Not set.	15
b. Linamon － Matungao － Balo-i section (19.1km)	No data.	Not set.	20
c. Kauswagan － Delabayan － Munai (19.1km)	No data.	Not set.	15

Source: Answers to the questionnaires, actual measurements during the field survey.

Photo 3: Fatima － Tagoloan － Balo-i Section

Photo 4: Linamon－Matungao－Balo-i Section

3) (Reference) Small-Scale Hydropower Facility

The effects of the small-scale hydropower facility construction were not measured in this evaluation study because it became out of project scope. For reference purposes only, data on power supply in the province of Lanao del Norte for the period of the completion of the project through the ex-post evaluation are provided.

Table 5: Data on Power Supply in the Province of Lanao del Norte

(Unit: MW)

	2008	2009	2010	2011	2012	2013	2014
Peak Power Demand	12.52	12.09	12.86	13.51	14.25	15.09	15.57
Power Supply Capacity	7.63	7.93	11.57	9.06	8.94	5.30	5.30

Source: Lanao del Norte Electric Cooperative, Inc. (LANECO).

In the province of Lanao del Norte, power supply is in a difficult situation because power demand (peak time) exceeds the power supply capacity. Meanwhile, the existing hydropower facilities are old.[20] In order to bridge the gap, the province relies on electricity purchased from other regions. Constructing the power facility that had excluded from the project scope would address the issue of stable power supply and promotion of MIRAIC[21], and therefore considered an urgent task for the province.

3.3.2 Qualitative Effects

1) Comfort of Travel through Road Construction

Through the road construction of this project, comfort of road travel has also been improved with shorter travel time. Several drivers of the three sections commented when interviewed: “It is comfortable to travel this road. I can travel to places in a short time. Transportation of goods has also become smooth.” The DPWH’s District Engineering Offices and the provincial government of Lanao del Norte were also interviewed and pointed out that it had become easy to travel within and outside of the region. Therefore, it can be presumed that road construction of this project has contributed to the improvement in terms of travel comfort within and outside the area.

[20] At the time of the ex-post evaluation, the province of Lanao del Norte mainly relied on electricity supplied by hydropower facilities along the Agus River. More specifically, hydropower stations owned by the National Power Corporation (NAPOCOR) are supplying power to this province. However, most of these facilities were constructed in 1950s to 1970s and are quite old.

[21] According to the provincial government of Lanao del Norte, introduction of such hydropower facility will enable companies and residents to benefit from cheaper electricity supply.

As part of this evaluation study, drivers and people living near the three sections targeted by this project (Fatima－Tagoloan－Balo-i, Linamon－Matungao－Balo-i and Kauswagan－Delabayan－Munai) were interviewed by using questionnaire. Drivers who have been driving in this area for more than five years and residents who have lived near the project sites for more than five years were targeted[22]. The results concerning the level of satisfaction with this project, reduction in travel time and increase in traffic volumes are shown and analyzed in Figures 2–4.

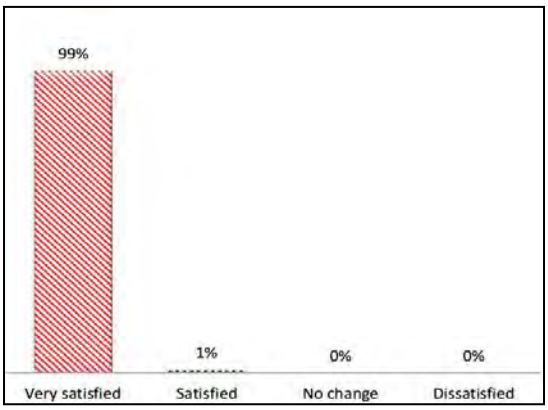


Figure 2: Are You Satisfied with this Project? (107 valid responses, residents and drivers)

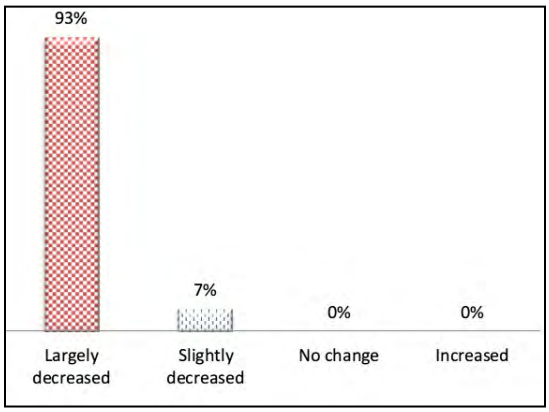


Figure 3: Do You Think Travel Time has Reduced for this Section? (107 valid responses, residents and drivers)

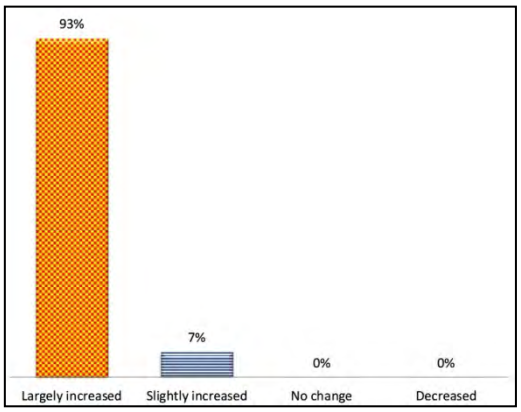


Figure 4: Do You Think that Traffic Volume has Increased in this Section after this Project? (107 valid responses, residents and drivers)

[22] The intention was to measure effects and impacts by interviewing those who would know the difference between before and after the project. The target respondents of 107 were selected from the surrounding seven Barangays (local village) of the three sections of the project. The respondents were: (1) residents: (sex) 27% male, 73% female; (age) 32% were 15-30 years old, 34% were 31-45 years old, 24% were 46-60 years old, and 10% were 61 or older; (occupation) 48% agriculture, 27% housewife, 11% public servant, 7% business owners, and 7% unemployed; (residency period) average 25.6 years. (2) Drivers: (sex) 100% male, 0% female; (age) 18% were 15-25 years old, 31% were 26-35 years old, 22% were 36-45 years old, 9% were 46-55 years old, and 20% were 56 or older; (driving experience) on average 14.6 years of driving experience. Samples were targeted to residents and drivers of the three sections, and respondents were interviewed using a questionnaire at local Barangay's community centers. Residents and drivers do not overlap.

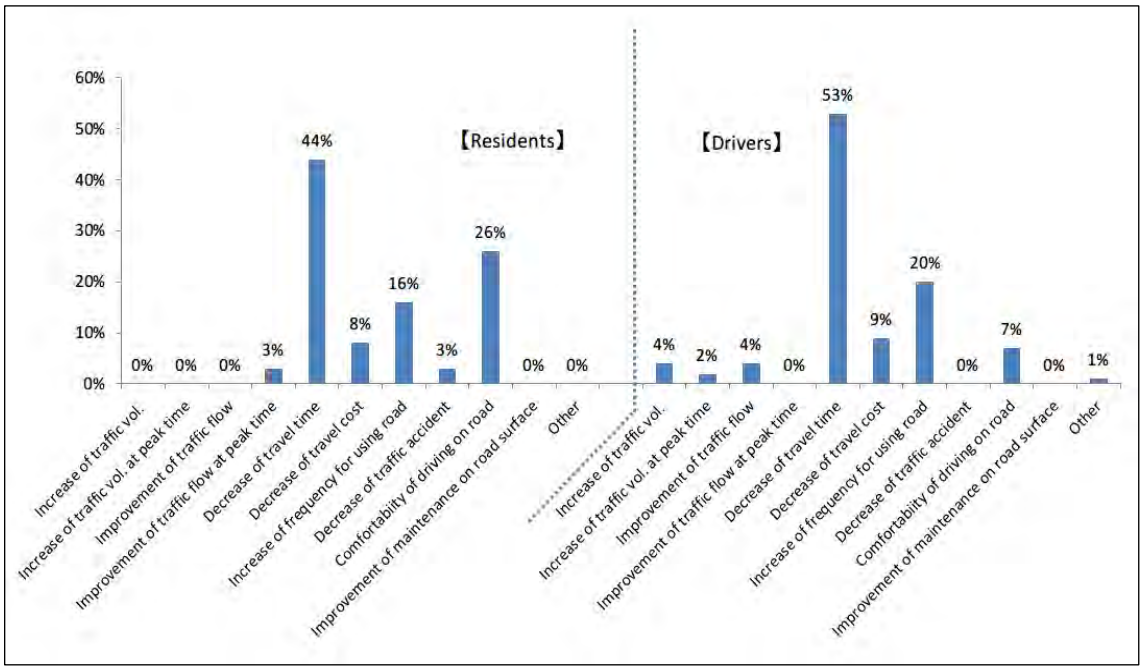


Figure 5: What is the Most Prominent Effect of this Project?
(Number of valid responses: 62 residents and 45 drivers)

As shown in Figure 2, the levels of satisfaction with this project were generally high among the residents and drivers. Furthermore, as shown in Figure 3 and Figure 4, the majority said that traffic volumes have increased and travel time has reduced, suggesting that effects that were intended by this project through road construction have been achieved. Figure 5 shows the most prominent effect observed in relation to road construction. Many respondents pointed out the reduction in travel time and more frequent use of the road. Based on these answers, it can be judged that convenience of transportation has been high and accessibility around the project sites has also improved.

2) Training in Japan (as part of Consulting Services)

Training was organized in Japan for the provincial government staff of Lanao del Norte as part of the consulting services of this project. The training was planned just after the project started, and five people from the provincial government of Lanao del Norte participated in 2002. The training was for two months. It covered tendering processes and the management procedure concerning road construction, the promotion of local products (publicizing locally produced products, such as the One Village, One Product movement), business matching and field visits to road construction sites. Interviews were conducted with the people who participated in the training. There were a few comments such as: “There are opportunities to utilize the experiences

we gained through this training in relevant divisions, including public relations and industrial development. We hope to contribute to promoting MIRAIC and attracting companies to MIRAIC in the future." Based on these comments, it can be judged that the staff members promoted better understanding of road projects and promotion of local products through participation of this training, and it can be presumed that the experience will be utilized for the progress of MIRAIC.

3.4 Impacts

3.4.1 Intended Impacts

3.4.1.1 Contribution to the Regional Economy and Social Development

① Qualitative Effects

Using the method described in Section 3.3.2 Qualitative Effects, a beneficiary survey was conducted to assess the impact of this project. In this survey questions were asked in relation to improvements in transportation of agricultural products, public transportation services, employment opportunities and living conditions through this project. The results are shown in Figures 6-9.

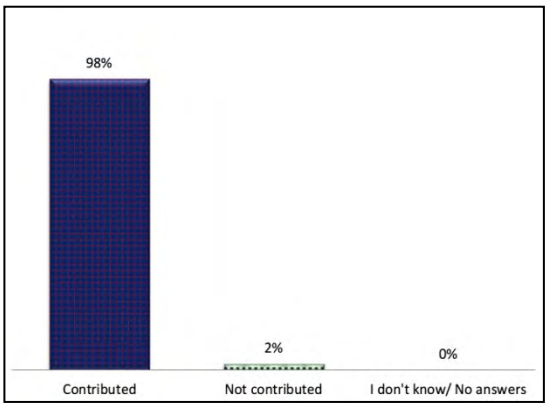


Figure 6: Do You Think this Project Contributes to Increase Transportation of Agricultural Products? (45 valid responses, only drivers)

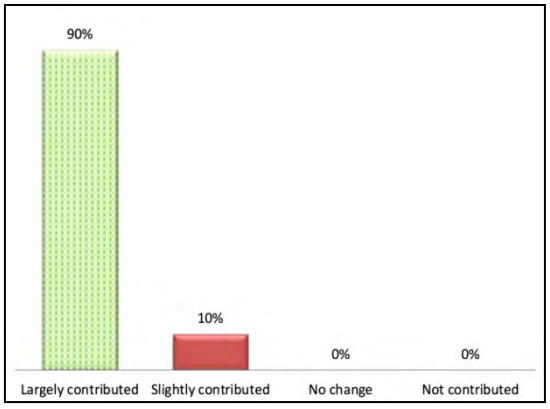


Figure 7: Do You Think this Project Contributes to the Improvements of Public Transport Service (e.g., Public Buses) in Terms of Frequency and More Routes? (62 valid responses, only residents)

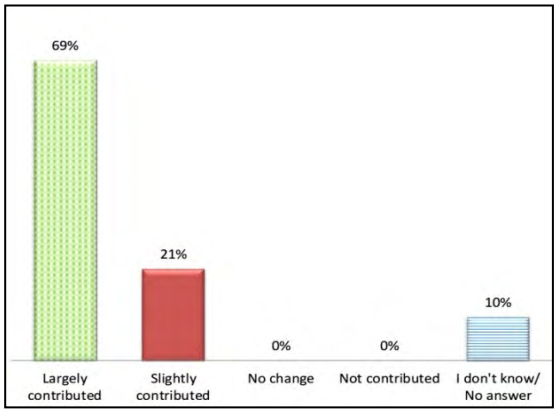


Figure 8: Do You Think this Project Contributes to the Increase in Employment Opportunities?
(62 valid responses, only residents)

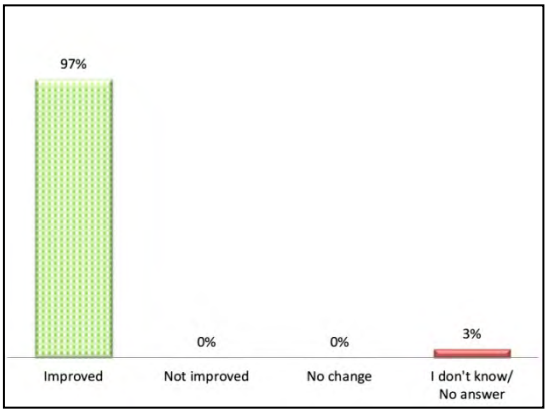


Figure 9: Do You Think the Quality of Life Improved After the Completion of this Project Compared to Before?
(62 valid responses, only residents)

As shown in Figures 6-8, impacts of road construction include the project's contribution to the increase in transportation of agricultural crops, more frequent and better routes for public transport services (e.g., public buses), and an increase in employment opportunities. Furthermore, as shown in Figure 9, a high percentage of local residents felt their quality of life improved after the completion of this project. More specifically, household income and security have improved and that interactions between neighbors have been promoted; thus, it can be presumed that the road construction of this project has contributed to such improvements.

② Quantitative Effects

Table 6 shows data on main agricultural production in Northern Mindanao from the completion of this project until the ex-post evaluation. The main agricultural crops of the Northern Mindanao (Region X), including the province of Lanao del Norte, are corn, coconuts, rice and coffee beans. The production of all of these crops has increased during the period except for coffee beans in 2012 and rice and corn in 2013[23]. Although it is difficult to prove if this project directly caused such changes, it is possible to think that it made the transportation of agricultural inputs such as seeds, seedlings and fertilizer easier, reduced the cost of transporting agricultural products, and supported gradual improvements in agricultural productivity.

[23] The reason for the drop between 2012 and 2013 can be a super typhoon (BOPHA or Pablo), which directly hit Mindanao at the end of 2012.

Table 6: Production Amount about Main Agricultural Crops of Northern Mindanao (Region X)

(Unit: tons)

Agricultural Crop	2009	2010	2011	2012	2013	2014
Rice	583,297	586,442	610,990	637,348	490,367	713,764
Corn	1,170,624	1,153,239	1,212,208	1,228,754	1,185,036	1,196,542
Coconuts	1,743,338	1,757,165	1,745,950	1,816,570	1,816,577	1,838,405
Coffee Beans	6,016	5,857	5,858	5,225	5,335	5,415

Source: The Bureau of Agricultural Statistics (BAS).

Table 7 shows average annual household income[24] in the Northern Mindanao (Region X), including the province of Lanao del Norte, for reference purposes. It can be observed that the income has increased over the last 10 years. It can be presumed that the road construction of this project has improved access to markets, thereby contributing to the improvement of residents' and household incomes.

(Reference) Table 7: Average Annual Household Income in the Northern Mindanao (Region X)

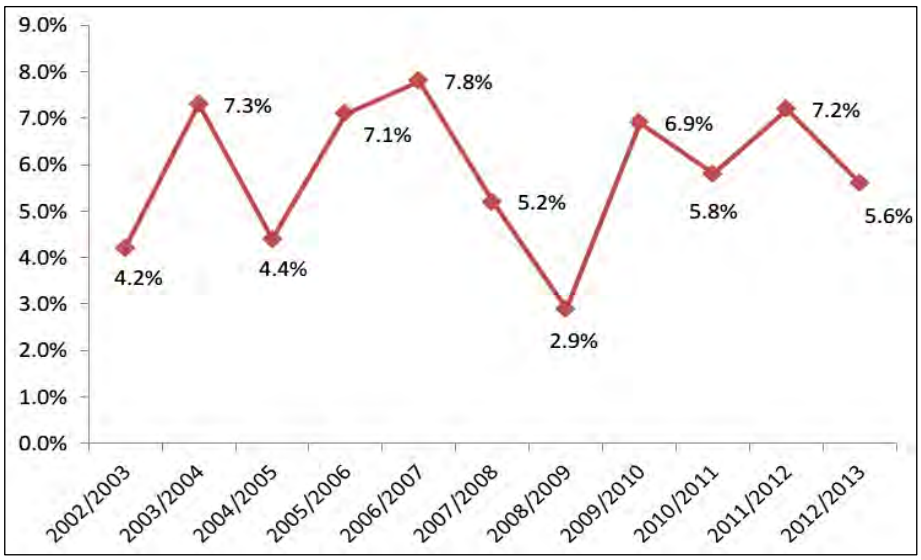
(Unit: Philippine peso)

2003	2006	2009	2012
80,397	142,000	167,000	190,000

Source: The Philippine Statistics Authority (PSA)[25].

Figure 10 shows the changes in gross regional domestic product (GRDP) growth in the Northern Mindanao (Region X). It has been more or less higher than 5% for the last 10 years. Although it is difficult to prove if this project directly caused it, it can be presumed that the project contributed to the vitalization of the regional economy.

[24] The main industry of the Northern Mindanao, including the areas targeted by this project, is agriculture.
[25] PSA conducts survey on average household income every three years.



Source: The Philippine Statistics Authority (PSA).

Figure 10: Gross Regional Domestic Product (GRDP) Growth Rate of the Northern Mindanao (Region X)[26]

(Progress of MIRAIC and the Relationship with this Project)

The corn drying facility mentioned in Section 3.1.2 (Relevance to the Development Needs of the Philippines) is being constructed at the time of the ex-post evaluation, using funds from the provincial government of Lanao del Norte. The provincial government expects the construction and operation of this facility, which addresses the needs of farmers, will lead to the promotion of MIRAIC and attract private companies to the region. According to the DTI Iligan Office, there is a wood processing (furniture) factory and a coconut cake factory near MIRAIC, which are both expanding. If they grow further, it is possible these factories may move to MIRAIC in the future. Considering the trends of recent years, while the roads constructed under this project have not directly affected the number of companies doing businesses in MIRAIC at the time of the ex-post evaluation, it is possible the markets for agricultural products will expand and the number of companies in MIRAIC will increase, thereby vitalizing the economy of the province of Lanao del Norte.

3.4.2 Other Impacts

3.4.2.1 Impacts on the Natural Environment

It has been confirmed through the questionnaires and interviews with the provincial government of Lanao del Norte and the DPWH's District Engineering Offices that there were no

[26] The drops during 2007-2009 are presumably due to the global financial crisis.

negative impacts on the natural environment, including air pollution, noise and vibrations during project implementation and after the completion of this project[27].

3.4.2.2 Land Acquisition and Resettlement

There was no resettlement in this project. Land acquisition was necessary for the Linamon－Matungao－Balo-i section (New Segment 2). As per the law of the Philippines, the provincial government of Lanao del Norte and the municipalities were responsible in the land acquisition. More specifically, 70 people received compensation for the Fatima－Tagoloan－Balo-i section, 132 people for the Linamon－Matungao－Balo-i section, and 135 people for the Kauswagan－Delabayan－Munai section[28]. Although the land acquisition took time, it was confirmed through the questionnaires and interviews with the above-mentioned government offices that the process had finished by the time this project was completed.

3.4.2.3 Other Positive and Negative Impacts (Increase of the Resident Population near Project Sites)

Table 8 shows the actual (2000 and 2010) and estimated (2018) populations of different municipalities near the sites of this project. It can be seen from the table that population growth rate of the municipalities related to this project is generally higher than the others in the province of Lanao del Norte. The Barangay head of Balo-i commented in an interview during the field survey: “In our Barangay the population has increased at least by 30-40% after completion of the road in 2010. Many people came from other areas to settle here, acquired land and started agriculture.” It is thus presumed that this project has contributed to the increase in number of settlers and the number of people engaged in agriculture.

[27] Barangay heads near the project sites were also interviewed during the field visits. It was confirmed through these interviews that there had been no negative environmental impacts during the project implementation nor after project completion and that there had been no negative comments from the local residents.

[28] It was difficult to capture the amount of compensation (in some cases compensation was paid, and in other cases taxes were exempt. Furthermore, there were cases where residents provided the municipality with land free of charge. There were also smaller cases where compensation was paid for crops, trees in gardens and fences. Thus, it is extremely difficult to capture the entire picture, and data provided by the municipalities were also limited.)

Table 8: Populations of Municipalities around the Project site,
The Province of Lanao del Norte and Other Municipalities (Total)

(Unit: No. of people)

Municipality	2000 (Actual)	2010 (Actual)	2018 (Estimated)
Balo-i	38,534	50,387 (30.7%)	62,445 (62.0%)
Kauswagan	15,364	24,006 (56.2%)	34,306 (123.2%)
Linamon	14,959	17,484 (16.8%)	19,808 (32.4%)
Matungao	9,266	12,217 (31.8%)	15,241 (64.4%)
Munai	15,972	27,600 (72.8%)	42,751 (167.6%)
Tagoloan	8,233	11,674 (41.7%)	15,437 (87.5%)
Others (total)	655,795	787,370 (20.0%)	901,557 (37.4%)
The Province of Lanao del Norte (total)	758,123	930,738 (22.7%)	1,091,725 (44.0%)

Source: The National Statistics Office (NSO).
Note: Figures in brackets indicate the rate of increase (actual for 2010 and estimate for 2018) from 2000.

In addition, an official from the Philippine National Army based near the project sites commented, “I think the security situation improved in the surrounding areas due to the road opening. Mindanao anti-government armed groups used to clash with the National Army frequently before the completion of this project. However, the group’s activities became limited with the road opening, and they stepped back to the mountains. We do not know the exact number, but some of the members have left the armed group and become farmers. As the Mindanao peace process progresses, fighters are beginning to lose their motives to fight.” Based on such a comment, it can be thought that this project has made a contribution toward security improvements, promotion of discharge from the armed group and engagement in agriculture.

【Summary of Effectiveness and Impacts】

In terms of quantitative effect data, such as annual average daily traffic volumes, a comparative analysis cannot be run on actual values as baselines and targets were not set at the time of appraisal and the time of the scope change. However, through the interviews with the provincial government of Lanao del Norte and the DPWH’s District Engineering Offices, it was confirmed that traffic volumes have increased in all sections since the completion of this project

in 2010. The travel time for each section has also reduced to 15-20 minutes. Accessibility has dramatically improved, with more convenient routes and a smooth traffic flow. It was also confirmed that traffic volumes have increased and travel time has reduced through the beneficiary survey. In addition, there is an increase in transport of agricultural products and employment opportunities, the improved access and convenience. Furthermore, this project has contributed to the increase in the number of settlers, security improvements and the peace process. Nevertheless, no new companies have yet established business in MIRAIC at the time of the ex-post evaluation, which was the initial objective of the project. In other words, there is no progress in attracting private investment in MIRAIC, which is an issue that the provincial government of Lanao del Norte should continue to work on. Thus, this project has to some extent achieved its objectives. Therefore, the effectiveness and impact of the project are fair.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

The executing agency of this project is the provincial government of Lanao del Norte. Main component of this project was paving and widening roads. The DPWH is responsible for the operation and maintenance of the national roads and the provincial government of Lanao del Norte is responsible for the provincial roads. The DPWH's First and Second Lanao del Norte District Engineering Offices operate and maintain national road of 41km under the project, while the Lanao del Norte Provincial Engineering Office operates and maintains provincial road of 12km under the project.

At the time of the ex-post evaluation, the DPWH's First and Second Lanao del Norte District Engineering Offices have 119 staff members, while the Lanao del Norte Provincial Engineering Office has 96 staff members[29]. Through questionnaires and interviews with the DPWH's First and Second Lanao del Norte District Engineering Offices and the Lanao del Norte Provincial Engineering Office, it was confirmed that sufficient numbers of operation and maintenance personnel, including engineers, supervisors and workers, have been allocated. The number of staff has been increasing every year because of the increase in road construction and rehabilitation projects in the province of Lanao del Norte in recent years[30].

[29] This number includes the people responsible for the operation and maintenance of roads and bridges not targeted by this project.
[30] At the time of the ex-post evaluation, demands for road development were high and road construction is being undertaken in many places, not just in the province of Lanao del Norte but across Mindanao.

Operation and maintenance works by the above-mentioned offices include cleaning and fixing paved roads and bridges, repairing dents, removing weeds, retaining walls and slope protection and maintaining traffic signs. It was confirmed through site inspections and interviews that the offices own their machinery and properly utilize them (e.g., loaders, trucks etc.).

The reasons why the part of provincial roads under the project were categorized to national roads are as described above, and no concerns were observed in terms of operation and maintenance through interviews with the DPWH and the provincial government of Lanao del Norte. Furthermore, the DPWH's First and Second Lanao del Norte District Engineering Offices and Lanao del Norte Provincial Engineering Office share information and collaborate with one another. For example, they borrow and lend maintenance machinery such as loaders and backhoes as needed each other.

Based on the above, it is thought there are no problems in the institutional aspects of operation and maintenance.

3.5.2 Technical Aspects of Operation and Maintenance

The DPWH's First and Second Lanao del Norte District Engineering Offices and Lanao del Norte Provincial Engineering Office, which are responsible for the roads and bridges constructed by the Project, have experienced members of staff. It was confirmed that these staff members are fully aware of how to operate heavy machinery and vehicles[31].

With regard to training, a variety of courses are provided in both organizations. For example, annual training courses are held on topics such as technical inspections of bridges, maintenance, road repair, maintenance of retaining walls of roads, prevention of accidents caused by slippery road conditions and detailed engineering design. In addition, on-the-job training is implemented at each organization. Whenever a worker is recruited, on-the-job training is given so that the knowledge, skills and information about maintenance are shared in a consistent manner. Furthermore, it was confirmed through interviews with both of these organizations that maintenance manuals are in place and utilized as needed.

Based on the above, it is thought that there are no major problems in the technical aspects of the operation and maintenance of this project.

[31] Regarding the work experience of operation and maintenance staff, at Lanao del Norte Provincial Engineering Office more than 75% of its staff have experience of 10 years or more, while at the DPWH's First and Second Lanao del Norte District Engineering Offices more than 50% of the staff members have experience of 15 years or more. Therefore, it can be said the operation and maintenance is carried out by experienced staff.

3.5.3 Financial Aspects of Operation and Maintenance

The operation and maintenance budgets of the DPWH's First and Second Lanao del Norte District Engineering Offices as well as the Lanao del Norte Provincial Engineering Office are shown in Table 9.

Table 9: Operation and Maintenance Budgets for this Project (last four years)

(Unit: Thousand Philippine peso)

	2012	2013	2014	2015
The DPWH's First Lanao del Norte District Engineering Office	17,039	17,092	31,236	31,259
The DPWH's Second Lanao del Norte District Engineering Office	6,000	16,368	47,527	45,325
Lanao del Norte Provincial Engineering Office	417	417	668	584

Source: Answers of the organizations listed above.
*Note: The operation and maintenance budgets of the DPWH's First and Second Lanao del Norte District Engineering Offices indicated above are for the entire operations, while the budget of Lanao del Norte Provincial Engineering Office is only for the targeted 12km.

Management of the DPWH's First and Second Lanao del Norte District Engineering Offices and the Lanao del Norte Provincial Engineering Office commented in interviews: "Taking account of the number of road extensions and bridges, our budgets of recent years are enough for the needed work. There were some years when a smaller amount was allocated[32]; however, we do not feel that there is any particular shortage." This is presumably because sufficient budgets were recently allocated to operation and maintenance, given the high demand for road development in the province of Lanao del Norte. As discussed in Section 3.5.1 Institutional Aspects of Operation and Maintenance, the numbers of staff are increasing and according to the interviews the budgets are not of particular concern.

Therefore, it can be considered that there are no major problems in the financial aspects of the operation and maintenance of this project.

[32] The DPWH's operation and maintenance budgets are calculated by multiplying the equivalent maintenance kilometer (EMK) indicator, determined by the type of paving, status, width, traffic volumes and so on, by the EMK basic cost. Road-related budgets of the province of Lanao del Norte are also calculated yearly, based on the DPWH's EMK.

3.5.4 Current Status of Operation and Maintenance

The DPWH's First and Second Lanao del Norte District Engineering Offices and the Lanao del Norte Provincial Engineering Office carry out similar tasks related to operation and maintenance. As described above, tasks such as protection of road surface and shoulders, pavement, retaining wall and slope, maintenance of traffic signs, cleaning and weed removal are carried out daily or regularly. Both the offices develop maintenance plans and carry out their work based on the plans. It was confirmed by interviewing maintenance staff that there are no major problems at the time of the ex-post evaluation.

No major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system. Therefore, the sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project rehabilitated and widened existing roads in MIRAIC located in the province of Lanao del Norte in Mindanao Island, with a view to smoothing traffic flow. It is consistent with the regional economic development policy such as the Cagayan de Oro-Iligan Corridor Initiative and the Northern Mindanao Regional Development Plan. It is also in line with the development needs for extending road networks and with Japan's assistance policy. Thus, relevance is high. Regarding efficiency, the development of a small-scale hydropower facility which was part of original plan was deleted from the project scope. As a result, the actual project cost was lower than planned. It can be judged that scale of project's inputs related to road construction was appropriate considering the change in route during the project implementation. However, the project period was significantly longer than planned due to delays in budget allocation from the Philippine government as well as delays in construction caused by addressing higher security risks near project sites. Thus, efficiency is judged to be fair. Through field visits and interviews with Lanao del Norte District Engineering Offices and district engineering offices of the DPWH during this ex-post evaluation study, it was confirmed that the traffic volume increased and traffic access improved after the completion of the project as a result of the road rehabilitation and shortening the travel time to 15-20 minutes in all road sections. In addition, positive impacts were confirmed through a beneficiary survey, which showed beneficiaries' satisfaction with the

roads, improvement of access and convenience, increase in transportation of agricultural products and employment opportunities. However, considering the fact that no private companies have yet invested in MIRAIC at the time of the ex-post evaluation, the effectiveness and impact are fair. No particular problems are observed in the institutional, technical and financial aspects of the operation and maintenance of this project; thus, sustainability of the project's effects is high.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

・As progress of MIRAIC is limited for, the provincial government of Lanao del Norte is making efforts to attract private companies by providing incentives to potential investors. It is recommended that such efforts will be continued by providing information, publicizing, promoting in collaboration with other organizations like the DTI.

・Data on traffic volumes is not collected every year for the road sections targeted by this project. It is suggested that the DPWH's First and Second Lanao del Norte District Engineering Offices as well as the Lanao del Norte Provincial Engineering Office should regularly measure and keep the record of traffic volumes, thereby capturing the project's effects and impacts.

4.3 Lessons Learned

Necessity of Setting Quantitative Effect Indicators at Appraisal and at the Time of Project Scope Change

At the time of the appraisal and scope change, quantitative indicators and targets were not set. With a view to properly measuring project effects, it would have been necessary for JICA and the executing agency to set indicators, including baselines and targets, for the core components such as road sections and the small-scale hydropower facility (e.g., annual average daily traffic volume after project completion, travel time, net electric energy production, etc.) as much as possible, thereby making efforts to monitor the project effect based on the agreed indicators, through the mutual agreements throughout the project implementation.

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1.Project Outputs	1) Paving and widening of provincial roads, renewal of a bridge (two-lane) a. Patag ― Tagoloan ― Balo-i section (17.1km) (Segment 1) b. Pantao Ragat ― Balo-i section (10.9km) (Segment 2) c. Kauswagan ― Delabayan ― Munai section (26.4km) (Segment 3)	1) Paving and widening of provincial and national roads, renewal of a bridge (two-lane) a. Changed to Fatima ― Tagoloan ― Balo-i section (15.5km) (Segment 1) b. Changed to Linamon ― Matungao ― Balo-i section (19.1km)→(New Segment 2) c. Kauswagan ― Delabayan ― Munai section (19.1km) (Segment 3)
	2) Small-Scale Hydropower Facility (Liangan) a. In-flow type with the capacity of 11.9MW b. Facilities: power generating facilities, diversion weir, intake facility, water pipes, surge tank, headrace, transmission line, substation and access roads	2) Small-Scale Hydropower Facility (Liangan) a. and b. Out of project scope[33]
	3) Monitoring Equipment a. Vehicles and communication equipment	3) Monitoring Equipment a. Cancelled[34]
	4) Consulting Service a. Review of the detailed design, assisting tendering processes and supervising construction concerning the provincial roads. b. Formulation of land use and development plans for the province of Lanao del Norte. c. Training in Japan for officials of the provincial government of Lanao del Norte and surrounding municipalities. d. Reviewing detail design for the small-scale hydropower facility, assisting tendering processes and supervising construction	4) Consulting Service a. Implemented (M/M reduced) b. Implemented (M/M reduced) c. Implemented d. Only the detailed design was conducted.
2.Project Period	September 1998 - June 2005 (82 months)	September 1998 - June 2010 (142 months)

[33] Same as footnote 8, page 7.
[34] Same as footnote 9, page 7.

3.Project Cost Amount Paid in Foreign Currency	3,771 million yen	357 million yen
Amount Paid in Local Currency	1,999 million yen	3,293 million yen
Total	5,770 million yen	3,650 million yen
Japanese ODA Loan Portion Exchange Rate	4,328 million yen 1 PHP=3.5JPY I USD=121 JPY (As of September 1998)	3,068 million yen 1 PHP=2.19JPY I USD=110JPY (Average during the project implementation. Source: International Financial Statistics, IMF)

Republic of the Philippines

FY2015 Ex-Post Evaluation of Japanese ODA Loan

"Post Ondoy and Pepeng Short-term Infrastructure Rehabilitation Project"

External Evaluator: Kenichi Inazawa, Octavia Japan Co, Ltd.

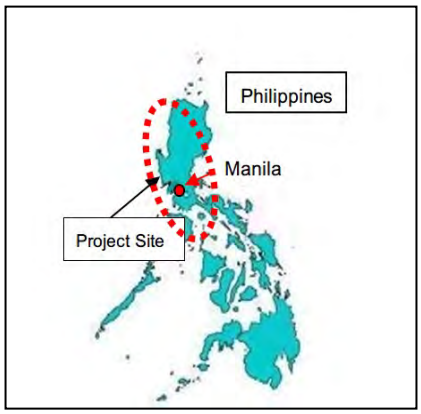
0. Summary

This project rehabilitated flood control facilities, roads and bridges in central and northern Luzon Island, which was seriously affected by the Typhoons Ondoy and Pepeng of 2009, with a view to prevent future damage and facilitate the early recovery of socioeconomic activities in the affected areas. Regarding relevance, the objectives of this project are consistent with the development policy of the Philippines at the start of this project, considering that the National Economic and Development Authority (hereafter referred to as "NEDA") held a public-private partnership dialogue to share the rehabilitation and reconstruction efforts and the private sector's initiatives, following the damage caused by Typhoon Ondoy and Pepeng. Importance was also placed on measures against climate change and natural disasters at the time of the ex-post evaluation, which is stipulated in the Philippine Development Plan (hereafter referred to as "PDP"). Furthermore, this project is also consistent with the development needs of the country, considering that at the time of the ex-post evaluation the executing agency of this project, the Department of Public Works and Highways (hereafter referred to as "DPWH"), has embarked on an initiative for timely responses of restoration in the event of natural disasters destroying infrastructures essential to people's livelihoods. Furthermore, the project is consistent with the assistance policy of the Japanese Government. Thus, relevance is high. Regarding efficiency, costs were economized as a result of competitive bidding for approximately half of the contracts for sub-projects disbursed under the special account procedure and it was possible to implement additional sub-projects. Meanwhile, the actual total project cost slightly exceeded the initial plan due to the fluctuation in exchange rates. As for the project period, each step such as tendering, contracting, commencement and completion of the construction took longer, and caused delays. Thus, efficiency is low. With regard to effectiveness and impact, flood control facilities, roads and bridges remain functional at the time of the ex-post evaluation, and meet the design specifications. It was confirmed that the risks for floods have been reduced and residents are less worried. Furthermore, a beneficiary survey revealed that the level of satisfaction with the project was high and that positive impacts such as increased and stable agricultural production were confirmed after the road constructions. Thus, the effectiveness and impact are high. Regarding sustainability, no particular problems were

observed in the institutional, technical and financial aspects of the operation and maintenance of this project; thus, sustainability of the project's effects is high.

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

1. Project Description



Project Location

Gabion Developed Along the Road
in the Mountainous Region (Benguet)

1.1 Background

Typhoon Ondoy (Typhoon Ketsana, hereafter referred to as "Ondoy") and Typhoon Pepeng (Typhoon Parma, hereafter referred to as "Pepeng") hit Central and Northern Luzon in September and October 2009. They caused strong winds, heavy rains, floods and landslides, causing serious damage to the region; 1,700 people died and more than nine million people were affected. Damage was severe in production sectors like agriculture, industry and commerce, as well as in the social sector such as housing and educational facilities. Particularly, damage was caused to infrastructures including electrical power, water and sewage, flood control/drainage/dam, transportation and communication, with total damages amounting to approx. 237 million USD. The damage caused by Ondoy and Pepeng had a serious influence on the livelihoods and economic activities of the poor, who were vulnerable to the external risks of natural disasters. Therefore, assisting rehabilitation and reconstruction works that aimed for early recovery of socioeconomic activities in the affected regions was an urgent task.

1.2 Project Outline

The objective of this project is to protect the affected areas from further damage and to facilitate early recovery of socioeconomic activities by rehabilitating the damaged flood control facilities, roads and bridges to the pre-disaster level, thereby contributing to the safety of the

affected population and to the sustainable economic development in Central and Northern Luzon which were seriously affected by Ondoy and Pepeng.

Loan Approved Amount/ Disbursed Amount	9,912 million yen / 8,134 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	April 2010 / May 2010
Terms and Conditions	Construction: Interest Rate 0.01% Repayment Period 40 years (Grace Period 10 years) Conditions for Procurement: General Untied
Borrower / Executing Agency(ies)	The Government of the Republic of the Philippines / Department of Public Works and Highways (DPWH)
Final Disbursement Date	September 2013
Main Contractor (Over one billion yen)	None
Main Consultant (Over 100 million yen)	None
Feasibility Studies, etc.	Post-Disaster Needs Assessment (hereafter referred to as "PDNA") (Philippine government and development partner led by the World Bank, November 2009)
Related Projects	【Grant Aid】 ・ 2009: "Typhoon Disaster in the Republic of the Philippines" (Emergency Grant Aid from Japan) (Emergency Grant Aid through the World Food Program of the UN (Food Aid)). ・ 2009: "Emergency Assistance for the People Affected by Typhoons in Manila Metropolitan and Province of Rizal" (Grant Assistance for Grass-Roots Human Security Projects). 【Other International Organizations】 (World Bank) ・2009: Assistance for Local Governments in response to

	Disasters (grant). ・2009: Food Crisis Response Development Policy Operation (loan). (Asian Development Bank) ・2009: Disbursement from the Asia Pacific Disaster Response Fund. (EU) ・2009: Implementation of the PDNA, emergency rescue, humanitarian assistance.

2. Outline of the Evaluation Study

2.1 External Evaluator

Kenichi Inazawa, Octavia Japan Co, Ltd.

2.2 Duration of Evaluation Study

Duration of the Study: August 2015 – September 2016

Duration of the Field Study: November 15 – November 29, 2015 and February 14 – February 23, 2016

2.3 Constraints during the Evaluation Study

As will be explained in Section 3.2.1 Project Outputs under Efficiency, this project is composed of many sub-projects[1]. With the given time and budget, it was difficult to visit all 720 sub-projects in all the areas affected by Ondoy and Pepeng. This evaluation study focused on three regions, namely the Cordillera Administrative Region (hereafter referred to as "CAR"), Region I and Region III[2], by analyzing collected information and data as well as interview and beneficiary survey results since 80% of the rehabilitated flood control facilities and 50% of the rehabilitated roads and bridges were concentrated in these regions.

Regarding the quantitative effect indicators to measure effectiveness, at the time of the appraisal it was thought that effectiveness should be measured using annual highest water level and annual largest inundation for the flood control facilities, thickness and width and loading limits for the roads and bridges as per the design specifications. However, such data were not

[1] All projects that were implemented under this project are collectively called "sub-projects".
[2] The sub-projects sites that were visited are listed at the end of this report.

collected before the start of the project or even after the completion of the project. In this evaluation study, effectiveness was judged based on the answers to the questionnaires and interviews with management officials by looking into the status of the DPWH Regional Office's (hereafter referred to as "RO") sub-projects before the disasters and after the completion of the project, and whether the rehabilitated facilities adhered to the design specifications at the time of the ex-post evaluation.

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

3.1 Relevance (Rating: ③[4])

3.1.1 Relevance to the Development Plan of the Philippines

Before the start of this project, the government of the Philippines appealed to the international community, requesting support to restore the damage caused by Ondoy and Pepeng. The Philippine government established a special national committee for public restoration and a system for restoration through public-private partnership. Furthermore, the Philippine government and international agencies such as the World Bank implemented the PDNA. The NEDA initiated a dialogue for public-private restoration support, shared the Philippine government's restoration and rehabilitation plans and initiatives of the private sector, and requested the international community to assist the post-Ondoy and Pepeng restoration efforts.

At the time of the ex-post evaluation, the government of the Philippines has formulated the PDP (2011-2016) and stipulated its policy and strategy for environment and society with a view to preventing natural disasters. This document lists the response to climate change and natural disasters and developing mechanisms for post-disaster restoration and rehabilitation as priorities. In addition, the government of the Philippines recognizes in its PDP that climate changes and the associated influences on natural disasters by the changes would lead to the expansion of poverty and lowering of environmental quality. Based on such an understanding, the Philippine government enacted the Disaster Risk Reduction and Management Act (Republic Act No. 10121).

As described above, measures were taken to respond to climate change and natural disasters in the Philippines at the time of the appraisal and at the time of the ex-post evaluation. Therefore, it can be said that this project was in line with the country's policy, such as national and sector plans.

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

3.1.2 Relevance to the Development Needs of the Philippines

Ondoy and Pepeng brought strong winds and storms, causing floods and landslides in Central and Northern Luzon. They left 1,700 people dead and more than nine million people injured. There was serious damage to the production sector including agriculture, industry and commerce, as well as to the social sector such as housing and educational facilities. In particular, there was severe damage to the infrastructure, such as the water supply and sewage, flood control/drainage/dam, transportation and communication. The total damage amounted to approx. 237 million USD. According to the PDNA, there is demand for repair and reinforcement of housing and construction of temporary housing, as well as assistance for infrastructures such as flood control facilities, roads and bridges. Therefore, Ondoy and Pepeng had serious impacts on people's daily lives and economic activities, especially the poor who are vulnerable to outside risks such as natural disasters. Thus, the restoration and rehabilitation of socioeconomic activities of the affected regions were an urgent task.

At the time of the ex-post evaluation, it can be judged that rehabilitation and restoration of flood control facilities, roads and bridges through this project have greatly contributed to stabilizing the foundations of local people's lives, as will be explained in Sections 3.3 Effectiveness and 3.4 Impacts. Furthermore, the executing agency of this project, the DPWH, adopted a policy of rapid response in 2015 in the event of natural disasters damaging infrastructures essential for people's lives. For example, if infrastructures such as flood control facilities, roads and bridges are damaged by a typhoon, the DPWH headquarters will quickly respond to regional offices' requests to conduct on-site assessment of the damage, thereby procuring contractors and disbursing budgets necessary for restoration.

As explained above, the effects of restoring and rehabilitating flood control facilities, roads and bridges through this project are clear and the government is also undertaking prompt measures. Therefore, this project can be judged to be consistent with the development needs of the country before the start of the project, as well as at the time of the ex-post evaluation.

3.1.3 Relevance to Japan's ODA Policy

Japan's Country Assistance Program for the Philippines formulated in June 2008 indicated that supporting the poor to be self-sufficient and improving their living conditions is one of the important development issues. The policy said: "Prompt emergency assistance and support for rehabilitation and reconstruction will be provided to regions which have suffered from

enormous damage from sudden natural disasters" as a measure for "protecting life from natural disasters".

Based on such policy, the Japan International Cooperation Agency (hereafter referred to as "JICA") formulated the Country Cooperation Strategy and Program for the Philippines, which said that JICA would promptly organize emergency assistance such as goods, human resources and finance in case of disasters, depending on the scale.

This project aimed to provide emergency assistance to the disaster-affected areas in the Philippines and is thus consistent with Japan's above-mentioned assistance plan and policy regarding emergency rehabilitation and reconstruction. Therefore, it can be said that the project is in line with the development policy of Japan.

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

Photo 1: Seawall Protection along the Asian Highway (Ilocos Norte, Region I)

Photo 2: Crib Wall Built along Trunk Road (Abra in CAR)

3.2 Efficiency (Rating: ①)

3.2.1 Project Outputs

After the above-mentioned PDNA confirmed that there was a need to respond to the damage of Ondoy and Pepeng, flood control facilities were restored, which included rehabilitation of shore protection works, protective walls, dikes, dams/weirs and drainage systems, as well as dredging operations. With regard to roads and bridges, slopes, abutment, piers, superstructure, retaining walls, road shoulders and disconnected roads were rehabilitated and roads were paved with asphalt. The numbers of implemented sub-projects are summarized in Table 1. This project targeted Metro Manila (hereafter referred to as "NCR") in Central Luzon, CAR, Region I, Region II, Region III, Region IV-A, Region IV-B and Region V. This project was an emergency

restoration and constructions did not require high level of technologies; thus, consultants were not recruited to assist in procurement and manage the needed construction works[5].

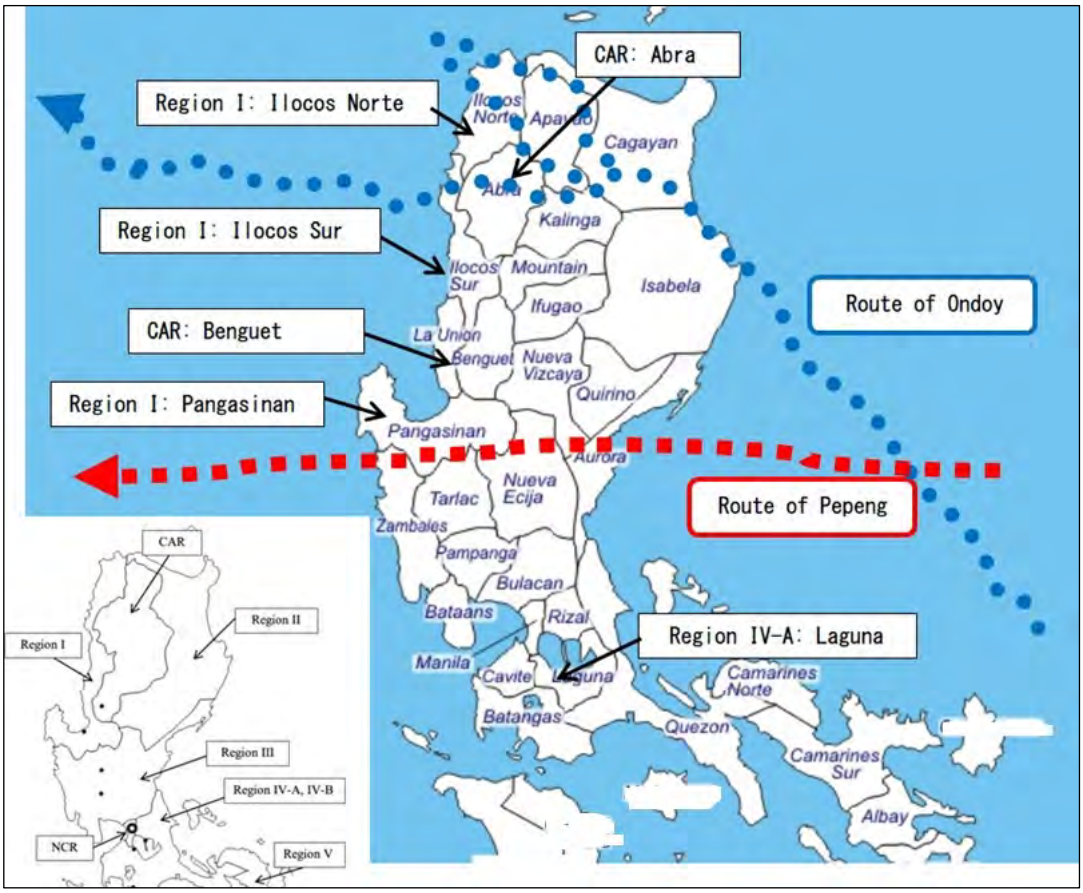


Figure 1: Route of Ondoy (red dotted arrow) and route of Pepeng (blue dotted arrow), which hit Central and Northern Luzon
(The location of each region is displayed on the lower left-hand side[6])

Table 1: Number of Sub-projects Implemented under this Project

【Flood Control Facilities】

(Unit: Number of sub-projects)

Region	Number of Sub-Projects	
	Special Account Procedure	Reimbursement Procedure
NCR	9	2
CAR	30	0
Region I	75	2
Region II	21	39
Region III	46	24

[5] On the other hand, consultants were recruited who managed the sub-projects and monitored the progress of the constructions.
[6] Photos in the main report and districts explained in the text are shown by markup balloons. This project covers all districts indicated in Figure 1.

Region IV-A	6	3
Region IV-B	7	2
Region V	0	0
Total	194 (Proportion: 73%)	72 (Proportion: 27%)

Source: Document provided by the DPWH
Note: The numbers concerning the special account procedure in the above table include 48 additional sub-projects, as will be explained in Section 3.2.2.1 Project Cost, below.

【Roads and Bridges】

(Unit: Number of sub-projects)

Region	Number of Sub-Projects	
	Special Account Procedure	Reimbursement Procedure
NCR	1	10
CAR	60	43
Region I	11	112
Region II	17	36
Region III	21	21
Region IV-A	46	34
Region IV-B	9	9
Region V	14	16
Total	179 (Proportion: 39%)	281 (Proportion: 61%)

Source: Document provided by the DPWH
Note: The numbers concerning the special account procedure in the above table include 73 additional sub-projects, as will be explained in Section 3.2.2.1 Project Cost, below.

As shown in Table 1, sub-projects on flood control, roads and bridges were conducted based on both special account[7] and reimbursement procedures[8]. The special account procedure was used for newly implemented projects using the ODA loan. On the other hand, the reimbursement procedure was applied to projects already under implementation at the time of the start of this project or were about to be implemented using the budget of the Philippine government. The ODA loan was allocated to reimburse these project costs. For either method, the number of planned projects was not fixed at the time of the appraisal; rather, they were selected and implemented based on the selection criteria after the start of the project[9]. The

[7] This is one of the disbursement methods used for loans. The borrower (the government of the Philippines) will open an account exclusively for the ODA project, and the lender (JICA) will transfer funds to the account. The borrower will withdraw the necessary funds from the account in accordance with the project's progress.
[8] This is one of the disbursement methods used for loans. The borrower (the government of the Philippines) will first use their own funds for payment and, later, the lender (JICA) will reimburse the money from the loan.
[9] The criteria were as follows. The flood control facility needed to be rehabilitated by the following rainy season and so the construction had to be completed within three months. As for the roads and bridges, the construction had to be completed by December 2011 and it had to be either a national road or a bridge managed by the country. Common criteria for the flood control facilities, roads and bridges were: (1) the infrastructure was not covered by other projects/programs supported by other donors; (2) the project does not have negative environmental impacts; (3) land acquisition does not occur; (4) resettlement does not occur and (5) priority will be given to areas where the population is concentrated.

special account procedure was applied to 73% of the flood control projects, while 27% were subject to the reimbursement procedure. Thirty-nine percent of the roads and bridges were implemented via the special account procedure, while 61% were implemented via the reimbursement procedure. Overall, 51% of sub-projects were implemented by the special account procedure and 49% by reimbursement.

Sub-projects subject to the special account procedure included those implemented as additional contracts (hereafter referred to as "additional sub-projects"). The reasons why additional projects were implemented are as follows. Since the priority of the project was to restore the damage caused by Ondoy and Pepeng as swiftly as possible, the initial plan was to select contractors for the sub-projects through single tendering. However, immediately after the start of this project, a presidential election was held in the Philippines in May 2010, and DPWH under the new administration had to revisit the policy and procedure for contractors' selection and tendering. Accordingly, it was decided that the contractors should be selected through competitive bidding instead of single tendering. As a result, the contracted project cost was lower than that in the initial plan. In other words, efficient contract negotiation led to surplus funds, which enabled the implementation of additional sub-projects[10]. On the other hand, competitive tendering of contractors required a longer time for preparation, contracting and the start and completion of the construction, causing delays. Thus it became difficult to complete the project within the initial project period.

3.2.2 Project Inputs

3.2.2.1 Project Cost

At the time of the appraisal, the total project cost was planned to be 12,086 million yen (of which 9,912 million yen was to be an ODA Loan). The actual project cost was 13,428 million yen (of which 8,134 million yen was an ODA Loan), which was slightly higher than planned (111% of the plan). As explained earlier, contractors of the sub-projects were selected through competitive tendering which minimized the construction costs. As a result, there was surplus funding to implement additional sub-projects. Although the actual project cost was almost as per the initial plan in Philippine pesos, fluctuation of the currency exchange rate[11] made the

[10] It was also true that needs for additional sub-projects kept arising from the regions given the scale of the damage caused by Ondoy and Pepeng. The NEDA held a meeting called "NEDA ICC-CC" in October 2011 to discuss the redistribution of surplus funds. After getting comments from and agreeing with JICA, the NEDA requested approval of the budget being allocated to additional sub-projects.

[11] At the time of the appraisal, 1PHP was equal to 1.86 Japanese yen. 1PHP equaled 2.07 Japanese yen on average during the project's implementation, which means that the exchange rate changed by about 11%.

total project cost slightly higher than the initial plan when converted to Japanese yen.

3.2.2.2 Project Period

At the time of appraisal, the project period was planned to be one year and eight months (20 months) from May 2010 to December 2011. In fact, the actual project period was five years and seven months (67 months) from May 2010 to November 2015, which was significantly longer than initially planned (335% of the plan). This is because the DPWH's policy for contractor selection was changed from single tendering to competitive bidding, as explained above. Consequently, many sub-projects took longer than the designated periods: completion within three months after the start of the project for the flood control projects and by December 2011 for the road and bridge projects[12]. During this ex-post evaluation study, executive members of the headquarters of the DPWH, RO and the offices responsible for the actual operation and maintenance under the RO (District Engineering Office, hereafter referred to as "DEO") were asked to answer questionnaires and be interviewed concerning the selection criteria and sub-projects' selections. The results confirmed that sites had generally been selected in accordance with the selection criteria. At the same time, it was confirmed that the delays were indeed caused by the change in the DPWH's policy on contractor selection. The higher the number of DEOs managing the sub-project (e.g., more than 8 to 10 sub-projects) and the more cross-sectional they were, the longer it took until the completion, due to factors such as coordinating among DEOs and bidding of local contractors, construction and payment of the contractors' fees. It also turned out that coordination between the DPWH headquarters and ROs and DEOs was not so efficient in some cases.

Furthermore, the fact that some sub-projects had not yet been completed (construction was ongoing) at the time of the field survey (November 2015) is prolonging the project period. More specifically, it is the construction in the Province of Laguna, Region IV-A (Calabarzon), "Marikina-Infanta Road and the Buenavista Bridge"[13]. According to the DPWH, immediately after the construction began, the need for a design change arose due to the site conditions (an unexpected geological problem). The contractor also faced difficulties in procuring the large anchorage needed to stabilize the ground, which forced them to consider redesigning. At the

[12] This means that it took longer to coordinate within the DPWH, select the contractors and complete the constructions.
[13] Package contract number is RB26. It is composed of seven sub-projects, of which five had been completed and the completion of the remaining two has been delayed.

time of the ex-post evaluation, redesigning was being explored[14].

Table 2 shows the percentages of contract packages that had been completed within the time frame specified at the time of appraisal (special account procedure only). It shows that there were many cases of delays both for the flood control and the roads and bridges.

Table 2: Percentage of Packages Completed within the Initially Planned Timeline[15]
(Planned packages using the special account procedure)

Flood Control Facilities	Roads and Bridges
Approx. 54% (26 packages were completed, as per the plan, out of 48 that had been contracted)	Approx. 29% (9 packages were completed, as per the plan, out of 31 that had been contracted)

Source: Document provided by the DPWH

3.2.3 Results of Calculations of Internal Rates of Return (Reference only)

At the time of appraisal, internal rates of returns were not calculated as the nature of this project was an emergency assistance. The rates were not calculated for the ex-post evaluation because there was no initial calculation and assumptions were not known.

Considering that the project cost exceeded the plan and that the project period significantly exceeded the plan, the efficiency of the project is low.

3.3 Effectiveness[16] (Rating: ③)

3.3.1 Quantitative Effects (Operation and Effect Indicators)

This project aimed to recover the conditions of flood control facilities, roads and bridges to the pre-disaster levels. Although it was thought preferable to measure effectiveness by using quantitative data that correspond to the design specifications, such as the highest water level and annual largest inundation for the flood control facilities and thickness/width/loading limits for the roads and bridges, such data were not collected at the start nor at the completion of this project. Nevertheless, it was confirmed through the questionnaires and interviews with management of the DPWH's ROs and DEOs that almost all facilities had been rehabilitated, minimizing the damage caused by typhoons that occurred between the completion of the project and the ex-post evaluation and remained functional. Table 3 shows the percentages of flood

[14] The time of completion is unknown at the time of ex-post evaluation.
[15] The ratios shown in Table 1 and Table 2 do not match. This is because the former is purely a percentage calculated by looking at the number of sub-projects, while the latter was calculated by comparing the number of contact packages that had been completed within the planned periods.
[16] The sub-rating for effectiveness is to be put with the consideration of impact.

control facilities, roads and bridges that are maintaining the functions and design specifications. The rates are generally high, and it can be judged that the project's effects are sustained.

Table 3: Percentages of Facilities that Are Functional and Maintaining Design Specifications at the Time of Ex-post Evaluation (November 2015)

Flood Control Facilities	Roads and Bridges
Approx. 96% (73 packages out of 76 including the additional contracts do not have any particular problem)	Approx. 95% (40 packages out of 42 including the additional contracts do not have any particular problem)

Source: Document provided by the DPWH

On the other hand, the facilities that are not sustaining the functions and design specifications are listed below:

【Flood Control Facilities】

1) Contract No. CP7 (Region I: Ilocos Norte)

A gabion-type revetment was constructed along Colioet River in Cabauran Village to control floods. According to the local DEO, the initial design specification was maintained after Pepeng and a number of typhoons and disasters that followed. However, heavy rain and flash flood during Typhoon Goni of 2015[17] caused unexpected river flow. Consequently, erosion of the riverbank's protection accelerated and the structure finally collapsed (Photo 3). At the time of the ex-post evaluation (as of November 2015), the local DEO is consulting the RO to submit a request to restore the structure and the estimated cost to the headquarters.

2) Contract No. CP47 (Region I: Pangasinan)

Dikes constructed along Bued River and Sinocalan River in Tayug were partially damaged during the typhoon and flash flood due to heavy rain in 2015. The local DEO is requesting that the headquarters restore the damage.

3) Contract No. CP49 (Region I: Pangasinan)

A dike constructed in Barangobong Village was partially damaged by the typhoon and flash water due to heavy rain in 2015. The local DEO is requesting that the headquarters restore the damage.

【Roads and Bridges】

1) Contract No. RB35 (Region I: Ilocos Sur)

The concrete blocks laid around the piers of a bridge on Amburayan River was damaged by a

[17] The Philippine name of the typhoon is Ineng. It left 33 people dead, 24 people injured, seven people missing and 5,742 houses damaged by 5 September 2015. Approximately, 318,000 people were evacuated.

series of typhoons and heavy rain in 2015. The local DEO is in touch with the RO to request restoration from the headquarters.

2) Contract No. RB26 (Region IV-A: Laguna)

Constructions of the Marikina-Infanta Road and the Buenavista Bridge in the province of Laguna, Region IV-A (Calabarzon) are delayed because of the reasons explained in Section 3.2.2.2 Project Period under Efficiency.

Briefly classifying, common features of the above-mentioned facilities: (1) they were significantly affected by the recent typhoons (particularly Typhoons Goni (August 2015) and Koppu (October 2015)) and (2) the initial design specifications were maintained until 2015 when typhoons hit the areas. With the recent trend of climate change, the frequency and size of typhoons are on the increase year after year, which may be causing damage beyond the initial prediction when the project began. In a country like the Philippines, which faces natural disasters every year, it is considered preferable to be prepared to restore damaged infrastructure, prevent further damage, assure security for the residents of affected areas and recover socioeconomic activities as swiftly as possible.

Photo 3: Gabion Fell Down due to Typhoon Koppu of 2015 (Region I: Ilocos Norte)

Photo 4: Functional Revetment Wall along the Residential Areas (Region I: Ilocos Norte)

3.3.2 Qualitative Effects

1) Assuring Security for Residents in the Affected Areas

Management of the DPWH's ROs and DEOs were interviewed during the evaluation study, and they commented: "The implemented sub-projects contribute to preventing river bank erosion and flooding during heavy rains. Particularly, people residing near the rivers are

probably less worried about flooding. The rehabilitated roads enable smooth evacuation right after a natural disaster such as typhoons. Thanks to the retaining walls constructed along the roads, people are able to pass without worrying when the weather is bad. There are fewer cases of landslides. Because there are fewer cases of flood damages, sanitary conditions have also improved, so have health situations." Judging from such a comment, it can be presumed that the sub-projects implemented under this project are contributing to safer lives of the residents, reducing the risks of floods and disasters.

2) Confirming Qualitative Effects through the Beneficiary Survey

As part of this evaluation study, a beneficiary survey[18] was conducted by selecting one site from flood control and one site from roads and bridges, selecting residents of the targeted areas (both male and female were targeted). More specifically, the survey was conducted by interviewing them on the project's effects, such as: whether the targeted facilities recovered their original functions, whether residents were less worried about floods and whether commuting became safer and less difficult. Sub-projects with the largest construction contract amounts were selected as the sites for the beneficiary survey. The survey results are shown in Figures 2 to 6. The upper bar charts represent answers regarding roads and bridges (75 valid responses) and lower bar charts represent answers concerning flood control facilities (51 valid responses). As shown in Figure 2, the levels of satisfaction are generally high, both with the flood control facilities as well as with the roads and bridges. Figure 3 was in relation to a question on whether people thought the rehabilitated facilities met the originally designed standards and were able to prevent further damage from natural disasters; the majority said that they thought so. From Figures 4 and 5, it can be observed that people residing near the sites are less worried about natural disasters and feel safer in their neighborhoods. It can be confirmed from Figure 6 that many people think that road access to schools, companies and community centers improved. Therefore, it can be seen that beneficiaries think that this project is contributing to improving security for the local residents and lowering flood risks.

[18] For flood control contract no. 15 (Restoration of damaged earth dike with protection works, Narra-San Vicente, San Manuel, Pangasinan, Region I) was selected, while for the roads and bridges, contract no. 18 (Construction of Acop-Kapangan-Kibungan Road, Benguet, CAR) was selected. The survey based on interviews was conducted by visiting and organizing gatherings. The characteristics of the respondents were as follows: (1) Flood control – 44% male, 56% female, average age 51, occupations were 52% farmers, 43% housewives, 4% students and 1% workers of private companies; (2) Roads and bridges – 90% male, 10% female, average age 49, occupations were 58% agriculture, 27% public servants, 13% others and 2% housewives.

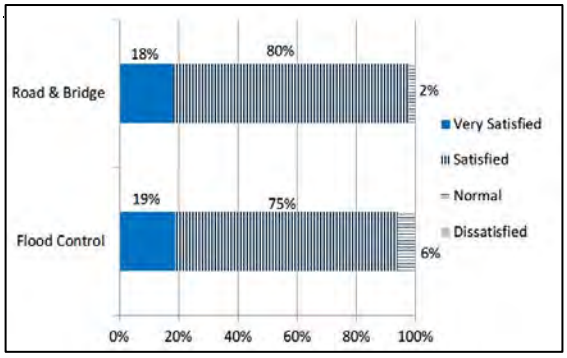


Figure 2: Are you satisfied with the facilities developed by this project?

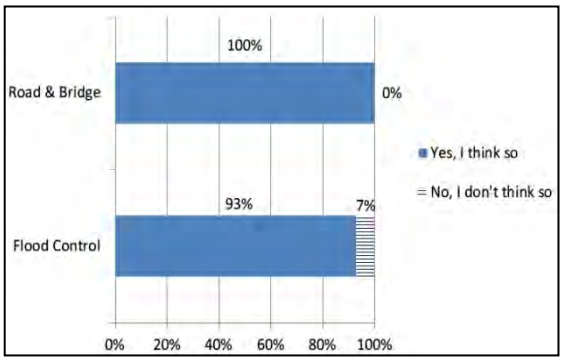


Figure 3: Do you think that the rehabilitated facilities meet the initially designed standards and that they can prevent further damage from natural disasters?

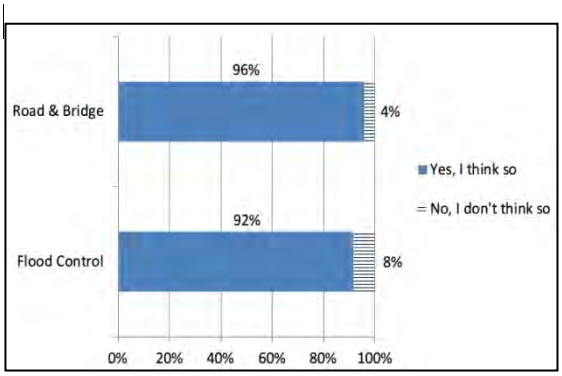


Figure 4: Do you think that you are less worried about natural disasters after this project?

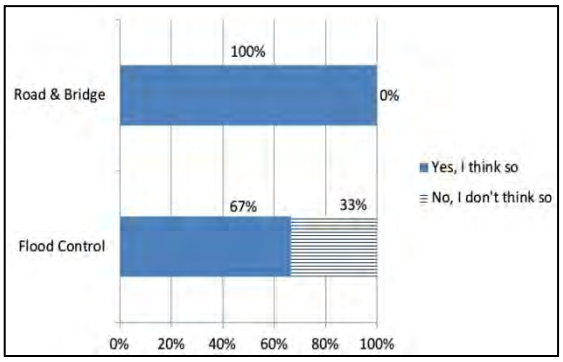


Figure 5: Do you think that local security improved after the implementation of this project?

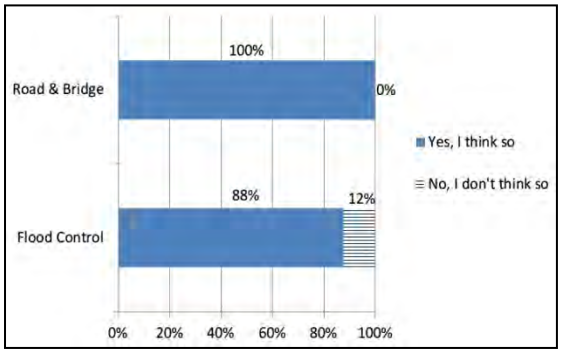


Figure 6: Do you think that access to school/company/community centers has improved after the implementation of this project?

3.4 Impacts

3.4.1 Intended Impacts

3.4.1.1 Contribution to the Regional Economy and Social Development

① Qualitative Effects

One site was selected from the flood control facilities, and another site was selected from the roads and bridges, in the same manner as the beneficiary survey[19] explained in 3.3.2 Qualitative Effects for a beneficiary survey which aimed to assess whether rehabilitated facilities contributed to stable agricultural production, improved transport of goods and better awareness about disaster prevention. The results are shown in Figures 7 to 9.

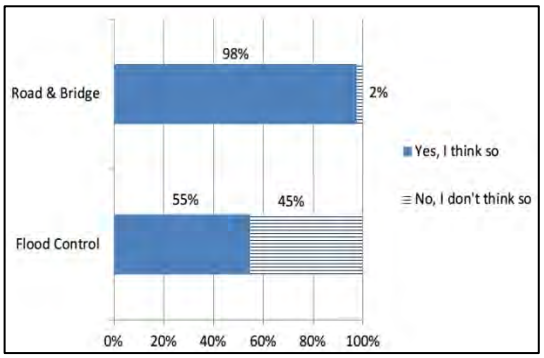


Figure 7: Do you think that agricultural production is increasing and stabilizing through the implementation of this project?

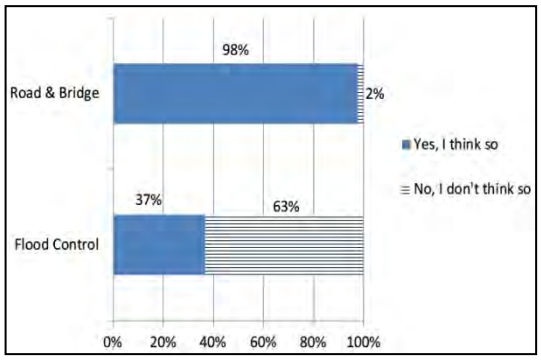


Figure 8: Do you think that living standards improved after the project completion as compared to before the start of this project?

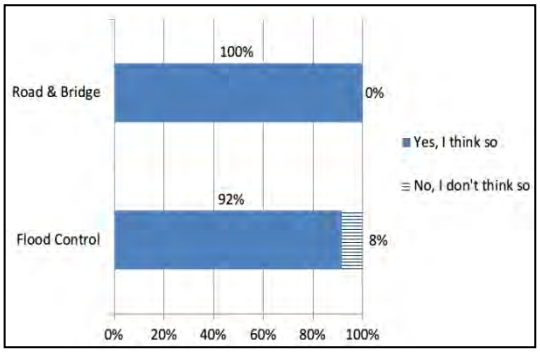


Figure 9: Do you think that your awareness about disaster prevention has improved though the implementation of this project?

Figure 7 was concerned with agricultural production in the areas. Generally, the majority think it has improved, but the percentage of people who thought so was higher for the roads and bridges. It can be confirmed that residents seem to think that roads and bridges had more

[19] The sample size, number of valid responses and characteristics of the respondents are the same as earlier.

indirect impacts on stabilizing agricultural productivity than the flood control facilities. The same was true for the question regarding living standards shown in Figure 8: a higher percentage of people thought that roads and bridges had effects on their living standards (improvement of transport access by restoration of the facilities[20]). Thus, the survey confirmed that residents felt certain impacts from the project. On the other hand, concerning awareness about disaster prevention shown in Figure 9, the majority thinks that their awareness improved both for the flood control and the roads and bridges. It can be observed that people residing near the sites have developed a better sense of crisis and awareness about disaster prevention[21] through the infrastructure development under the sub-projects. From the beneficiary survey results above, it can be judged that this project is contributing to the socioeconomic development of the targeted regions.

② Quantitative Effects

Table 4 shows the changes in gross regional domestic product (nominal GRDP) growth in the regions targeted by this project. In all regions, production has been on the increase until recently on and after the Ondoy and Pepeng typhoon. However, it is not easy to prove if this project caused the increase in GRDP because other factors must have contributed to the economy. On the other hand, the management of the DPWH RO[22] visited during the evaluation study commented in interviews on the relation between flood control facilities, roads and bridges and the local economy: “The land prices of the neighboring residential areas have stabilized or increased due to this project. New shops have been opened in places that are not so far from the rivers. Rehabilitation of the roads and bridges facilitated the movement of people and goods, realizing smooth transport of agricultural goods. Rehabilitation of the facilities is the foundation for growth of the regional economy. Had the facilities not been rehabilitated, we think that the local economy and transport of goods would have stagnated.” Therefore, it can be presumed that the contribution of this project’s rehabilitation works to the local economy is not small.

[20] The reason for the tendency of answers in Figure 7 and 8 may be that facilities of flood control may not always be perceived as giving positive influences toward living standards compared with the case of roads and bridges, which people actually utilize for daily activities or economic opportunities. Therefore, the local people may have a different perception between the two.

[21] This refers to the awareness that they should be prepared for disasters, including checking evacuation routes, places and procedures in advance.

[22] The interviewed people were three to four males and one female in CAR, Region I and Region III. Their titles were Engineer III and District Engineer.

Table 4: Gross Regional Domestic Product (Nominal GRDP)

of the Targeted Regions for the Recent Years

(Unit: Thousand PHP)

Region	2008	2009	2010	2011	2012	2013
NCR	2,740,343	2,813,802	3,224,786	3,461,448	3,823,187	4,290,630
CAR	145,790	149,450	198,504	209,516	211,961	227,925
Region I	207,409	215,073	279,787	299,315	326,639	359,707
Region II	131,905	138,872	149,564	166,150	187,748	208,547
Region III	571,165	576,550	795,503	885,869	960,983	1,018,224
Region IV-A	801,842	802,837	1,561,506	1,640,078	1,775,645	1,881,381
Region IV-B	162,400	161,986	159,091	173,610	181,355	186,762
Region V	189,139	213,099	185,857	199,312	216,675	240,303

Source: National Statistical Coordination Board

3.4.2 Other Impacts

3.4.2.1 Impacts on the Natural Environment

The sub-projects of flood control, roads and bridges acquired the "Certificates of Non-Coverage (CNC)" before the start of this project and were exempted from going through an environmental assessment. Furthermore, one of the selection criteria for the sub-projects was that it would not have negative impacts on the environment. Through the interviews with the management of the DPWH headquarters, visited ROs and DEOs, it was confirmed that there were no major problems during the implementation of the project. In addition, interviews with the visited DEOs, barangay[23] heads who represent community members residing around the sub-project sites, confirmed that there were no negative impacts on the environment (e.g., air pollution, noise/vibration and negative impacts on the ecosystem) during the project implementation, and that there were no complaints from the local residents. Regarding the environmental monitoring concerning the implemented sub-projects, the DEO's maintenance staff is patrolling on ad hoc basis. In case of a problem, the DEO addresses the issue if they can. If not, the DEO consults the RO and headquarters to address the matter. It was confirmed that there were no major problems at the time of the ex-post evaluation.

3.4.2.2 Land Acquisition and Resettlement

In this project, there were no resettlement and land acquisition. No negative impacts were observed through the interviews with the management of the DPWH headquarters, ROs and DEOs visited during the study.

[23] This is the smallest administrative division, comprising cities and towns; it is a term for a village or ward.

This project has largely achieved its objectives. Therefore, the effectiveness and impact of the project are high.

3.5 Sustainability (Rating: ③)

During this evaluation study, three major regions (CAR, Region I and Region III) where 80% of the rehabilitated flood control contract packages and 50% of the rehabilitated road and bridge contract packages concentrated were visited. Through the visits, the institutional, technical and financial aspects, and the status of the operation and maintenance, were examined. The findings are as follows:

3.5.1 Institutional Aspects of Operation and Maintenance

The executing agency of this project is the DPWH. The facilities under the jurisdiction of the DPWH, including the ones developed by the sub-projects, are operated and maintained by eight ROs and 51 DEOs[24] under the ROs in central and northern Luzon. The total numbers of staff in each region for the DEO's visited were: roughly 1,300 in the CAR, roughly 800 in Region I and roughly 900 in Region III. On the other hand, the DPWH headquarters supervise ROs and DEOs. At the headquarters, it is the Unified Project Management Office Flood Control (UPMO-FC) Management Cluster that is supervising ROs and DEOs regarding flood control issues, while it is the Bureau of Maintenance that is supervising ROs and DEOs concerning roads and bridges. Through the interviews with the management of DEOs, it was confirmed that staff shortages were not an issue. Thus, it can be judged that there is no institutional concern about DEOs[25]. Therefore, it is thought that there are no particular problems with the institutional aspects of the operation and maintenance of this project.

3.5.2 Technical Aspects of Operation and Maintenance

In general, DEOs' maintenance staff members have a rich experience, and most of them have certificates to operate heavy machinery[26]. Through the interviews with DEO staff members, it was confirmed that they were sufficiently aware of the importance of the operation and maintenance work.

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[24] In the Philippines, there exist 16 ROs and 180 DEOs.

[25] As supplementary information, road and bridge projects handled by DEOs are categorized into three classes (1st class, 2nd class and 3rd class) depending on the size of the jurisdictional areas. In principle, numbers of staff and engineers are specified for each class, with a view to preventing staff shortages.

[26] According to the Bureau of Equipment (BOE) at the headquarters, almost all operators who belong to DEOs have licenses to operate vehicles and machinery.

On the job training (OJT) is provided as needed at each DEO. Whenever new staff is recruited, such training is given; thereby maintenance techniques and skills are shared among staff members. In addition, ROs and DEOs hold training courses for their staff. For example, the DPWH held training courses techniques on flood control, evaluation of road surface and retaining walls and techniques and practice on maintenance in 2014 and 2015 for durations ranging from a few days to a few weeks. Therefore, it is observed that there are no major problems with the technical aspects of the operation and maintenance of this project.

3.5.3 Financial Aspects of Operation and Maintenance

Table 5 shows total operation and maintenance budgets of DEOs under ROs in the CAR, Region I and Region III[27].

Table 5: Operation and Maintenance Budget for the Regions Visited During the Study

(Unit: Thousand PHP)

RO	2013	2014	2015
CAR[28]	45,116	407,916	420,702
Region I	210,511	300,268	315,412
Region III	273,894	413,668	428,437

Source: Answers to the questionnaire.

No major problems were observed in the financial aspects of the operation and maintenance of DEOs in the regions visited during the study: namely, the CAR, Region I and Region III. As shown in Table 5, operation and maintenance budgets of the DEOs under ROs have been increasing every year. Basically, each DEO develops an “Annual Maintenance Program” and calculates necessary budgets for operation and maintenance works on a yearly basis, which is submitted to the DPWH headquarters via the RO. The headquarters examines the requested budgets and finalizes allocated budgets by consulting DEOs. According to the headquarters, budgets requested by DEOs have generally been approved in the last few years and that the trend is foreseen to continue in the future. If flood control facilities, roads and bridges get damaged under normal circumstances, DEOs use their budgets to address the problem.

On the other hand, if flood control facilities, roads and bridges get damaged by natural disasters such as typhoons and urgent repairs are necessary, DEOs can request calamity funds

[27] These data are based on the answers submitted by DEOs under ROs regarding a question on operation and maintenance budgets.

[28] 2013 data for CAR do not include a road maintenance budget generated from the Motor Vehicle Users' Charge (MVUC). Their budget should be larger than the amount specified in the table, but the data could not be obtained.

from the headquarters. The DEO first estimates the construction cost for the damaged facilities. The Bureau of Maintenance from the headquarters then inspects the site, evaluates the request and as necessary validates the damaged facilities/structures and recommends funding for their repair. Then, The DPWH from the headquarters is responsible for disbursing the funds to the DEO swiftly. The amounts of calamity funds received by DEOs are shown in Table 6[29]. The interviews with the headquarters and DEOs conducted during the study confirmed that such procedures and budget disbursement were handled in a timely manner[30]. Therefore, no major problems are observed in the financial aspects of the operation and maintenance of this project.

Table 6: Calamity Funds for the Areas Targeted by This Project

【CAR】

(Unit: Thousand PHP)

DEO	2013	2014	2015
Baguio City	347	35,150	N/A
Benguet 1st	N/A	31,688	27,023
Benguet 2nd	26,600	42,700	28,800
Mt. Province	N/A	85,424	17,315

Source: DPWH CAR

【Region I】

(Unit: Thousand PHP)

DEO	2013	2014	2015
Ilocos Norte I	5,000	33,192	3,784
Ilocos Norte II	N/A	148,279	N/A
Ilocos Sur I	N/A	N/A	5,480
La Union I	314	9,900	N/A
La Union II	7,926	N/A	N/A
Pangasinan I	N/A	N/A	3,782
Pangasinan II	N/A	36,000	N/A
Pangasinan III	N/A	N/A	4,188

Source: DPWH Region I

【Region III】

(Unit: Thousand PHP)

DEO	2013	2014	2015
Aurora	43,429	8,204	8,300
Bataan I	43,965	N/A	8,000
Bataan II	N/A	13,866	7,000

Sources: DPWH Region III

[29] N/A in the table means that the DEO did not receive any funds because there was no natural disaster.

[30] Before, it used to take a few months and up to one year for the funds to be disbursed. However, the average processing time has been two to three months since 2015. According to the DPWH headquarters, experiences were built around rapid site inspections and disbursement procedures when Typhoon Haiyan (Yolanda) occurred in 2013, which is presumably the reason why the processing time has improved.

3.5.4 Current Status of Operation and Maintenance

As shown in Table 3, about 96% of the flood control facilities and 95% of the roads and bridges constructed by the sub-projects under this project were maintaining the designed functions and specifications. Regarding the operation and maintenance of flood control facilities, roads and bridges in the CAR, Region I and Region III, interviews with engineers and the management of concerned DEOs, as well as site inspections, revealed that there were no concerns such as significant damage or dents. Thus, it is thought that there are no particular problems with the status of operation and maintenance at the time of the ex-post evaluation. Regarding spare parts, there were no problems observed in terms of procurement.

No major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system. Therefore, the sustainability of the project's effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project rehabilitated flood control facilities, roads and bridges in central and northern Luzon Island, which was seriously affected by the Typhoons Ondoy (the No. 16) and the typhoon Pepeng (the No. 17) of 2009, with a view to prevent future damage and facilitate the early recovery of socioeconomic activities in the affected areas. Regarding relevance, the objectives of this project are consistent with the development policy of the Philippines at the start of this project, considering that the NEDA held a public-private partnership dialogue to share the rehabilitation and reconstruction efforts and the private sector's initiatives, following the damage caused by Typhoon Ondoy and Pepeng. Importance was also placed on measures against climate change and natural disasters at the time of the ex-post evaluation, which is stipulated in the PDP. Furthermore, this project is also consistent with the development needs of the country, considering that at the time of the ex-post evaluation the executing agency of this project, the DPWH, has embarked on an initiative for timely responses of restoration in the event of natural disasters destroying infrastructures essential to people's livelihoods. Furthermore, the project is consistent with the assistance policy of the Japanese Government. Thus, relevance is high. Regarding efficiency, costs were economized as a result of competitive bidding for approximately half of the contracts for sub-projects disbursed under the special

account procedure and it was possible to implement additional sub-projects. Meanwhile, the actual total project cost slightly exceeded the initial plan due to the fluctuation in exchange rates. As for the project period, each step such as tendering, contracting, commencement and completion of the construction took longer, and caused delays. Thus, efficiency is low. With regard to effectiveness and impact, flood control facilities, roads and bridges remain functional at the time of the ex-post evaluation, and meet the design specifications. It was confirmed that the risks for floods have been reduced and residents are less worried. Furthermore, a beneficiary survey revealed that the level of satisfaction with the project was high and that positive impacts such as increased and stable agricultural production were confirmed after the road constructions. Thus, the effectiveness and impact are high. Regarding sustainability, no particular problems were observed in the institutional, technical and financial aspects of the operation and maintenance of this project; thus, sustainability of the project's effects is high.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Regarding the delayed sub-project along the Marikina-Infanta Road (package contract number: RB26) in Laguna, Region IV-A (Calabarzon), the DPWH should see to it that the construction is promptly completed, so that it can contribute to smooth road access for the areas targeted by this project.

4.2.2 Recommendations to JICA

JICA's Philippine Office has been periodically monitoring the sub-projects under this project. It is recommended that the office continues such efforts.

4.3 Lessons Learned

Emergency Assistance for a Country Prone to Natural Disasters

Emergency assistance like this project, face challenges of having to tackle multiple things simultaneously: restoring infrastructures damaged by a typhoon, preventing further damage, assuring the safety of the residents of affected areas, recovering socioeconomic activities and coordinating timely design, bidding, procurement and construction. The delays for this project did not adversely affect the project's effects and impacts. However, it is worth considering that JICA establishes a system which enables timely assistance with using the strong point of the

assistance scheme for future programs and projects (e.g., establishing a system with the only consultants hired for supervision of construction, which enables timely allocation of budgets so that constructions can begin immediately for timely recovery, tendering and contracting of packages without the use of procurement consultants, in order to shorten the processing time of recovery works if the organizational structure and capacity of the executing agency is sufficient, etc.). For a country prone to natural disasters like the Philippines, it is worth considering the use of the scheme like "Post Disaster Stand-by Loan[31]" signed in 2014, which is an emergency recovery loan developed after the completion of this project.

[31] This is a Stand-by Emergency Credit for Urgent Recovery (SECURE) scheme, which enables the country to secure a credit line for natural disasters, as loan agreements are signed beforehand so that financial needs for post-disaster recovery can be met in a timely manner.

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1.Project Outputs	1) Restoration and Rehabilitation of Flood Control Facilities: Restoration works such as shore protection, protective walls, dikes, dams/weirs and drainage systems, as well as dredging operations were implemented.	1) The implemented sub-projects are as follows; Special Account procedure is 194. Reimbursement procedure is 72.
	2) Restoration and Rehabilitation of Roads and Bridges: Restoration works such as slopes, abutment, piers, superstructure, retaining walls, road shoulders and disconnected roads were implemented and roads were paved with asphalt.	2) The implemented subprojects are as follows; Special Account procedure is 179. Reimbursement procedure is 281.
2.Project Period	May 2010 – December 2011 (20 months)	May 2010 – November 2015 (67 months)
3.Project Cost Amount Paid in Foreign Currency	32 million yen	14 million yen
Amount Paid in Local Currency	12,054 million yen	13,414 million yen
Total	12,086 million yen	13,428 million yen
Japanese ODA Loan Portion	9,912 million yen	8,134 million yen
Exchange Rate	1 PHP=1.8602JPY (As of May 2010)	1 PHP=2.07JPY (Average during the project implementation. Source: International Financial Statistics, IMF)

List of Project Sites Visited (November 16-27, 2015)

1. CP52: Seawall Protection
Place: Barangay Caruan, Pasuquin, Ilocos Norte
Contract amount: 14,117,438.23PHP
Date of visit: November 17

2. CP72: River Wall Protection
Place: Barangay Caburuan, Bacarra, Ilocos Norte
Contract amount: 14,100,460.46PHP
Date of visit: November 17

3. CP73: Earth Dike
Place: Barangay Nalbo, Laoag City
Contract amount: 3,108,815.30PHP
Date of visit: November 17

4. RB3-CAR 21: Improvement of Kennon Road[Crib Wall with Concrete Armor/Slope Protection/Retaining Wall]
Place: Barangay Camp 6, Baguio City
Contract amount: 5,812,190.71PHP
Date of visit: November 19

5. RB3-CAR 22: Crib Wall with Concrete Armor/Slope Protection/Retaining Wall
Place: Barangay Camp 7, Baguio City
Contract amount: 5,879,900.77PHP
Date of visit: November 19

6. RB3-CAR 13: Crib Wall, Grouted Riprap, Spillway
Place: Major Raine Road, Barangay Loakan, Baguio City
Contract amount: 12,833,575.00PHP
Date of visit: November 19

7. RB32-CAR 43: Gabion-type Retaining Wall
Place: Shilan-Beckel Road, Barangay Lamut, La Trinidad
Contract amount: 21,719,673.94PHP
Date of visit: November 19

8. CP37: River Protection Wall/Retaining Wall along Balili River
Place: Benguet State University, La Trinidad
Contract amount: 41,491,133.32PHP
Date of visit: November 19

9. CP 36: Drainage Canal/Box Culvert Type
Place: Barangay Balili, La Trinidad
Contract amount: 9,808,079.00PHP
Date of visit: November 19

10. RB32-CAR 42: Gabion-type, Concrete Protection Wall (mountain fell down, 115 people died on October 2009 on the onslaught on Typhoon Pepeng)
Place: Pico-Lamtang Road, La Trinidad, Benguet
Contract amount: 38,786,889.80PHP
Date of visit: November 19

11. RB3-CAR 20: Rehabilitation/Improvement of Quezon Hill: Concrete Wall (Tam-awan village, collapsed in 2009)
Place: Barangay Tam-awan, Baguio City
Contract amount: 6,536,879.40PHP
Date of visit: November 19

12. RB4: Slope Protection/Gabion Type, Ambassador's Road Section
Place: Tublay, Benguet
Contract amount: 87,102,077.56PHP
Date of visit: November 20

13. RB4: Retaining Wall/Gabion Type
Place: Atok, Benguet
Contract amount: 87,102,077.56PHP (same as above)
Date of visit: November 20

14. RB 35: Retrofitting of Amburayan Bridge
Place: Tagudin, Ilocos Sur
Contract amount: 64,868,131.95PHP
Date of visit: November 23

15. RB 35: Repair/Restoration of San Fernando-Bagulin Road
Place: Bagulin, San Fernando, La Union
Contract amount: 2,644,160.58PHP
Date of visit: November 23

16. RB 35: DELETED/Repair/Restoration of San Fernando-Bagulin Road/Bridge
Place: Bagulin, San Fernando, La Union
Contract amount: 14,974,695.56PHP
Date of visit: November 23

17. CP15: Restoration of Damaged Earthdike with Protection Works at Brgy Narra-San
Place: Vicente-San Manuel, Pangasinan [Agno River Control Project]
Contract amount: 120,264,380.90PHP
Date of visit: November 24

18. CP46: Restoration/Rehabilitation of Flood Control Facilities along Viray-Depalo
Place: Ambayaoan and Cabalisan rivers in San Quintin and San Nicolas, Pangasinan
Contract amount: 29,892,858.40PHP
Date of visit: November 25

19. RB41-RegIII-31: Mancatian Bridge, Angeles-Porac Road
Place: Pampanga
Contract amount: 39,970,137.79PHP
Date of visit: November 26

Socialist Republic of Viet Nam

FY2015 Ex-Post Evaluation of Japanese ODA Loan Project

"Vietnam Television Center Project"

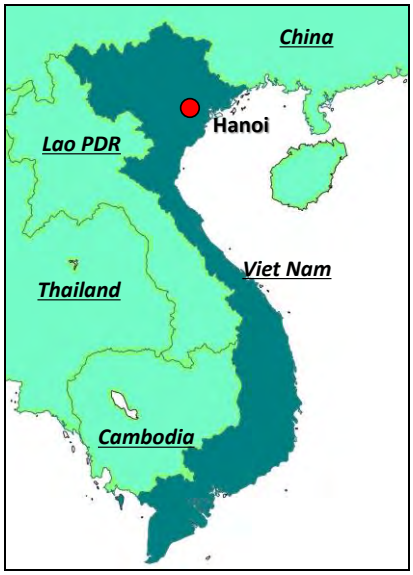
External Evaluator: Keisuke Nishikawa, Octavia Japan, Co., Ltd.

0. Summary

In this project, a television center with facilities and equipment, including studios and editing equipment, was constructed to strengthen the broadcasting capacities of Vietnam Television and to improve nationwide transmission of information. This project was consistent with the development plans and needs of Viet Nam at the time of appraisal and ex-post evaluation as well as Japan's ODA policy at the time of appraisal. Therefore, the relevance of this project is high. With regard to project implementation, although there were some changes to the broadcasting system, they were appropriate for generating project effects, and the project cost was within the plan. However, the efficiency was fair as the project period substantially exceeded the plan due to delays in administrative procedures and conflicts among the contractors. With respect to project effectiveness, the expected quantitative effects were largely achieved; the qualitative effects were sufficiently achieved as well. As for the impact of the project, positive effects on the social and economic aspects were confirmed. Therefore, the effectiveness and impact of this project are high. Regarding sustainability, there were no issues in terms of institutional, technical and financial aspects as well as the operation and maintenance status. Therefore, project effects generated in this project are considered sustainable.

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

1. Project Description



Project Location

Control Room Developed in This Project

1.1 Background

Viet Nam is a narrow country with a distance of 2,300km from north to south, and had economic, social and cultural differences between regions. Access to information from other countries had also been restricted. While the national literacy rate was high, at approximately 90%, levels of education and knowledge of the people were not necessarily high and a shortage of human resources was evident after the introduction of the market economy. Therefore, the government was faced with the need to further intensify activities in raising knowledge levels and awareness through media-based broadcasting programs particularly in rural and mountainous areas. The Viet Nam government has recognized the need of developing its science and technology to industrialize and modernize the country and of improving the knowledge level of the people for that purpose. Under these recognitions, the government has regarded TV broadcasting services as an effective means to (1) promote education on scientific technology, (2) promote equal educational opportunities, (3) disseminate knowledge on health, hygiene and family planning, (4) provide vocational education on agriculture, fisheries and so forth and (5) rectify regional disparities. However, Vietnam Television, a state-run television company, had an issue with shortages of equipment and technologies necessary to produce the programs which would expand broadcasting service hours and raise self-production ratios.

Under these circumstances, it was necessary to construct a television center for program production equipped with studios and editing equipment to transmit information as well as improve education and awareness campaigns all over the country.

1.2 Project Outline

The objective of the project was to strengthen broadcasting capacities of Vietnam Television by constructing a television center with modern production capabilities, including studios and editing equipment, thereby contributing to nationwide transmission of information as well as education and awareness campaigns.

<ODA Loan Project>

Loan Approved Amount / Disbursed Amount	19,548 million yen / 19,349 million yen	
Exchange of Notes Date / Loan Agreement Signing Date	March, 2000 / March, 2000	
Terms and Conditions	Interest Rate	1.80% (Construction) 0.75% (Consulting Services)
	Repayment Period	Construction: 30 years (10 years)

	(Grace Period)	Consulting Services: 40 years (10 years)
	Conditions for Procurement	General Untied (Construction) Bilateral Tied (Consulting Services)
Borrower / Executing Agency	The Government of the Socialist Republic of Viet Nam / Vietnam Television	
Final Disbursement Date	March, 2014	
Main Contractor	Construction: VINCI CONSTRUCTION GRANDS PROJECT (France) / Sumitomo Mitsui Construction Co., Ltd. (Japan) Construction: Hitachi Plant Technologies, Ltd. (Japan) Plant Equipment Supply and Installation: Sojitz Corporation (Japan)	
Main Consultant	NHK Integrated Technology Inc. (Japan)	
Feasibility Studies, etc.	A Feasibility Study on the development of the television center was conducted in 1997, based on a 1996 survey, subsidized by the Ministry of Posts and Telecommunications. The Engineering Service Loan (L/A amount: 598 million yen) related to this project was provided in March, 1998.	
Related Projects	<Technical Cooperation> ➢ Dispatch of Short-term Experts (March and August, 1998) ➢ Dispatch of Long-term Experts (1999 – 2000) ➢ Country Focused Training: Capacity Development Program for Vietnam Television (April, 2012 – March, 2015) ➢ Country Focused Training: Capacity Building for Vietnam Television (VTV) to enhance production of TV programs on agriculture (April, 2015 – March, 2017 (scheduled)) <Volunteer Programs> ➢ Dispatch of Short-term Volunteer: Program Production (September, 2015 – August, 2016) ➢ Dispatch of Long-term Volunteer: Program Production (July, 2016 – July, 2018 (scheduled)) <ODA Loan> ➢ Vietnam Television Center Project (E/S) (March, 1998)	

	<Grant Aid> ➢ Cultural Grant Assistance: The Project for the Improvement of TV Programs of Vietnam Television (2014 – 2015) <Other International and Aid Organizations> ➢ France: Provision of five transmitters (1994) ➢ Spain: Provision of 21 transmitters by 2002 ➢ Australia: Human resource development on broadcasting ➢ UNDP: Cooperation on family planning programs

2. Outline of the Evaluation Study

2.1 External Evaluator

Keisuke Nishikawa (Octavia Japan Co., Ltd.)[1]

2.2 Duration of Evaluation Study

This ex-post evaluation study was conducted with the following schedule.

Duration of the Study: August 2015 – October 2016

Duration of the Field Study: January 12 – 26, 2016, and April 17 – 23, 2016

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

3.1 Relevance (Rating:③[3])

3.1.1 Relevance to the Development Plan of Viet Nam

At the time of appraisal of this project, a development path for Viet Nam had been set at the Eighth National Congress of the Communist Party of Vietnam, held in 1996. In relation to this project, it was thought that the development of science and technology would be the foundation of the nation's industrialization and modernization. Therefore, the improvement of the intellectual level of the people for that purpose was thought to be imperative. In particular, vocational training and technological education were highly valued, and TV broadcasting was regarded as an effective means in terms of (1) improving scientific and technological education, (2) promoting equal educational opportunities, (3) disseminating knowledge on health, hygiene and family planning, (4) providing vocational education on agriculture and fisheries, and (5) handing down and spreading traditional culture and performance arts. Therefore, in the National Congress, a modernization of the TV broadcasting system was referred to as a major goal. Also,

[1] Joined the evaluation team of Octavia Japan Co., Ltd. as a team member from Japan Economic Research Institute Inc.

[2] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

[3] ③: High, ②: Fair, ①: Low

widening of economic disparity under rapid economic growth between urban and rural-mountainous areas was becoming a problem in Viet Nam, and the development of TV broadcasting was seen as a priority agenda to rectify this problem.

In response to these directions, Vietnam Television (hereinafter referred to as 'VTV') prepared a master plan, in which the following concrete priorities would be presented: (1) VTV Channels 1 – 3 would be separated (to expand broadcasting hours), (2) domestic program production would be raised from 30% to 50%, (3) VTV Channel 2 would be used in daytime hours, (4) the number of entertainment programs of VTV Channel 3 would be increased, (5) a unified management system of the programs of VTV regional offices would be established, (6) the ratio of self-produced TV advertisement would be raised, and (7) movies would be produced by VTV.

Regarding the development plan at the time of ex-post evaluation, in the 10-year 'Socio-Economic Development Strategy 2011-2020', adopted at the Eleventh National Congress of the Communist Party in January 2011, the Viet Nam government listed guaranteeing the rights of the people, particularly the residents in remote areas and ethnic minority regions, obtaining information and the opportunities to have access to information as one of the priorities. Education was also a priority area with a focus on ethics, lifestyle, creative skills, practical skills and entrepreneurial skills. Other educational priorities were to rapidly develop and improve the quality of education in poor, mountainous and ethnic minority areas and to expand a distance-learning education system. In the 5-year 'Socio-Economic Development Plan 2011-2015', prepared in response to the 'Socio-Economic Development Strategy 2011-2020', improvements in spiritual and material welfare of the people in ethnic minority areas were set as a development policy. As for education and training, the improvement of the quality of human resources detailed a thorough reform, while the provision of vocational training to a million workers in rural areas every year, by emphasizing the importance of vocational training and the investigation of childhood education and educational policy in mountainous areas, were also listed. Regarding TV broadcasting, the 'Media Development Master Plan' was prepared in 2013 with a target period of 2015 – 2020 in order to promote multimedia broadcasting to respond to the need for diversification of the TV broadcasting service.

As shown above, improvement in TV broadcasting was confirmed as a policy direction and positioned as a policy target at the time of appraisal of this project, and even at the time of ex-post evaluation, improvements in information transmission, narrowing regional economic disparities and educational improvements were listed as priority areas in the 10-year strategy. In the 5-year plan based on that strategy, a focus was placed on the mountainous and ethnic minority areas to improve education as well

as their living situations. Therefore, this project was consistent with the development plan at the time of appraisal and ex-post evaluation.

3.1.2 Relevance to the Development Needs of Viet Nam

At the time of appraisal of this project, there was an urgent and important agenda to develop the TV broadcasting industry in a manner that would enable timely dissemination of necessary information such as education, technology, world and domestic news as part of the government's efforts, to narrow the economic disparity between urban and remote areas, particularly in mountainous areas where ethnic minorities live[4]. However, while VTV's plan for the future estimated that the programing production equipment needed to be four times the equipment capacity at the time of planning, the actual amount of equipment in its television center was kept only in the two-story technology center which was refurbished from a warehouse, leaving no more room for enhancement of equipment capacity if the same building was to be used. In other words, there was a shortage in the programming production equipment and technologies necessary to expand broadcasting service hours and raise self-production ratios of programs.

The broadcasting service hours of VTV Channels 1 – 4, which was already providing broadcasting services at the time of appraisal, was a cumulative 45 hours a day in 2000 but 24-hour broadcasting has been realized since 2011 on every channel. Moreover, VTV added two channels to have six channels in 2011, and further introduced VTV 7 – 9 in January 2016 to have nine channels. In this way, VTV's broadcasting has made a certain level of quantitative development. However, according to the executing agency, it needed to promote multimedia broadcasting in line with the 'Media Development Master Plan' as a government-run television under the government policy, and the general quality of their programs had not sufficiently met the demand of various regions.

This project has been positioned as part of the overall VTV development master plan since the appraisal period, and the next-phase of this project was ongoing at the time of ex-post evaluation while being funded by VTV. Specifically, a 28-story studio building, outside the scope of this project, was under construction, in which VTV offices, a production studio for news programs ($180m^2$), a sound dubbing studio ($100m^2$), editing rooms, and so forth were expected to be housed in the building once completed.

Based on the above, this project, which supported the improvement of broadcasting

[4] According to 'Sekai no Tokei (World Statistics)' published by the Statistics Bureau of the Ministry of Information and Communications of Japan, the ratio of households having TVs in Viet Nam was 52.7% in 2004, but it increased to 87.8% in 2011.

capacities, can be said to have met the demand for broadcasting services both at the time of appraisal and ex-post evaluation.

3.1.3 Relevance to Japan's ODA Policy

In the 'Medium-Term Strategy for Overseas Economic Cooperation Operations' prepared by JICA in 1999, the priority areas to support the sustainable development of developing countries were listed, including support on economic structural reform, human resource development, and so on. It can be said that the support for the broadcasting sector through developing television networks was conducive to the narrowing of regional economic disparities and human resource development, which were important development agendas in Viet Nam, in that they would distribute the information related to science, technology and education to the target areas. In this way, it was observed that this project was consistent with Japan's assistance policy at the time of appraisal.

As stated above, this project aimed at improving nationwide transmission of information and educational activities by enhancing the broadcasting capacities of VTV, the state-run broadcaster, and was consistent with the policy of the Viet Nam government at the time of appraisal and ex-post evaluation. While there was a quantitative development such as an expansion of broadcasting service hours and an increase in the number of channels, it was assumed that there was still a need for qualitative improvement such as an improvement of program quality. Regarding the relationship with Japan's ODA policy, this project can be said to have been consistent with the 'Medium-Term Strategy for Overseas Economic Cooperation Operations' at the time of appraisal.

In light of the above, this project was consistent with Viet Nam's development plans, development needs and Japan's ODA policy. Therefore, the relevance is high.

3.2 Efficiency (Rating:②)

3.2.1 Project Outputs

In this project, it was planned that a five-story studio building with a floor area of 32 thousand square meters would be constructed, in which broadcasting equipment such as studio equipment, production equipment for news programs, editing equipment and integrated control equipment would be procured. Consulting services including tender assistance, construction supervision, training on program production, and so forth as well as the monitoring of social effects through broadcasted programs would also be provided. The actual scope is summarized in Table 1.

Table 1: Actual Scope of this Project

Infrastructure and Equipment Developed		Quantity
Facility	Studio ($180m^2$)	4
	News Studio ($180m^2$)	2
	News Center (open area)	1
	Studio ($350m^2$)	2
	Studio ($700m^2$)	1
	Sound Recording Studio ($350m^2$)	1
	Central Apparatus Room	1
	Sound Dubbing Studio ($100m^2$)	4
	Sound Dubbing Studio ($10m^2$)	10
	Editing Room	44
	High-Rise Studio Building	5-story
Broadcasting Equipment	Equipment for Studio 3 (News Studio, $180m^2$)	1 set
	Equipment for Studio 4 (News Studio, $180m^2$)	1 set
	Equipment for Studio 9 (News Studio, $180m^2$)	1 set
	Equipment for Studio 11 (News Studio, $350m^2$)	1 set
	Equipment for Studio 12 (News Studio, $350m^2$)	1 set
	Equipment for News Center (Weather Shooting Camera, News Server System and News Editing System)	1 set
	Equipment for Central Apparatus Room (Master Control Room, Continuity Room 1 and 2, and Signal Distribution System)	1 set
	Equipment for Television Standards Conversion Room	1 set
	Equipment for Terminal Facility Room	1 set
	Equipment for Editing Room (Non-linear Editing)	1 set
	Equipment for Editing Room (Linear Editing)	3 sets
	Equipment for Sound Dubbing Room ($100m^2$)	2 sets
	Equipment for Sound Dubbing Room ($10m^2$)	5 sets

Source: Information provided by the executing agency

According to the executing agency and the project consultant, the quantity of facilities and equipment to be constructed and/or procured through this project was as planned; but, this project was affected by a global transition from a standard definition system to a high definition system during the significant delay in the project period, as will be stated later in this report. There was a change in the specification of equipment to meet the demand for high definition digital broadcasting:

- The Master Control System itself was changed in line with a transition to the high definition digital system.
- Upgrading of the Master Control System and the signal distribution device to the high definition digital system by adding more channels.
- Introduction of high definition digital video equipment in news production studios.

With regard to the consulting services, as a tender was conducted again during project

implementation, tender assistance was provided twice. On the other hand, according to the project consultant, training for program production was substituted for training for the operation of the high definition digital equipment procured, as the production skills of VTV staff was judged to have improved during the delay period of the project. Monitoring surveys of social and economic impacts of TV programs were conducted from 2008 – 2009 in three types: 'Routine Monitoring', 'Orientation Monitoring' and 'Evaluation Monitoring', and the reports were prepared.

Exterior view of the Television Center (Floors 1 – 5 were developed through this project)

One of the studios developed through this project

3.2.2 Project Inputs

3.2.2.1 Project Cost

The cost of this project was planned to be 22,998 million yen, including 19,548 million yen in the form of ODA loan. Table 2 compares the planned and actual costs.

Table 2: Comparison of Original and Actual Project Cost (Overall cost and loan amount)

(Unit: million yen)

	Original		Actual	
	Overall cost	of which is loan amount	Overall cost	of which is loan amount
Construction	9,895	9,895	11,400	11,002
Equipment procurement	5,820	5,820	6,181	5,700
Price escalation	734	734	－	－
Consulting services	850	850	2,004	1,603
Contingencies	1,645	1,618	－	－
Interest during construction	631	631	－	1,044
Land acquisition, tax and administration, etc.	3,423	－	1,604	－
Total	22,998	19,548	21,189	19,349

Source: Data provided by JICA and the executing agency

While the project period was substantially increased, as will be described later in this report, the overall project cost was 21,189 million yen (92% of the plan), which was within the plan, together with the loan amount provided.

3.2.2.2 Project Period

This project was planned to require 42 months from March 2000 until August 2003. In fact, 168 months were required from March 2000, when the loan agreement was signed, until February 2014. Table 3 summarizes the planned and actual periods by item.

Table 3: Comparison of Original and Actual Project Period

	Original	Actual
Loan Agreement signed	March 2000	March 2000
Civil engineering work	February 2001 – June 2003	February 2001 – March 2012
Equipment procurement	February 2001 – August 2003	November 2005 – January 2014
Project completion	August 2003	February 2014
Project period	42 months	168 months

Source: Information provided by the executing agency

Note: Project completion date was defined as the exact date of handover to VTV after all the construction work was completed.

The main reasons for the substantial extension of the project period were as follows:

- A delay of three years and six months due to the time required for approval processes of resident resettlement and detailed design.
- A delay of one year and four months for a tender evaluation process. Another two-month delay for the issuance of Letter of Credit and Letter of Commencement.
- Occurrences of conflicts between the first contractor and the executing agency and between the first contractor and their sub-contractors regarding payment stipulated in the contract, which lead to the cancellation of the contract by the first contractor (2009). There was a delay of three years and ten months for construction works, including procedures for processing a contract with the new contractor. Due to this delay, the completion of equipment procurement was delayed until January 2014.

As stated above, various factors were involved in the delay of the project, which could be broadly classified into two aspects, the delay in procedure and the delay caused by the conflict among the parties concerned regarding the payment stipulated in the contract agreement. Therefore, the actual project period was 168 months (400% of the plan), significantly longer than the plan.

The outputs of this project, i.e., the quantities of facilities and equipment, were largely in line with the plan except for the change of equipment from standard definition-based ones (planned broadcasting system) to high definition digital compatible ones due to technological advancement. The project cost for the outputs were 92% of the plan. As for the project period, there was a delay of more than ten years due to the delay in procedures and the conflicts between the executing agency and the original contractor, leading to the actual period becoming 400% of the plan.

In light of the above, although the project cost was within the plan, the project period exceeded the plan. Therefore, the efficiency of the project is fair.

3.3 Effectiveness[5] (Rating:③)

3.3.1 Quantitative Effects

At the time of project appraisal, it was considered difficult to conduct a quantitative evaluation due to the nature of the project. However, a future plan regarding the broadcasting equipment to be required at the entire VTV television center was presented in the master plan at that time in response to the growing need for TV broadcasting

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

services. Therefore, the indicators in the future plan were regarded as effect indicators to be achieved in the future through project implementation, and their levels of achievement were evaluated.

Table 4: Effect Indicators of this Project

(Unit: number of hours per day, proportion (%))

Indicator	Baseline	Target	Actual			
	2000	2005	2012	2013	2014	2015
	Appraisal Year	2 Years after Completion	2 Years before Completion	1 Year before Completion	Completion Year	1 Year after Completion
Total broadcasting hours (VTV1-4)	22.5 hours	52 hours	96 hours	96 hours	96 hours	96 hours
Self-production ratio (Domestic production ratio)	30%	50%	No data			22.7%
Total hours of self-produced (domestically-produced) programs	6.75 hours	26 hours				21.82 hours
Proportion of TV advertisement	1.5%	5%	5%	5%	5%	5%
Total minutes of TV advertisement	20 minutes	156 minutes	288 minutes	288 minutes	288 minutes	288 minutes
Ratio of self-production of TV advertisement	50%	50%	No data			
Total minutes of self-produced TV advertisement	10 minutes	78 minutes				

Source: Data provided by JICA and the executing agency

As for the total broadcasting service hours, a 24-hour broadcasting service has been realized on all four channels (VTV1 – 4) since 2011, achieving the upper limit of 96 hours per day; much higher than the planned figures. The reason why the 24-hour broadcasting service has been realized in the pre-completion period of this project was that VTV received more advertisement revenues and enhanced its program production during the rapid growth of the Vietnamese economy in the 2000s. Many of the above indicators based on the master plan were improved during project implementation and the targets were largely achieved by the late 2000s. In other words, the degree of contribution from this projects which substantially delayed was not significant in quantitative terms such as improvement of the total broadcasting service hours, proportion of TV advertisements and total minutes of TV advertisements. However, this project can be said to have played a significant role in terms of: modernizing broadcasting equipment, including studios; enabling digital high-definition broadcasting, and; responding to the increase in the number of channels from 2016[6] and to the

[6] The number of VTV channels increased to six in 2011; and further, to nine from 2016.

growing demand for program production needs, while sustaining the level of indicators achieved with the standard definition system.

The ratio of self-production programming on VTV1– 4 as a whole was 22.7% (in 2015), with VTV1 (politics and economy) at 48%, VTV2 (education) at 8.3%, VTV3 (entertainment) at 19.6% and VTV4 (for overseas) at 15%. These figures show the ratios only for the first broadcasts of each self-produced program, but not the rebroadcasted programs. If the rebroadcasted programs were included, the target figures would be thought to have been achieved as the self-production ratio of VTV would rise to higher than 80%. Meanwhile, the total hours of self-produced programs are 21.82 hours, reaching 83.9% of the initially planned 26 hours.

The upper limit of the ratio of self-produced TV advertisements has been set at 5% of the total broadcasting service hours according to VTV's regulations, and the actual broadcasting hours are up to 5%. Therefore, the total broadcasting hours of TV advertisements on VTV1 – 4 are 288 minutes (96 hours times 5%). TV advertisements are often produced outside VTV by the sponsors themselves, and there are few TV advertisements produced by VTV. On this matter, it was not felt that VTV was of the view that the ratio of self-produced TV advertisements needed to be increased.

As stated above, while some of the data were not available, it was confirmed that the development effects of this project were sufficiently generated as the broadcasting hours increased; a number of programs were self-produced; and the indicators were positive even after the system was changed to the high definition digital one. Regarding the advertisement programs, sponsors were secured and the maximum broadcasting hours were utilized. Production of advertisement programs was not included in the evaluation judgement as it was not necessarily essential to produce them within VTV as commented by them.

In this ex-post evaluation, recent figures of related indicators in addition to the ones above were obtained, as shown in Table 5.

Table 5: Indicators Related to TV Broadcasting

Indicator	Actual			
	2012	2013	2014	2015
	2 Years before Completion	1 Year before Completion	Completion Year	1 Year after Completion
Number of TV channels	6	6	6	6
Length of interference with broadcasting (hours / year)	0	0	0	0
TV service coverage ratio	100%	100%	100%	100%
Number of broadcasting hours of educational programs (per week)	168	168	168	168
Number of disaster prevention programs (per year)	30	30	53	79
Number of environmental conservation programs (per year)	44	44	52	54
Number of public health-related programs (per year)	420	416	416	214
Number of economy-related programs (per year)	1,125	1,164	1,200	880
Number of programs targeting ethnic minority groups (per year)	1,790	1,870	1,934	1,880
Number of programs targeting women (per year)	84	88	95	150
Number of programs targeting children (per year)	468	467	370	350

Source: Data provided by the executing agency
Note: The number of programs indicates the figures which are a sum of all the broadcasted programs, regardless of producers.

The length of interference with broadcasting is an important indicator, of which no instances have occurred since 2011, indicating that programs have been provided in a stable manner. Also, the TV service coverage[7], which was 57% in 1998 before the commencement of this project, has achieved 100% on the basis of population, and it is considered that regional disparities in TV broadcasting services have been eliminated.

One of the objectives of this project was to improve educational levels by enhancing TV broadcasting services. Regarding this point, the broadcasting hours of educational programs are 168 hours per week through VTV2, an educational channel, which is providing 24-hour broadcasting.

When the number of programs for other sectors was checked through the executing agency, variations were observed depending on the sectors, for example, while the number of programs for disaster prevention, environmental conservation and women increased, public health and economy-related programs decreased considerably in 2015. According to the executing agency, the number of programs generally increased in comparison to that during the appraisal period, but no further increase in the number of

[7] A ratio showing the proportion of the coverage area of TV broadcasting in Viet Nam.

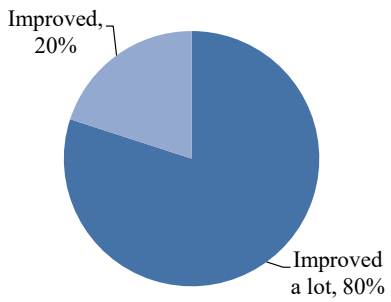
programs could be expected after 2011 as 24-hour broadcasting service has been realized. The programs have been increased and decreased within the limited timeframe.

3.3.2 Qualitative Effects (Other Effects)

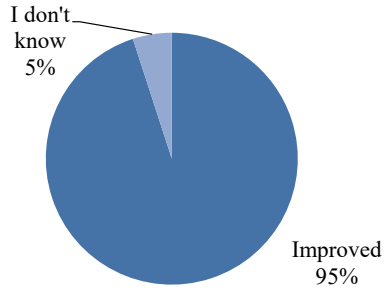
At the time of project appraisal, qualitative effects of the project were expected in that this project would rectify economic disparities with urban areas by narrowing the digital divide between urban and rural areas, particularly through improvements in living standards and intellectual levels by means of TV broadcasting of educational and social programs.

Therefore, in the ex-post evaluation, a beneficiary survey[8] was conducted with TV viewers in Hanoi and in its suburbs in addition to interviews done with the executing agency to verify these effects.

According to the executing agency, they have met the demand for TV broadcasting as a number of programs for ethnic minority groups have been provided[9] and a nationwide 24-hour broadcasting has been accomplished. In the beneficiary survey, the following responses were obtained when questions on changes in the quality of programs and its contribution to educational and capacity development as well as narrowing of rural-urban disparities were asked.



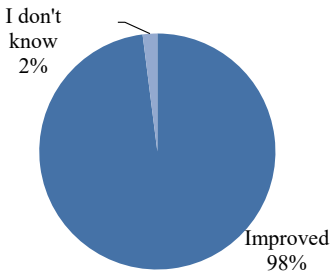
Has the quality of VTV's programs improved in general?



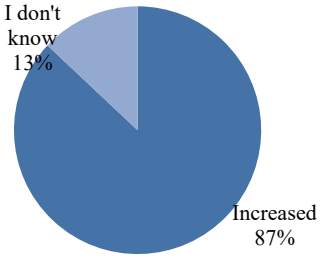
Has the quality of VTV's educational programs improved?

[8] 100 residents in nine communes in four districts in Hanoi and its suburbs were selected by positive sampling (valid response numbers; 54 men and 46 women), and a local survey assistant interviewed them (the four districts: one in Hanoi, two in an adjacent suburb and the last in a remote suburb (ethic minority regions)). Districts where cooperation by the local People's Committee was obtained were extracted and the interview survey was carried out in the communes in those districts. In one commune, a certain 'road or street' was conveniently sampled and several houses were visited in one such street before moving to the next. Questions: Problems with reception of TV signals, an increase in the number of programs, improvement in the quality of programs, changes in the quality of educational and social programs (information on life and cultural programs), ease of obtaining information, expansion of educational opportunities, skill development and improvement, narrowing regional disparities, induced activities (economic and social), changes in lifestyle and satisfaction with TV broadcasting

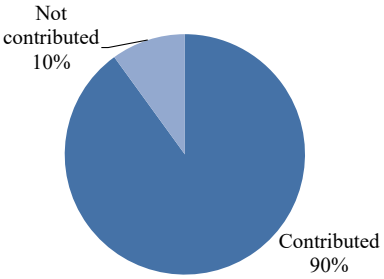
[9] VTV5 is a channel for ethnic minority groups and a total of 23 languages are used every week.



Has the quality of daily life-related programs and cultural programs improved?



Do you think that there are more opportunities for education and capacity development due to increased educational programs?



Do you think that the increase in TV programs has contributed to narrowing the gap between urban and rural areas?

Source: Beneficiary survey

Figure 1: Evaluation of Viewers on VTV's TV Broadcasting

In the beneficiary survey, the quality of VTV programs, including the educational programs, was highly regarded. As a result, it became clear that approximately 90% of the respondents held a positive view that educational and skill development opportunities increased and rural-urban gaps were narrowed. It was often heard in rural areas as an example of skill development and narrowing of gaps, that the programs on vegetable cultivation methods were useful for improvement of their livelihoods.

As stated above, the executing agency claimed that TV broadcasting services were meeting the demand of the people and it was also found in the beneficiary survey that the quality of educational and social programs improved. It is presumed that educational and skill development opportunities have increased and rural-urban disparities have narrowed with the improvement of TV program quality. Therefore, the expected qualitative effects are thought to have been largely generated.

3.4 Impacts

3.4.1 Intended Impacts

At the time of appraisal, it was expected as an impact that this project would promote

a nationwide transmission of information, education and awareness activities. In the ex-post evaluation, this impact was verified by conducting the beneficiary survey.

With regard to the nationwide transmission of information, all of the respondents in the beneficiary survey replied that it had become easier to obtain information as the number of TV channels and programs had increased[10]. As for social and economic changes brought about by improved TV broadcasting services, 63% of the respondents commented that there had been some kind of change, with some examples that (1) sporting activities inspired by sports channels became more common in villages, (2) there were more visitors to festivals with the festival information provided, (3) TV viewing provided an opportunity to reappraise traditional cultures, (4) cultivation of new crops commenced, and so forth. It was also mentioned as an effect of TV broadcasting that they had more interest toward the outside world, which they had not known before.

Based on the above, it can be said that the TV broadcasting service has become more widespread all over the country and it has become easier to obtain information through such service. It has also become clear that sporting activities, traditional culture events, agricultural activities, and so forth became more active with the enhanced TV broadcasting service, and it was confirmed that the improvement in TV broadcasting made some degree of impact.

In the social and economic monitoring survey[11] conducted during the period of this project, the executing agency commented that it had not conducted any such surveys after project completion. Therefore, it was unknown to what extent the viewers watched VTV channels and what kinds of preferences and requests for programming they might have.

3.4.2 Other Impacts

3.4.2.1 Impacts on the Natural Environment

In this project, a television center was to be constructed on the existing site of the previous center and its adjacent site, while no significant environmental impact was expected. For this reason, when the feasibility study of this project was conducted, it was judged that no Environmental Impact Assessment (EIA) would be necessary for this project as it would not cause any particular environmental problem. However, formulation of an adequate construction plan and construction supervision by project

[10] In Viet Nam, there are larger number of households watching TV by using cables or satellite antennas. 56% of the respondents in the beneficiary survey were using cables; 28% satellite antennas; 13% using frame antennas, and; 3% using Internet TV.

[11] Delegated by VTV, the Institute for Public Opinion Research, an organization under the Communist Party of Viet Nam, conducted the actual survey.

consultants was required to manage the influences of noise and dust caused by construction work and the issue of access to sunlight, and so forth.

The implementation statuses of these points of consideration were checked through the executing agency during the ex-post evaluation. According to them, efforts were made to minimize the impacts by installing dust-proof nets and sound-proof materials during construction as there were residents living around the project site. Interviews with nearby residents showed that they regarded some noise unavoidable during the construction period for the improvement of broadcasting services, and that they were thankful to the executing agency for putting lids on the gully and expanding the road. No particular issues seemed to have occurred between the executing agency and the nearby residents and it was thought that appropriate measures were taken.

3.4.2.2 Land Acquisition and Resettlement

In this project, acquisition of an adjacent site and resettlement of residents were expected.

Resettled residence of the people affected by this project

Confirmation during the ex-post evaluation revealed that a land area of 5,380m^2 was acquired in an area adjacent to the existing site for this project, under the approval of the Hanoi People's Committee. Compensation for land purchase was paid to 12 households that had dry field sections for farming in accordance with the domestic regulation and the Hanoi City guideline. Another 45 households living in the project site were resettled to an apartment in a different district of the city[12]. According to the executing agency, a compensation council consisting of representatives from Ba Dinh District, where the project site was located, Hanoi People's Committee, and, the executing agency was established: The council formulated a resettlement plan and conducted the resettlement based on the plan[13].

Interviews with the resettled residents were conducted during ex-post evaluation. They commented that while the current location was farther away from the city center than the pre-project residential site, their living environment improved and it had

[12] According to the executing agency, the number of households to be resettled was 47 in total and 45 households which were comprised of Hanoi citizens got resettled from the project site at Ba Dinh District to Hai Ba Trung District in the same city. As the remaining two households were not Hanoi citizens, they were paid only the compensation in accordance with the regulation.

[13] The compensated amount required for land acquisition and resettlement was 219.6 million yen (from the data provided by the executing agency).

become more convenient with more shops compared to the period following their resettlement. Also, no issues on the resettlement procedure were found in particular, but there were some residents that required a long time to reach agreements on conditions.

Therefore, it is considered that there were no problems in terms of the process for land acquisition and resettlement in this project.

3.4.2.3 Unintended Positive/Negative Impacts

The broadcasting system initially planned in this project was a standard definition system. Because of this, it is assumed that the equipment would have become obsolete by the time of ex-post evaluation, and problems with spare parts procurement as well as situations where no technical measures could be taken may have happened, if the project was implemented without delay and the analogue broadcasting equipment compatible with this system were procured as planned.

A delay unexpected at the beginning of the project, which would be normally regarded as a negative factor for generating project effects, resulted in the introduction of a digital-based system enabling improvements in screen definition as well as simultaneous and additional release of information, all of which would not have been possible with the analogue-based system. Another impact of this newly acquired technology, introduced through this project, was that it was able to meet the same level as that used more prevalently throughout the world.

At Vietnam Television, increases in the number of channels and a 24-hour broadcasting service were realized, and the viewers held high regard for the increase in programs and the improvement in their quality. Therefore, the expected project effects are estimated to have been largely achieved. The role of this project was that it responded to the growing needs for program production and that it enabled the modernization of broadcasting equipment, including studios and also responded to the need for high-definition digital broadcasting. Moreover, it contributed further to increasing the number of channels in 2016.

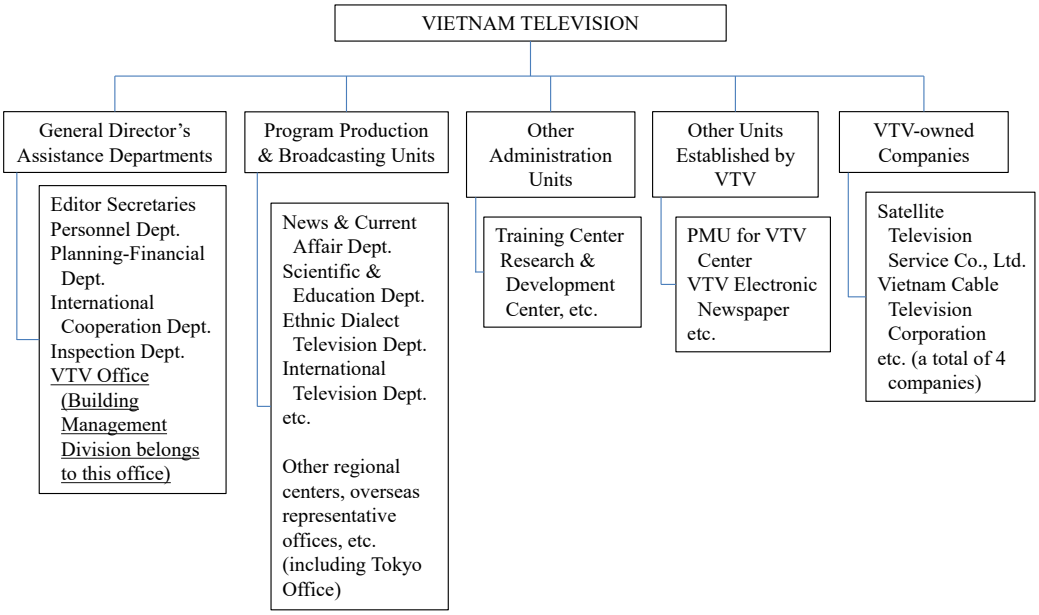
Regarding the impacts, information became easier to obtain, and other social and economic aspects such as more active sporting activities and the commencement of new crop cultivation were also observed. It was thought that there were generally no issues in terms of the impact to the natural environment, land acquisition or resettlement.

In light of the above, the effectiveness and impact of the project are high.

3.5 Sustainability (Rating:③)

3.5.1 Institutional Aspects of Operation and Maintenance

The executing agency of this project was VTV. While VTV had only a little over 1,000 staff members including the long-term temporary staff at the time of appraisal, it had 56 departments and offices in the country and overseas with 4,095 staff members at the time of ex-post evaluation (January 2015). Behind this substantial increase was the increase in the number of channels, the commencement of multimedia broadcasting using a satellite system and the Internet, the realization of 24-hour broadcasting, the increase in the number of programs produced, and so forth, all of which led to the overall expansion of broadcasting operations.



Source: Provided by the executing agency

Figure 2: VTV Organization Chart (simplified version)

Daily use and operations of broadcasting equipment were carried out by the broadcasting units, but maintenance of facilities and equipment was handled by the Building Management Division within the VTV Office. In the division, a team to conduct maintenance work on the building (16 members) and the Chilling Mechanical and Engineering Team (25 members), which conducted inspections and maintenance of broadcasting equipment for stability of use, were allocated. There were some work tasks these teams conducted independently, and the maintenance of some equipment such as power supply system, elevators, generators, the uninterruptible power-supply system (UPS) and so forth were outsourced to external specialist companies. According to the executing agency, the number of members was sufficient, and there was a system to

conduct operation and maintenance by partially utilizing support of external companies.

As stable TV broadcasting and adequate management of equipment has been actually realized, it is presumed that a structure to carry out facility maintenance and broadcasting operations smoothly has been developed and a sufficient number of staff members has been allocated.

In order to complete the overall project designed in the master plan, it was confirmed that VTV had been implementing the subsequent project independently and the Project Management Unit (PMU) of this project remained and continued to carry out the supervision of that project.

3.5.2 Technical Aspects of Operation and Maintenance

According to the executing agency, manuals such as the operation supervision procedure of building management system, the breakdown management procedure and the operation procedure for major equipment have been developed and utilized, and there were no problems in terms of the skills of technicians carrying out the operation and maintenance of facilities and broadcasting equipment, enabling stable broadcasting as a result. The actual hours of broadcasting interference has been zero (no occurrences) since 2011, and stable broadcasting services have been realized nationwide despite the increases in the number of channels and broadcasting service hours.

With regard to the capacity development of broadcasting-related personnel, a total of seven JICA experts (long-term and short-term) provided technical training on program production and broadcasting-related human resource development from the commencement of this project until 2003. After that, technical cooperation and follow-up cooperation toward the improvement of techniques for the production of documentaries as well as lighting adjustment techniques were carried out as Country Focused / Local In-Country Training from 2012 to 2015. Additionally as the Country Focused Training / Local In-Country Training, JICA has been supporting the technicians to develop their capacities in producing the programs suited to the needs of farmers and villages from 2015 to 2017. According to VTV, these efforts not only improved the skills of those related to program production but also strengthened the cooperative relationship with Japan in the broadcasting area.

While VTV is not regularly providing internal training programs to the technicians of the Building Management Division, which is in charge of maintenance of facilities and equipment, training courses are provided on mechanical and engineering, UPS, generator, electrical system, labor safety and hygiene, and so forth to the technicians who routinely operate such equipment. This has led to stable operation and maintenance of related equipment, including high-definition digital equipment.

Regarding facility maintenance, it is thought that there are neither skill deficiencies of nor technical problems for technicians as manuals are developed and training is conducted, and no troubles have been caused in actual operation and maintenance.

3.5.3 Financial Aspects of Operation and Maintenance

The following table shows the recent financial status of the entire VTV and the maintenance budget obtained during ex-post evaluation.

Table 6: VTV's Financial Status

(Unit: billion dong)

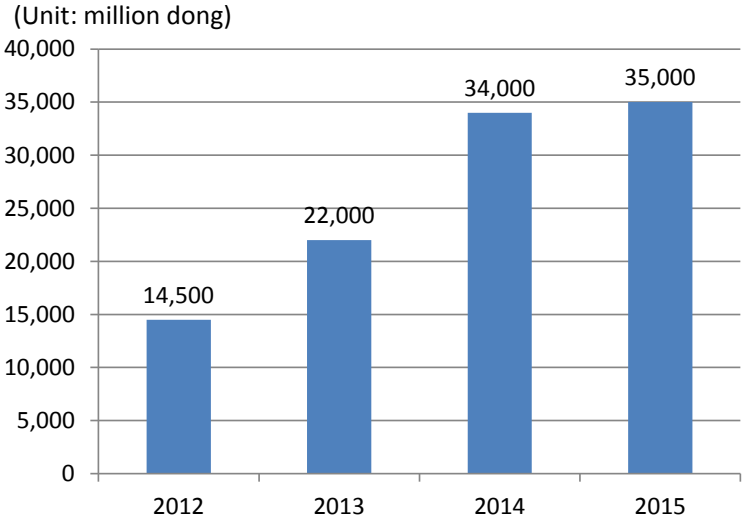
	2000	2011	2012	2013	2014
[Revenue]					
Turnover*	268	3,514	3,566	4,429	4,519
Other	175	193	271	244	292
Total	443	3,707	3,837	4,673	4,811
[Expenditure]					
Operating expenses**	166	2,269	2,620	3,096	3,559
Equipment expenses	115	257	319	402	555
Other expenses	83	0	0	0	0
Total	364	2,526	2,939	3,498	4,114
Balance	79	1,181	898	1,175	697

* 'Turnover' mainly includes revenues from TV advertisements, production of TV advertisements, program production, etc.

** 'Operating expenses' include production cost, labor cost, transportation expenses, etc.

Source: Data provided by JICA and the executing agency

The majority of VTV's revenues come from the turnover, which are mainly the revenues from advertisements, making up 94% of the entire revenues in 2014. Compared to those in 2000 (at the time of appraisal), this category skyrocketed nearly 17 times, indicating that it had been underpinning the sound financial status of VTV in recent years. Although the operating expenses such as program production costs and labor costs are also increasing, the increase in revenue can cover that cost, and no particular financial concerns have been observed. There has been no reception fee collected from viewers and no government subsidies have been injected.



Source: Data provided by the executing agency

Figure 3: Maintenance Budget for Facilities and Equipment (Budget for Building Management Division)

The maintenance budget for facilities and equipment allocated to the Building Management Division has been on the increase in recent years, as shown in Figure 3, which is generally sufficient to carry out necessary repairs and inspections, according to the executing agency.

As shown above, no particular issues have been found and it is thought that there are no problems as a whole.

3.5.4 Current Status of Operation and Maintenance

The facilities and equipment developed through this project were checked during ex-post evaluation, and all of them were found to have been in good condition. According to VTV, while there were no major maintenance-related problems, they were experiencing some difficulties in procuring spare parts for the chilling system, generator system, and the fire alarm system. More precisely, time and cost were needed in procuring spare parts for the chilling and generator systems as there is no agent in Viet Nam. As for the fire alarm system, spare parts were no longer being produced. The fire alarm system was in smooth working condition at the time of ex-post evaluation, and it was indicated that spare parts would be substituted with alternate ones.

Regarding regular inspections, each department needed to prepare an inspection plan of their equipment and submit the plan to the Chilling Mechanical and Engineering Team. The team would then carry out regular inspection and maintenance based upon the plan. The inspection and repair manual provided in this project was used and, for

example, a chilling system was inspected quarterly; and, a generator monthly.

As stated above, both the facilities and equipment have been operated and maintained in good condition, and no particular issues were observed in terms of the provision of stable TV broadcasting.

Regarding the sustainability of the effects generated though implementing this project, there were no particular issues found in terms of institutional aspects of operation and maintenance nor were there concerns in technical aspects. It was confirmed that the sufficient turnover realized the overall surplus from a financial aspect, and that the facilities and equipment were largely maintained in good condition.

In light of the above, no major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system, therefore, the sustainability of the project effects is high.

4. Conclusion, Recommendations and Lessons Learned

4.1 Conclusion

In this project, a television center with facilities and equipment, including studios and editing equipment, was constructed to strengthen the broadcasting capacities of Vietnam Television and to improve nationwide transmission of information. This project was consistent with the development plans and needs of Viet Nam at the time of appraisal and ex-post evaluation as well as Japan's ODA policy at the time of appraisal. Therefore, the relevance of this project is high. With regard to project implementation, although there were some changes to the broadcasting system, they were appropriate for generating project effects, and the project cost was within the plan. However, the efficiency was fair as the project period substantially exceeded the plan due to delays in administrative procedures and conflicts among the contractors. With respect to project effectiveness, the expected quantitative effects were largely achieved: the qualitative effects were sufficiently achieved as well. As for the impact of the project, positive effects on the social and economic aspects were confirmed. Therefore, the effectiveness and impact of this project are high. Regarding sustainability, there were no issues in terms of all institutional, technical and financial aspects as well as the operation and maintenance status. Therefore, project effects generated in this project are considered sustainable.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

VTV increased the number of channels and programs, and had recently been making

efforts to improve the quality of programs. However, no independent efforts to capture the viewers' opinions on the TV broadcasting service by VTV were made in a sufficient manner except through the social and economic monitoring survey carried out during this project and the beneficiary survey in this ex-post evaluation. Surveys on the viewers' orientation and their assessment of programs, as conducted in this project, as well as an analysis of the effects such as the kind of contribution TV programs are making to the society and economy, are considered to be an important means of correctly understanding the viewers' needs when reflecting them into the production of TV programs. In the training program to improve capacities for the production of programs to meet the needs of farmers and villages, which have been supported through JICA's technical cooperation project since 2015, efforts are being made to improve the method of capturing such needs and to improve awareness when producing programs based on such needs. It is therefore desirable to improve the quality of programs by taking that opportunity to capture said needs and apply them to various programs.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

Scrutiny of project components for smooth implementation before signing a contract

One of the major causes for the delay of this project was a long-standing conflict between the executing agency and the original contractor over the contents of their contract. While the details were not analyzed in the ex-post evaluation, bidding was significantly lower than the planned value of construction, and there were disagreements subsequently observed as to whether small work items would be included. Therefore, in the future bidding of grant aid or loan projects, it will be essential, when signing an official construction agreement, to discuss and agree on the contents in a detailed manner as possible to avoid conflicts among those concerned on the points that could potentially affect the progress of the project.

Ensuring project effects by adapting to technical innovation

While this project was considerably delayed, an innovation was seen worldwide during that period in that the broadcasting system changed from the standard definition system to the high-definition digital one. Although the factor was seen as a project delay, it was confirmed that this project adapted to such worldwide change and changed some of the equipment which were compatible with the high-definition digital system. This led to effective utilization of the broadcasting equipment procured at the time of ex-post

evaluation. From this lesson, in implementing aid projects in the future, if a technical innovation is seen while a project delay is occurring, it should be important to change the equipment to be procured to what is adaptable to the latest technology so that the project effects would be increased.

(End)

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs		
Construction of Television Center	Construction of studio building (a total floor area of 32,000m^2) Equipment for studios (TV cameras, lights, adjustment tables, etc.) Equipment for production of news programs (editing equipment, interviewing equipment, etc.) Editing equipment (image editing equipment, sound editing equipment, etc.) Integrated control equipment (program organizing equipment, transmitting program controlling equipment, etc.)	Implemented as planned (Some of the equipment was changed to that compatible with the high-definition digital system)
Consulting Services	Tender assistance, construction supervision (including the measures and instructions to ease environmental impacts during construction) Training on program production, etc. Monitoring of social effects by TV programs	Tender assistance increased to two-fold. Training: changed from program production to instruction on equipment operation Other components were implemented as planned.
2. Project Period	March 2000 – August 2003 (42 months)	March 2000 – February 2014 (168 months)
3. Project Cost		
Amount Paid in Foreign Currency	14,604 million yen	Unknown
Amount Paid in Local Currency	8,394 million yen (1,558,225 million dong)	Unknown
Total	22,998 million yen	21,189 million yen
Japanese ODA Loan Portion	19,548 million yen	19,349 million yen
Exchange Rate	1 dong = 0.00828 yen (as of October 1999)	1 dong = 0.00539 yen (Average between February 2001 and March 2014)