Ex-Post Project Evaluation 2020:
Package I-3
(Brazil, Guatemala)

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JAPAN INTERNATIONAL COOPERATION AGENCY

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Federative Republic of Brazil

FY2020 Ex-Post Evaluation of Technical Cooperation Project

"Project for Strengthening National Strategy of Integrated Natural Disaster Risk Management"

External Evaluator: Mitsue Mishima, OPMAC Corporation

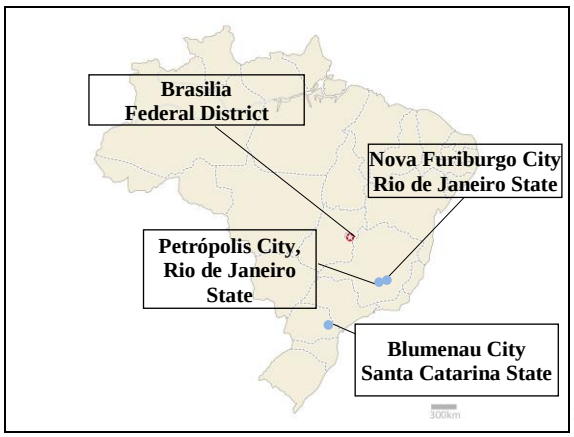
0. Summary

This project supports capacity building for the risk assessment on sediment disasters, formulating and implementing, based on such risk assessment, urban expansion plans and disaster prevention/rehabilitation/reconstruction plans, issuance of early warning and dissemination of risk information, and research and development on disaster monitoring as well as forecast and early warnings. Through these capacity building activities, the project aims to improve Brazil's preparedness for disaster response and thereby contributes to strengthening its integrated national strategy for natural disaster risk management. This project is consistent with the needs of Brazil's development plans and policies as well as the efforts made by the governments on federal, state, and municipal levels to prevent disasters. The project is aligned with the Japanese government's development aid policies of that time as well. Japan's advanced sediment disaster technologies also contributed to the project. In light of the above, the relevance of the project is high. The project delivered outputs related to capacity strengthening of pertinent organizations and agencies in four areas: risk assessment on sediment disasters; formulation and implementation of urban expansion plans as well as disaster prevention, rehabilitation, and reconstruction plans; protocol of early warning; and system of monitoring and prediction. The federal government officially approved manuals and other products of this project for these areas as the national guidelines to be referred in Brazil, and therefore, the effectiveness of the project is high. One of the verifiable indicators for the Overall Goal, i.e., project outputs will be reflected on the disaster risk management program in the multi-year federal government plan (*Plano Plurianual*, hereinafter referred to as "*PPA*") (2020-2023) at the time of the ex-post evaluation, was partial. However, project outputs were incorporated in policies and training plans of federal government organizations and disaster risk reduction management plans of local governments. In addition, the project had many other positive impacts, including: raised awareness among federal and local authorities about the importance of coordination and cooperation for mainstreaming disaster reduction management; enabled the government to apply risk evaluation and hazard mapping to other locations; contributed to the research on sediment disaster risk in Brazil; led to the formation of JICA's new Collaboration Programs with the Private Sector; and had positive spill-over effects on other donor agencies. Therefore, the impact of this project is considered high. With regard to the efficiency, the delay in project implementation was managed within a minimal level, but the project has experienced some cost overrun and extension of the cooperation period. Therefore, the efficiency of the project is fair. Concerning the policy and political aspects of sustainability of project effects, the context as the federal government program has waned due to political

influence and other factors; however, project outputs are partially incorporated in the activities of each federal government organization and the operations of local governmentss. As for institutional and organizational aspects, all project's products were enacted by federal and local authorities, but the collaborative institutional arrangement between federal and local governments, established under this project, is no longer functioning. The sustainability of technical aspects is high, as seen in the case of technologies mastered by participating organizations and agencies under the project. Concerning financial aspects, a certain level of the budget has been allocated by the federal government for training programs to disseminate project outputs and by municipal governments for disaster reduction activities. Considering the mixed results across aspects and organizations, the overall sustainability of this project is fair.

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

1. Project Description



Project Site

Source：JICA

Meeting at a Federal Government Organization during project implementation

1.1 Background

The Federative Republic of Brazil (hereinafter referred to as Brazil) has experienced a sudden acceleration in urbanization since the 1950s. Along with rapid development, the population living in the disaster risk areas increased through illegal land uses. Urban areas have been expanding to the risk-prone parts in recent years, causing damages from natural disasters to be more significant. In January 2011, heavy rains in Rio de Janeiro State caused a sediment disaster and flash floods, resulting in the country's most devastating disaster damage induced by rainfall, with approximately 400 missing people, more than 800 lost lives, and about 20,000 people without a home.

Reacting to the sediment disaster in Rio de Janeiro State, the federal government formulated the *Disaster Risk Management and Response Program* that incorporated the disaster risk management concept for the first time and included this program in the *PPA* (2012-15), which is

equivalent to a national development plan in Brazil. To strengthen the disaster risk management system based on the *Disaster Risk Management and Response Program*, the federal government established two centers. The National Center for Monitoring and Warnings of Natural Disasters (Centro Nacional de Monitoramento e Alertas de Desastres Naturais, hereinafter referred to as "CEMADEN") was set up within the Ministry of Science, Technology and Innovation (Ministério da Ciência, Tecnologia, e Inovaçõe e Communicacão, hereinafter referred to as "MCTIC") in December 2011, with an aim to strengthen capacity for precipitation prediction and monitoring. In August 2012, the National Center for Risk and Disaster Management (Centro Nacional de Gerenciamento de Riscos e Desastres, hereinafter referred to as "CENAD") was established in the Ministry of National Integration (Ministério da Integração Nacional, hereinafter referred to as "MI") to strengthen disaster risk assessment and response. As a result, the system was set up where CEMADEN issues early warnings to CENAD and CENAD, in turn, disseminates warnings and risk information, including evacuation advisory, to municipalities. Moreover, MI planned to develop disaster risk maps for 286 municipalities by 2013, and 821 municipalities by 2014. Based on disaster risk assessments, the Ministry of Cities (Ministério das Cidades, hereinafter referred to as "Mcidades") was expected to provide municipalities, responsible for urban expansion planning, with land use standards that have incorporated disaster risks.

However, this system had been just established by laws, and the forecasting by CEMADEN lacked sufficient accuracy. There was a need to improve CEMADEN's forecasting capabilities for sediment disasters possibly triggered by rainfalls. In addition, the disaster risk maps to be developed by CENAD did not take such factors as geologic features and soil water index into consideration. The development of accurate disaster risk maps requires evidence-based risk assessments. Furthermore, the land use regulations, which prevent illegal uses of land supervised by MCidades, have not been legislated. Therefore, it was necessary to take a more comprehensive approach that considers each aspect of monitoring, early warning, risk assessment, and urban planning.

Against this background, the Government of Brazil requested technical cooperation from Japan, a country prone to disasters and known for its superior technologies for nonstructural measures, such as risk area assessment on sediment disaster, urban expansion planning, rehabilitation and reconstruction, and early warning system development in the world. Project components mainly relates to these measures and JICA started this technical cooperation project with a planned project period of four years, starting July 2013.

1.2 Project Outline

Overall Goal		Sediment disaster risk is reduced according to non-structural measures based on risk assessment.
Project Purpose		Disaster management cycles, which consist of the urban expansion plan, protocol of early warning and forecast, and system of monitoring and prediction, are established based on risk assessment and risk mapping.
Outputs	Output 1	Strengthen capacity of risk assessment on sediment disaster, including hazard identification, vulnerability analysis, and risk evaluation and mapping.
	Output 2	Strengthen capacity of planning and implementation of risk reduction measures for sediment disaster.
	Output 3	Improve protocol of early warning, risk information dissemination, and methodology of collecting disaster data.
	Output 4	Improve system of monitoring and prediction for sediment disaster mitigation.
Total cost (Japanese Side)		1,100 million yen
Period of Cooperation		July 2013 – November 2017
Target Areas		1) Location of Implementing Agencies Brasília Federal District (Location of MCidades, MI, MCTI, CENAD) São José dos Campos, São Paulo State (Location of CEMADEN) Rio de Janeiro City, Rio de Janeiro State (Location of CPRM) 2）Pilot Project Sites Rio de Janeiro State: Petrópolis City, Nova Furiburgo City Santa Catarina State: Blumenau City
Implementing Agency		Federal government agencies: MCidades*, MI*, CEMADEN, CENAD, MCTIC**, Ministry of Mines and Energy (MME), Geological Survey of Brazil (CPRM)
Other Relevant Agencies / Organizations		State government agencies: Rio de Janeiro State: State Center for Monitoring and Warning of Natural Disasters-RJ(CEMADEN-RJ), Rio de Janeiro Geological Survey (DRM-RJ), Civil Defense School, State of Rio de Janeiro *** （ESDEC） Santa Catarina State: State Secretariat of Civil Defense, State Secretariat of Economic & Social Development Planning Municipal government agencies: Petrópolis City, Nova Furiburgo City, Blumenau City
Supporting Agency/Organizations in Japan		Ministry of Land, Infrastructure, Transport and Tourism of Japan
Related Projects		[JICA Technical Cooperation Project] Capacity Development Project for Structural Measures against Sediment related Disaster for Resilient Cities (5-year project starting 2021. As a follow-up project of this project, the Detailed Planning Survey was conducted in FY2019. The Record of Discussion (R/D) was signed in July 2020.) [JICA Collaboration Programs with the Private Sector to Disseminate Japanese Technology] ・Collaboration Program with the Private Sector for Disseminating Japanese Technology for Steel Slit Dam and Sabo Soil-Cement Gravity Dam (2017-2019)

	・Collaboration Program with the Private Sector for Disseminating Japanese T echnology for Radar Rain Gauge in Paraná State (2017-2019) ・Collaboration Program with the Private Sector for Establishing a Basic Map for Risk Assessment Using Satellite-based Digital Maps (AW3D) (planned for 2019-2021)

* The name used at the time of project implementation. MCidades and MI have since merged to form the Ministry of Regional Development (Ministério de Desenvolvimento Regional ：MDR).

**At the time of project implementation. Currently, Ministry of Science, Technology, and Innovation（Ministério da Ciência, Tecnologia e Inovações: MCTI）

***Civil Defense is a direct translation of the Portuguese word 'Defesa Civil.' In addition to disaster reduction, the word can be used for other emergency efforts, such as those against armed conflicts.

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

It was expected that the project purpose would be achieved by the project termination. It is because project activities related to the approval of manuals and other products, which were included in the indicators for the project purpose, were mostly implemented as scheduled, and the consideration on the formality and procedures for the approval of manuals was underway. During the terminal evaluation, the federal implementing agencies expressed their positive views that all planned activities would be completed in the remaining project period.

1.3.2 Achievement Status of Overall Goal at the Terminal Evaluation (including other impacts)

The terminal evaluation found that the possibility of achieving the overall goal was high. The indicators of the overall goal were: project outputs are reflected in the *PPA*, and the *PPA* is implemented. The *PPA* (2016-2019), published in December 2015, incorporated the *Program 2040 – Disaster Risk Management and Response Program.* The terminal evaluation pointed out that the *Program 2040* highlighted the importance of integrated actions and coordination in disaster risk management, among concerned federal, state, and municipal authorities. According to MCidades, the *Program 2040* directly reflected the discussions held during the project implementation and was developed in coordination and cooperation among four federal implementing agencies and the Ministry of Plan and Budget Management (Ministério do Planejamento, Orçamento e Gestão: MPOG). Similar outcomes were expected for the following *PPA* (2020-2023), and the terminal evaluation survey mentioned that the positive outlook was a reason to assume that the overall goal would be achieved.

1.3.3 Recommendations at the Terminal Evaluation

【Recommendations for Implementing Agencies in Brazil at the Terminal Evaluation】

Recommendation	Situations at the Ex-post Evaluation
Continuation and Expansion of Project Activities Activities (implementation of structural/nonstructural measures against sediment disasters) should be expanded beyond the targeted areas to other areas in the three pilot municipalities. In addition, to accelerate these works in the future, it is advised that each municipality consider utilizing such outside resources as private sectors.	No evidence of municipalities making progress in utilizing external technology resources was confirmed.

2. Outline of the Evaluation Study

2.1 External Evaluator

Mitsue Mishima, OPMAC Corporation

2.2 Duration of the Evaluation Study

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

Duration of the Study: October 2020–December 2021

Duration of the Field Study: No field study was conducted due to the widespread COVID-19 infections in Brazil.

2.3 Constraints during the Evaluation Study

Due to widespread cases of COVID-19 in Brazil, the External Evaluator did not travel to the country. Also, the Local Consultant could not make the planned on-site inspection of pilot project sites due to restrictions imposed on domestic travels. Instead, the External Evaluator and Local Consultant conducted online interviews with officials of implementing agencies and other relevant agencies. This ex-post evaluation was conducted by analyzing the interview findings and information and resources submitted by implementing agencies and other concerned organizations.

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

3.1 Relevance (Rating: ③[2])

3.1.1 Consistency with the Development Plan of Brazil

The project has been consistent with the policies during project implementation since the ex-ante evaluation.

As confirmed during the ex-ante evaluation, the project was in line with the content of the *PPA* (2012-2015) and the *Program 2040 – Disaster Risk Management and Response Program*

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

[2] ③: High, ②: Fair, ①: Low

included in *PPA* (2016-2019). In the *PPA* (2012-2015), the project was aligned with risk evaluation and mapping and monitoring and monitoring in vulnerable area by sediment disaster. In the *PPA* (2016-2019), the federal government promoted and provided state and municipal authorities with financial and other support to take actions towards disaster reduction. The project made direct contribution to the objectives pursued under the *Program 2040* at that time: (1) understanding the natural disaster risks through mapping disaster-prone municipalities; (2) support the reduction in natural disaster risks through structural measures; (3) enhancing capacity to issue early warnings of natural disaster risks through integrated actions among federal, state, and municipal governments; and (4) improving the coordination and management of actions for disaster preparedness, reduction, response and recovery through stronger partnerships between the federal government and foreign agencies. [3]

3.1.2 Consistency with the Development Needs of Brazil

This project has been consistent with the development needs of Brazil during project implementation since the ex-ante evaluation.

Municipal governments are responsible for taking immediate response and emergency actions in times of disaster. Under this project, it became necessary to clarify how the federal government should support municipal governments by setting more concrete guidelines and identifying actions to be taken by federal and local authorities, respectively. The experience of consulting with state and municipal authorities during the pilot projects was significant for the federal government to develop national guidelines suitable for the situations facing local governments. The project's scope includes capacity building of the federal government organizations to conduct risk assessments, predict and monitor rainfalls, and forecast and issue early warnings based on analysis. The project also shared the methodologies and procedures for forecasting and issuing early warnings with relevant parties in pilot municipalities and reflected their feedbacks on the protocol of early warning to improve it further. This work process itself helped strengthen the capacity of relevant authorities and was consistent with Brazil's needs.

In addition, three municipalities selected as the pilot project sites have experienced sediment disasters and, hence, considered high priority areas in disaster risk management. Blumenau City developed its warning system called *AlertaBlu* before this project and had a strong interest in disaster risk management and a long track record. Rio de Janeiro State has a civil defense school that provides the country's municipal governments with disaster reduction training. By allowing such an organization to participate in the project's activities, it is expected that project

[3] The formulation of the *PPA* (2016-2019) was in process when the project commenced. Therefore, in a sense, it can be said that this project was reflected in the *PPA*.

outputs can be disseminated within the country. Based on the above, the selection of the project sites is considered appropriate.

At the ex-post evaluation, questionnaire surveys were sent to four federal implementing agencies and other relevant organizations. Interviews were also conducted with officials of all concerned organizations. The results showed that the project was consistent with the needs and expectations of concerned agencies and was highly evaluated.

3.1.3 Consistency with Japan's ODA Policy

Japan's aid policy to Brazil (as mentioned in the Official Development Aid [ODA] Data Book by Country 2013) listed "urban issues and environmental/disaster risk management policy" as a priority for Japan's assistance to Brazil. The project was a main operation of the natural environmental risk reduction program within the disaster risk management agenda, and consistent with Japan's ODA policy.

3.1.4 Appropriateness of Project Design and Approach

The project's counterparts (hereinafter referred to as "C/P") on the Brazilian side consisted of the staff of a number of institutions, i.e., federal government organizations and the authorities of pilot states and municipalities. The project involved many organizations in the implementation in this way and was designed to have a wide range of outputs, including: (1) capacity strengthening for hazard identification and risk assessment on sediment disaster; (2) capacity strengthening for planning based on the sediment disaster risk assessment; (3) improvement in the protocol of early warning, risk information dissemination, and disaster data collection; and (4) improvement in the monitoring and prediction system to mitigate sediment disasters. These outputs are indispensable components for establishing a management system of sediment disaster risks and need to be functional to achieve the project's overall goal of disaster risk reduction. Therefore, achieving all outputs with a short period of four years and five months was a major challenge. Furthermore, the disaster risk management which aims to produce these outputs requires an institutional structure where the operation is implemented in coordination among all concerned organizations. At the formulation stage of this project, it was decided that the project pursues an implementation structure that enables participating organizations to deepen mutual understanding and work in coordination through holding frequent meetings. Such a collaborative operational structure was unprecedented for all concerned agencies in Brazil, and therefore, was very substantial in itself.

Based on the above, the project was well in line with Brazil's development policies and development needs, as well as Japan's aid policy. Therefore, the relevance of the project is high.

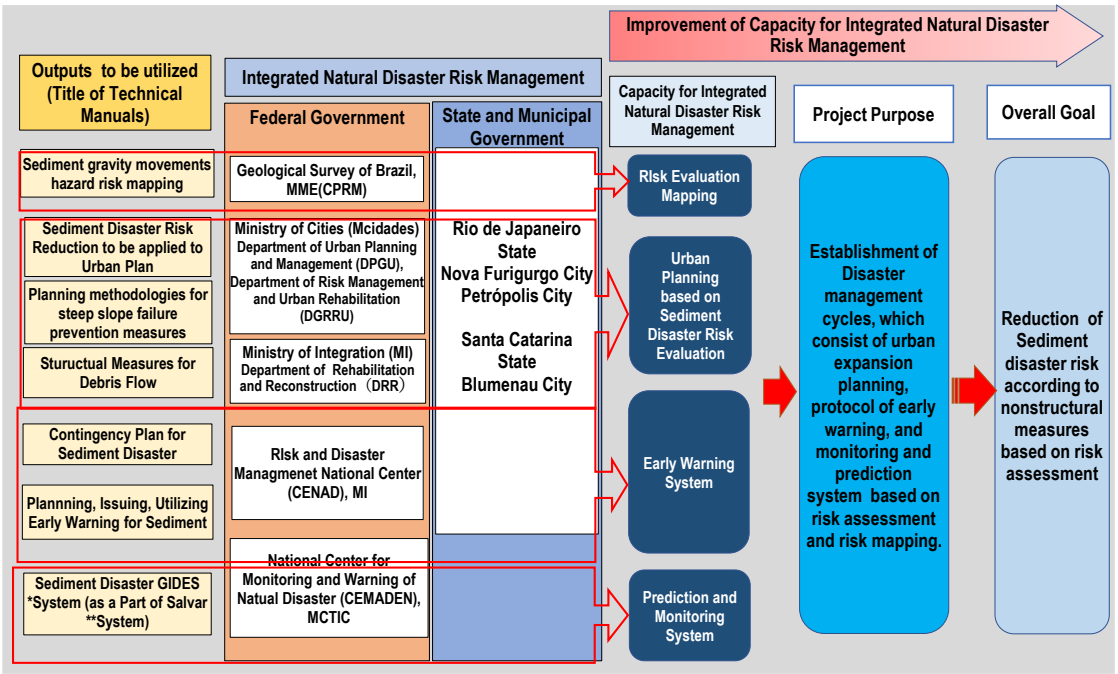
3.2 Effectiveness and Impact[4] (Rating: ③)

3.2.1 Effectiveness

3.2.1.1 Achievement of Project Purpose

The project outputs were mostly achieved by the time of the terminal evaluation. Therefore, the project purpose is considered achieved.

The indicators of the four project outputs were generally completed by the time of the terminal evaluation. The indicators considered almost completed or partially completed at the terminal evaluation were marked completed in the project completion report. These outputs covered the capacity strengthening in the following four areas: (1) improvement in risk assessment capacity of sediment disasters; (2) improvement in planning capacity based on sediment disaster risk assessment; (3) improvement in the protocol for issuing early warnings, disseminating risk information, and collecting disaster data; and (4) improvement in the monitoring and prediction system for sediment risk reduction. The relationships between outputs for each area, such as manuals, and capacity building of concerned C/Ps are summarized in Figure 1.



Source: Created by the Evaluator based on various JICA resources, including the project design matrix (PDM) of this project.

Notes: * GIDES is an abbreviation of this project's name in Portuguese (Gestão Integrada de Riscos de Desastres).
**CEMADEN's Risk Area Alert and Visualization System (Sistema de Alertas e Visualização de Áreas de Risco: Salvar)

Figure 1: The Logic Flow and Concerned Organizations of the Project

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

Source: JICA

Photo 1：Sediment Disaster Site in Nova Furiburgo City (2011)

Source： Blumenau City

Photo 2：Sediment Disaster Simulation Training in Fortaleza Alta, Blumenau City (2017)

Source： Petrópolis City

Photo 3： Monitoring Center at Civil Defense Bureau, Petrópolis City

Source： Petrópolis City

Photo 4：A landslide Site in Independência, Petrópolis City (2017)

With regard to various capacity building activities of the project, interviews were held with Japanese experts (two long-term experts and three members of consulting teams) and JICA staff who participated in the formulation and implementation of this project. According to their responses, the project has achieved capacity building of Brazilian C/Ps, as mentioned as the project's outputs. In addition, a questionnaire survey was conducted with all C/Ps (12 organizations/agencies) at federal, state, and pilot municipal governments. To supplement their responses, online interviews were also held with a total of 31 pertinent staff,[5] including more than one C/P from each organization. All respondents from the Brazilian side expressed that the capacity of C/Ps has been enhanced due to the project. Their comments about actual examples of capacity improvement are summarized in Table 1. Through the process of producing manuals,

[5] Interviewees were selected based on the recommendations from the staff at JICA Brazil Office, JICA staff that participated in the formulation and implementation of the project, former JICA experts, contact persons at Brazilian C/Ps during the ex-post evaluation study and other contacts at C/Ps to ensure that appropriate personnel would be interviewed.

participating in workshops, and receiving instructions from the Japanese experts, C/Ps obtained new knowledge and learned to apply it to their operations. The staff of these organizations and Japanese experts both highlighted that, by working together to produce manuals and participating in the same training program in Japan, away from their organizations, the staff of federal, state, and municipal authorities strengthened the coordination among them in addition to enhancing the technical capacity of their respective field. The fact that the staff of three different levels of administrations learned from each other through participating in various activities together was significant. Such an achievement was made possible by the highly motivated and mutually cooperative working relations among C/Ps, and Japanese experts and consultant teams during the project implementation.

Table 1: Views of C/Ps on the Achievement of Capacity Building

Topics	C/P	Capacity Building-related Outputs (mostly completed at Project Termination, but also include some progress made later)
Risk Assessment on Sediment Disasters	CPRM	✓ Improved geologic risk analysis and risk assessment of sediment gravity movements. ✓ Experience in conducting a risk assessment for each pilot project site and review of existing data collection and analysis methodologies. ✓ Developed a methodology to identify the origin and reach areas of a sediment disaster during the analysis process.
	Governments of Pilot Municipalities	✓ In Blumenau City, the municipal government incorporated the sediment gravity movement risk/hazard maps, produced under the project, into a decree (Decreto 12227/2019). Some geologists at the municipal government applied the hybrid approach of mapping technology, with partial incorporation of the method introduced by the project and conducted risk assessments in areas vulnerable to debris flow in the municipality. ✓ The staff of the Nova Furiburgo Municipal government strengthened their capacity for risk mapping preparation and evaluation with the help of CPRM. A new Geography Sector Unit was established within the Municipal government.
Formulation and Implementation of Urban Expansion Plan and Disaster Prevention, Rehabilitation, and Reconstruction Plan	MDR (MCidades and MI during Project Implementation)	✓ Planning based on disaster risks (e.g. zoning incorporating risk assessment), review and improvement of planning methodologies for steep slope failure prevention measures and debris flow mitigation. ✓ Strengthening capacity for planning and implementing disaster prevention activities for disaster risk reduction by knowledge and experience obtained through technical meetings in training in Japan and Brazil. ✓ Brazil already had a slope failure manual created by GEO-Rio Foundation in Rio de Janeiro, and thus the project was supplementary in this area. But there was no know-how on how to conduct risk mapping of or respond to debris flows in Brazil. Therefore, the project provided new knowledge related to debris risk.
	Governments of Pilot Municipalities	✓ In Blumenau City, the risk assessment map, developed under the project, contributed to the formulation of its Urban Master Plan, approved in 2018 (However, because of zoning codes that were later established, there is a need for another plan that is more detailed and reflective of risks). ✓ Nova Furiburgo City strengthened capacity to develop a plan for disaster risk reduction, implement risk reduction, mitigate risks, and take countermeasures. ✓ Although the project did not include urban planning in its scope in Petrópolis City, discussions on making laws and regulations on land use and occupation maters have started, and people's awareness of the topic has grown.

Protocol of early warning	CENAD	✓ Methodologies and procedures of developing a contingency plan (emergency response plan at the time of disaster) and early warning of sediment disaster. ✓ One of the important lessons was to gain a practical understanding of the relations between the warning levels and civil defense action. ✓ Continued consultation with concerned organizations/agencies after the project termination on sediment and flood disasters caused by heavy rainfalls. There is a plan to improve procedures and protocol for early warning in 2021.
	CEMADEN	✓ Through exchanges of opinions with state and municipal staff, clarified how CEMADEN's warnings were interpreted by them and understood how agencies in charge of disaster prevention on the municipality level would react to warnings. ✓ The Japanese warning system introduced under this project considerably improved the quality of warnings, especially in terms of speed, accuracy, and automation of issuing early warnings for precipitation events. A lesson learned from the project is that Brazil will need to find a way to incorporate weather forecasts into Japan's system, and this is a remaining challenge.
	Governments of Pilot Municipalities	✓ Blumenau City developed its own early warning system, called *AlertaBlu*, two years prior to the start of this project. The new information dissemination procedures and a protocol were added to this system. The city also created the precautionary advisory stage to rainfall monitoring (Other municipal governments also supported improving precautionary advisories). ✓ Petrópolis City elaborated further the protocol of early warning system based on the proposal by the project, since they were in the process of installing additional sirens to expand the coverage of their early warning network. By working with a private service provider, the city selected appropriate locations for siren installation.
The Monitoring and Prediction System	CENAD CEMADEN	✓ CEMADEN incorporated the system developed under the project into Brazil's existing *Salvar* system and started real-time monitoring of the precipitation data, which is transmitted from the rain gauges installed in municipal governments to CEMADEN, to ensure rainfalls will not exceed the threshold level. ✓ All concerned organizations/agencies agreed on the operational challenge related to coordinating the (disaster) events database, which is shared by various organizations, such as CEMADEN, CENAD, and CPRM.

Sources: JICA resources, questionnaire responses collected from implementing agencies, and information collected during interviews with relevant staff ofimplementing agencies and Japanese experts.

Notes: *Governments of pilot municipalities: state government of Rio de Janeiro, municipal government of Nova Furiburgo, municipal government of Petrópolis, state government of Santa Catarina, and municipal government of Blumenau.

In light of the above outputs, Project Purpose was considered achieved as listed in Table 2. During the project, three levels of government agencies, i.e., federal, state, and municipal, consulted to formulate a set of manuals as part of project outputs and utilized them as national guidelines. This experience has set the foundation for the three levels of governments to continue discussions in the future. Judging from the interview responses of concerned parties, the awareness about the importance of mainstreaming disaster risk reduction among federal, state, and municipal agencies was high at the time of project termination.

Table 2: Achievement of Project Purpose

Project Purpose	Indicator	Actual
Disaster management cycles, which consist of urban expansion planning, protocol of early warning, and monitoring and prediction system are established based on risk assessment and risk mapping.	1. Methodologies and procedures for risk assessment on sediment disaster are approved with the CPRM and related organizations. 2. Tools and plans for urban expansion planning and reconstruction are approved with related organizations. 3. Methodologies and procedures for issuing early warning of sediment disaster are incorporated in the national system of forecasting and early warning.	**Achieved** 1. One of the project's indicators, "Methodologies and procedures for risk assessment on sediment disaster," were approved by CPRM and related organizations. CPRM uses them as one of the criteria for risk assessment on sediment disasters. 2. Manuals on Urban Planning and Sediment Disaster Risk Reduction, Plan Preparation for Slope Rapture Countermeasures, and Plan Preparation for Debris Flow Countermeasures were approved by the then MCidades. These manuals were uploaded on the MDR's website* and can be downloaded by anyone. 3. Recommendations provided under the project on the methodologies and procedures for issuing early warning on sediment disasters have been incorporated in the systems of CEMADEN, CENAD, and state and municipal governments of pilot project sites. ・ Although not included in the project's indicators, the manual on contingency planning of sediment disaster was approved on December 5, 2018, as MCidades' ministerial ordinance No. 348. ・ The project's outputs, such as methodologies, and procedures for risk assessment and issuing early warning on sediment disasters, and all related manuals were disseminated among C/Ps, and through them, in the respective organizations.

Source: JICA resources, questionnaire responses collected from implementing agencies, and information collected during interviews with relevant staff of implementing agencies and Japanese experts.
Note: * The website https://antigo.mdr.gov.br/protecao-e-defesa-civil/publicacoes/293-secretaria-nacional-de-protecao-e-defesa-civil/11876-projeto-gides (as of July 2021).

This project mostly achieved the following four capacity building outputs: risk assessment, development and implementation of urban expansion planning as well as the disaster prevention/rehabilitation/reconstruction plans, early warning protocol, and monitoring and prediction system. These outputs were incorporated in the operations of each concerned organization, and a set of manuals for each topic has been developed, as planned, through the concerted efforts of Japan and Brazil. Pertinent government organizations approved these manuals. The Project Purpose has been achieved, and therefore, the effectiveness of this project is high.

3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

The Overall Goal is being partially achieved. It will take some time for the non-structural measures, which incorporated the risk assessment provided in the project, to be reflected in the urban expansion plans, but they are reflected gradually in the municipal disaster risk reduction plans.

The indicator for the Overall Goal described in the PDM, i.e., incorporating the project's outputs in the *PPA*, is partially achieved as explained in Table 3.

Table 3: Achievement of the Overall Goal

Overall Goal	Indicator	Actual
Sediment disaster risk is reduced according to nonstructural measures based on risk assessment.	1. Next version of the Multi-Year Plan is formulated considering the outputs of the Project.	**Partially achieved** 1. In the federal government's *PPA* (2020-2023), the budget for disaster risk management was listed as *Program 2218: Disaster Risk Management Program (Civil Defense).* Compared to the *PPA* (2016-2019), the provision is mainly focused on civil defense activities (i.e., early warning issuing, evacuation, disaster rehabilitation/reconstruction) and is more limited in scope.
	2. Priority actions following the revised version of the plan are implemented.	2. In 2020, the implementation of various government programs was postponed due to the widespread transmission of COVID-19 in Brazil. The programs related to disaster risk management were also impacted, and priority actions based on the *PPA* have not been implemented.

Source: JICA resources, questionnaire responses collected from implementing agencies, and related agencies, and information collected during interviews with relevant staff.

The incorporation of project outputs in the plans formulated by the federal government means more than the incorporation in the *PPA*, one of the indicators for the project's Overall Goal. Therefore, the ex-post evaluation study also investigated whether outputs were incorporated in other federal government plans. According to the MDR, the project implementation period overlapped with the formulation of the *National Urban Development Policy (Política Nacional de Desenvolvimento Urbano)*. The contents discussed under the project have been incorporated in this Policy and are being implemented.

In addition, because not only the *PPA* of the federal government but also local governments are in charge of the planning and implementation of disaster risk management when verifying the achievement of the Overall Goal, it is crucial to confirm whether the project's outputs were incorporated in the plans developed and implemented by local governments. With regard to incorporating project outputs in the plans by local governments of pilot municipalities, the following areas have advanced towards risk reduction through non-structural measures.

- ✧ According to the C/P within the state government of Rio de Janeiro and the State Civil Defense within the state government of Santa Catarina, the project's outputs were reflected in the *Emergency Response Plan for the State of Rio de Janeiro* and the *Disaster Risk Reduction and Management Plan of the State of Santa Catarina*.
- ✧ According to the relevant staff in the three pilot municipalities, the project's outputs were used as a reference during the formulation and review of their Disaster Risk Reduction and Management Plans.
- ✧ The contingency plan developed by the project for the communities with high sediment disaster risks in pilot municipalities and the revised protocol of early warning can lead to reduced disaster risk.

The *Manual for Urban Planning to Apply Sediment Disaster Risk Reduction to be Applied to Urban Expansion Planning* needs to be reflected on each city's Urban Master Plan of each municipality. The work is underway for obtaining formal approvals and implementing Urban Master Plans, which incorporates the macro-zoning based on risk assessment conducted under the project. Interviews were held with relevant pilot municipalities (with staff in charge at such offices as the Civil Defense Bureau, Urban Planning Bureau) during the ex-post evaluation. In Blumenau City, the risk assessment map produced under the project contributed to developing their Urban Master Plan approved in 2018. However, there is a need for the city to apply more detailed zoning codes reflective of the degrees of risk to the planning process. The decree on land use/occupation promulgated in 2019 included the risk assessment map produced under this project as an attachment. In Nova Furiburgo City, the project's outputs were considered when the macro-zoning was reviewed in the city's urban and rural areas in December 2019. However, unlike the case of Blumenau City, the revised decree on land use/occupation has not reached the approval process by the legislature at the time of the ex-post evaluation. The situation is similar in Petrópolis City. All municipalities appear to need more time to formulate and approve master plans that reflect the degrees of risk and project outputs in greater details.

The hazard and risk assessment information on sediment disaster developed under this project is used as the basic information for studying how to reduce sediment disaster risks through structural measures under the subsequent project, "Capacity Development Project for Structural Measures against Sediment related Disaster for Resilient Cities."

3.2.2.2 Other Positive and Negative Impacts

Other impacts of this project were confirmed as follows:

(1) Improved Coordination and Cooperation among Four Federal Organizations, Pilot states and Municipalities in Disaster Risk Reduction Activities

According to Japanese experts and C/Ps' self-evaluation, the project contributed to raising the recognition for the need to collaborate among various relevant government organizations on three administrative levels (federal/state/municipality) on disaster risk reduction, and the importance of risk prevention activities for sediment disaster risks. Concerned organizations and agencies of this project maintained cooperation during the project implementation, and that experience strengthened the awareness among relevant staff of its need and importance.

The international society also recognized this coordination structure. At the "2017 Global Platform for Disaster Risk Reduction," organized by The United Nations Office for Disaster Risk Reduction (UNDRR) in Cancun, Mexico, this project received the UN Sasakawa Award for Disaster Reduction on May 25, 2017. The favorable evaluation was given as the project strengthened the lateral coordination among concerned government agencies in taking risk management measures for sediment disasters. Such coordination among organizations was rarely seen in Brazil in the past, and the project was regarded as an example of good practice. The reward was used to cover part of the printing expense of the manuals produced in the project.

The coordination structure, seen during the project implementation, was maintained through meetings of concerned parties for a while after the project termination. However, meetings have not been held for the last few years and the coordination structure was not continued. Concerned organizations expressed their views that similar meetings as held during the project are needed.

(2) The Dissemination of Project Outputs inside Brazil

After the project termination, CPRM and the state government of Santa Catarina entered into an agreement to conduct hazard and risk assessment in five municipalities in the State. Using one of the project outputs, *Hazard and Risk Mapping Manuals for Sediment Disaster,* CPRM and the state government developed the sediment disaster hazard and risk assessment maps for the five municipalities. In 2021, CPRM plans to conduct hazard mapping of three more municipalities (one area each from the South, Southeast, and North regions). In 2019, CENAD, CPRM, and CEMADEN also provided training to Secretariat of Civil Defense in the State of Pernambuco on the methodologies developed in the project.

The State of Rio de Janeiro also secured the budget for risk assessment and mapping in 2019, although the implementation has been delayed at the time of this ex-post evaluation. The plan is to conduct risk assessment mapping in some priority areas, using the mapping methodologies provided in the project.

(3) Contribution to Research on Sediment Disaster Risk

According to CPRM, eight research papers were completed on the hazard and risk mapping for sediment disasters based on the project activities and outputs (as of February 2021). Furthermore, after the project termination, a C/P of CPRM spoke about this project at an event, "10 years of Rio de Janeiro Mountain Regions Mega Disasters," organized by the Brazilian Geological Society on January 14, 2021. Thus, the project is considered to have had some positive impacts on the research in this field inside Brazil.

(4) Participation of the Japanese Private Enterprises in the Market of Brazil

To solve the challenges, which came to light during the project implementation, three new public-private partnership assistance programs were formulated. Under the project "Disseminating Radar Rain Gauge in Paraná State (2017-2019)" JICA collaborated with Japan Radio Co., Ltd. to improve the accuracy of rainfall measurement in urban areas and facilitate the transmission of early warning. A weather radar capable of measuring rainfall intensity more accurately was installed in Curitiba City, Paraná State. As for structural measures, JICA collaborated with the Nippon Steel Metal Products, Co., Ltd under the project "Steel, Slit Dam and Sabo Soil-cement Gravity Dam (2017-2019)" to promote the construction of a steel Sabo dam in an area with high debris flow risks in Nova Furiburgo City, one of the pilot sites of this project. In collaboration with Remote Sensing Technology of Japan (RESTC), JICA is implementing the project "Establishing a Basic Map for Risk Assessment Using Satellite-based Digital Maps (AW3D)" (planned for 2019-2021)" to help develop a basic map from the satellite images for pilot project sites (i.e., Nova Furiburgo City Petrópolis City, Blumenau City). The basic maps will then be used to analyze disaster risks.

(5) The Spill-over Effects of Project Outputs on Other Aid Agencies

During the ex-post evaluation, a C/P of MDR mentioned the "Sustainable Urban Development Project in Brazil (Apoio à Agenda Nacional de Desenvolvimento Urbano Sustentável no Brasil, hereinafter referred to as "ANDUS")," provided by the German Corporation for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit ：GIZ), as an example of this project's positive impacts on the assistance by other aid agencies. According to this C/P, the project concept of ANDUS was proposed to MDR during the last year of this project's implementation. This C/P staff mentioned the project's experience, particularly how beneficial the cooperation and exchange of ideas with pilot municipalities were. As a result, ANDUS incorporated a similar implementation structure. In a publication titled the Guidelines for the Formulation and Reviews of the Urban Master Plan (Guia para Elaboração e Revisão dos Planos Diretores), published under ANDUS at the end of 2019, a manual produced under this project

was used as a reference for the development of the Disaster Risk Reduction Plan for Municipality (Plano Municipal de Redução de Riscos).

One indicator for this project's Overall Goal, "Sediment disaster risk is reduced according to nonstructural measures based on risk assessment," is that the incorporation of the project outputs into the "Disaster Risk Management and Response Program" of the current version of the *PPA* (2020-2023) is only related to the part of the civil defense. It is critical that the project outputs are also incorporated into the plans of the local governments. Although more time is needed to reflect the results of risk assessment in the regulations related to land use and Urban Master Plans of all pilot municipalities, the project led to the improvement in disaster risk reduction plans, evacuation action plans, and early warning protocol of targeted communities in pilot municipalities. Based on the above, the overall goal is considered partially achieved. The project also yielded a wide range of other positive impacts, including: improved coordination and cooperation for disaster risk reduction activities among four federal government organizations and pilot state and municipal authorities; recognition given by the UN Sasakawa Award for the collaborative structure; formulation of new JICA collaboration programs with the private sector; application of methodologies of sediment disaster risk evaluation and mapping to non-pilot municipalities; contribution to the research on sediment disaster risks; and impacts of the project outputs on another aid agency. The achievement of the overall goal is in progress, and the project had various other positive impacts. Therefore, the impact of the project is considered high.

This project has achieved the project purpose of "Establishment of disaster management cycles, which consist of urban expansion planning, protocol of early warning, and monitoring and prediction system based on risk assessment and risk mapping" and the overall goal in terms of incorporating project outputs into federal and local government plans and implementation of planned activities, having other various spill-over effects. Therefore, effectiveness and impact of the project are high.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

The planned and actual inputs on the Japanese side are summarized in Table 4. At the ex-post evaluation, questionnaire surveys and interviews were conducted. The Brazilian C/Ps highly valued the quality of Japanese experts and training programs in Japan.

Table 4: Inputs of the Project

Inputs	Plan	Actual
Dispatch of experts	Long-term experts ・ Chief Advisor/Disaster management policy (48 months) ・ Erosion and sediment control (24 months) ・ Coordinator (48 months) etc. Short-term experts ・ Sediment risk evaluation and hazard mapping ・ Forecasting and early warning ・ Land use regulations and development planning ・ Disaster prevention and recovery planning ・ Flash flood ・ Meteorology	Long-term experts: 6 experts ・ Chief Advisor/Disaster management policy ・ Erosion and sediment control ・ Coordinator Short-term experts: 8 experts ・ Forecasting and early warning ・ Sediment risk evaluation and hazard mapping ・ Disaster prevention and recovery planning Consultant Team: Survey phase – 8 consultants Manual preparation phase–11 consultants General Manager (sediment disaster), Organization and legal system, Disaster data, Risk assessment and mapping, Urban planning/land use regulations/development planning, Disaster prevention/rehabilitation/reconstruction planning, Early warning and risk information dissemination, Sediment disaster monitoring, Prediction system
Training	Training in Japan and a third country	71 trainees (5 trainings in Japan)
Provision of equipment	Office automation equipment, analysis software, etc.	Laptops, laser range finder, laser printer
Local activity cost (local cost)	Expenses related to organizing seminars, workshops, OJT	Part-time staff, domestic trip expenses, communication expenses, etc. Approximate total JPY137 million
Total project cost (Japanese side)	JPY907 million	JPY1.1 billion

Source: JICA documents

3.3.2 Elements of Inputs

3.3.2.1 Project Cost

The actual project cost was JPY1.1 billion against the planned project cost of JPY907 million, representing 121% of the planned cost. One of the reasons for the cost overrun was an increase in the number of C/Ps, from 21 persons scheduled at the signing of R/D to 77 persons and therefore this resulted in the increased number of participants for training in Japan (71 participants).

3.3.2.2 Project Period

The project period was divided into four phases: survey, manual preparation, pilot projects and manual review, and conclusion. The project period was planned to be four years, but was

extended to four years and five months, which is 110% of the plan. The project experienced a delay as early as the Plan of Operation (PO) preparation stage in the survey phase. The main reasons for this delay were the political turmoil created by the presidential impeachment trial in 2016, difficulties securing appropriate staff due to mayoral elections in local areas, and the lack of an adequate operational budget. These external factors were considerable setbacks and hindered the timely implementation. In the first half of the project period, especially in FY2016, the progress was stagnant, but efforts were made in the latter half of the year, and the project was implemented as scheduled.

Brazilian C/Ps and Japanese experts often pointed out that the implementation arrangements, including the frequently organized Joint Technical Working Group (JTWG) meetings, enabled the efficient implementation of the project. Conducting the meetings of C/Ps located in different areas online was instrumental for the efficient implementation.

The implementation of this project involved a wide geographical area and many implementing agencies. These factors put a load on the management of this project and increased the risk of implementation delays. Moreover, the political turmoil caused by the presidential impeachment turned out to be a major obstacle.[6] It is worthy of notice that the project extension was limited to 5 months,[7] and project outputs and purpose were mostly achieved despite adverse impacts. The factors that contributed to the project implementation, such as the above-mentioned implementation arrangement, are listed below:

- Key role played by JICA staff and Project Coordinator in formulating and implementing the project

Both Brazilian C/Ps and Japanese experts highly commended the tireless efforts of the JICA staff engaged in the formulation of this project and the excellent project management capability of the project's Coordinator. The JICA staff continued to get involved in project implementation, either as the staff in charge or a supervisor when he was transferred to different positions (Brazil Office, Latin America and the Caribbean Department, Global Environment Department) during the project period. He also promoted the formulation of collaboration programs with private sector to support the implementation of this project. Having the staff, who was involved in the

[6] The then President Rousseff was accused of manipulating the government budget and was removed from office at the end of August 2016 due to the Senate vote in the impeachment trial. The impeachment trial started at the end of 2015, and the Senate suspended President Rousseff's power and duties in May 2016. Considering that for approximately eight months from the end-2015 to the end of August 2016, there were repeated anti-government demonstrations by the people, and that the society was in turmoil, it was likely that the government's internal processes were stranded on various levels. The implementation of this project is considered to have been substantially affected as well. The long-term experts mentioned that the federal budgets were unavailable during this time, and it was listed as one of the main reasons for the project delay at the project's terminal evaluation.

[7] To be accurate, a few interviewees have mentioned that the extension of the project was considered in the final year of 2017, but did not materialize due to a lack of funding available on the JICA side. The project extension may have been a preferred direction if achieving outcomes and Project Purpose in a more complete manner was the aim. However, outputs and Project Purpose were largely achieved in accordance with indicators. It is worth noting that some efforts were made to reduce the impact of the implementation delay caused by political and other factors.

formulation of the project and was knowledgeable about it, continued to support helped, in no small measures, to facilitate the smooth project implementation. This JICA staff's contribution was highly valued by the federal government and resulted in the award of the National Civil Defense Decoration.[8] As for the project's Coordinator, he tactfully arranged conferences in a manner that Brazilian organizations could take the initiative. In response to the frequent staff changes in the federal government organizations, especially on the high levels, the Coordinator actively reached out to the new personnel to promote their understanding of the project. Such day-to-day operational coordination was crucial for promoting implementation.

- Selection of high-caliber Japanese experts

The Japanese experts and consultant teams dispatched under the project included professionals who were active on the frontline in sediment disaster risk management in Japan, such as officials of the National Institute for Land and Infrastructure Management under the Ministry of Land, Infrastructure, Transport and Tourism. Engaging highly qualified experts likely contributed to enhancing the effectiveness of the project and the efficiency of implementation. According to the JICA personnel at the time of project formulation and the project's Coordinator, it was considered necessary to dispatch Japanese experts with the solid technical ability to respond to the high technical levels of researchers at Brazil's federal government organizations. Therefore, the selection of experts was conducted with attention to this point. Furthermore, care was taken to ensure that there would be an adequate number of capable translators, who played an essential role in facilitating the communication between Japanese experts and Brazilian C/Ps.

- Capability and Commitment of Brazilian C/Ps

One of the promoting factors for this project was the high qualification and strong commitment of the researchers at Brazilian concerned organizations. In addition to those with master's or doctorate degrees, many had studied in western countries. The project scope that fit each C/P's capacity strengthening needs and dispatching capable Japanese experts as mentioned above were other factors that ensured C/Ps' willingness and commitment to project activities.

Although the extension of the project period was limited to a minimum, both the project cost and period exceeded the plan to an extent. Therefore, the efficiency of the project is fair.

[8] JICA website https://www.jica.go.jp/topics/2018/20190328_02.html (as of July 2021)

3.4 Sustainability (Rating: ②)

3.4.1 Policy and Political Commitment for the Sustainability of Project Effects

The below evidence shows that the project is sustainable to some extent from the policy and political points of view. However, considering the political influences, this category is rated fair.

- As analyzed in 3.2.2.1 Achievement of Overall Goal, the *Program 2218: Disaster Risk Management (Civil Defense)* in the federal government's *PPA* (2020-2023) mentioned the budget for capacity building of municipal governments for disaster response and disaster risk reduction. This program supports risk assessment and mapping, disaster risk reduction plans in municipalities, geotechnical maps for urbanization suitability, contingency plans, and the early warning system. Thus, there are continued efforts that are related to the project's outputs. However, compared to the previous *PPA* (2016-2019), the program content was considerably reduced and only the civil defense-related program was maintained within disaster risk management. It is not always required to maintain the same level of content and budget, however, there was a change in administration in Brazil in 2019, and the priority given to disaster risk management within the overall federal government plan is not necessarily equal to that under the *PPA* (2016 – 2019), affected by political influences.

- On the other hand, plans of some government organizations include activities that reflect the project outputs and allow the continuation of activities started under this project. For example, CPRM's internal activity plan shows that the organization will conduct hazard mapping. Also, CEMADEN's Master Plan (approved in 2019) shows that the warning and monitoring of sediment disasters will be conducted based on the model developed under the project.

- The Disaster Risk Reduction Plans on state and municipality levels refer to this project (GIDES). However, incorporating the sediment disaster risk assessment to land use regulations and Urban Master Plans of each municipality will likely require more time because there are often vested interests of local people and it is not easy to obtain the approval of the municipal legislature.

- In Brazil, combating the COVID-19 pandemic has been a more urgent agenda since 2020.

3.4.2 Institutional/Organizational Aspect for the Sustainability of Project Effects

Considering the situations related to the legal and the institutional systems, institutional/organizational aspect of the sustainability of project effects is rated fair.

〈Legal System〉

- Based on Regulation No. 10593 of Law No. 12608 (December 2020), the National Civil Protection and Defense System, Civil Defense Council, Civil Protection Plan, and National Disaster Information System were established as part of the country's Disaster Risk Management System.
- The protocol of early warning, developed through the consultation among federal, state, and municipal authorities under this project, was introduced by CEMADEN, CENAD, and all pilot states and municipalities.

〈Organizational System〉

- After the project termination, meetings were organized less frequently and the collaborative system among federal, state, and municipal governments was discontinued. All C/Ps expressed their views that continued collaboration is needed. The reason why the collaborative system did not continue was due to the reorganizational and personnel changes of each organization, however, it can be mentioned that another reason is that there was no project activity to establish a sustainable system for the post-project period that takes these risks into consideration.
- Among the federal government organizations, MI and MCidades were merged as MDR in January 2019. This reorganization made it possible to unify their activities, which used to be conducted by separate ministries. Also, the Department of Disaster Management and Coordination and the Department of Risk Management were established within CENAD. On the other hand, urban planning-related sections have seen staff reductions. Nevertheless, C/Ps strive to share the project's outputs within their respective organizations, and therefore, the sustainability of project effects has not been jeopardized.
- In state and municipal governments, a change in the governor or mayor often results in personnel reshuffling. During this ex-post evaluation, two state governments and three municipal governments were contacted to check the status of C/Ps. As a result, it was confirmed that, even when an original C/P was transferred or chose to resign, there is another staff who is engaged in the same task since the project implementation or a different disaster-related operation. Hence, the project's outputs were passed on among staff.

3.4.3 Technical Aspect for the Sustainability of Project Effects

The technical aspect for sustainability is considered high due to following reasons:

- The whole set of manuals, a part of project deliverables, can be found on the MDR website and available even after personnel changes. The content of the manual for risk evaluation has been reviewed by members of the Society of Technology, Environment and Geology in Brazil and domestic consultants (including university professors and others). The C/Ps in MDR confirmed that these manuals were shared with colleagues in his department. Some Brazilian C/Ps and Japanese experts mentioned that it would have been better if researchers, such as those noted above, were included in the project activities from the start.

- According to the feedback received in the meetings with C/Ps, the technical manuals that were part of the project's outputs continue to be used by all organizations. For example, the response from the federal agency in charge of urban planning showed that they refer to the manual when they receive inquiries from municipalities.

- The technical knowledge (e.g., risk assessment and mapping, early warning and risk information dissemination), which the federal government staff has obtained during the project, is being applied in different regions in the country.

- CENAD approved and is implementing the training plan (2019-2023) aimed at the Civil Defense Bureaus at state and municipal governments. Among the training programs offered is the one called "GIDES," the title of this project. This program provide training on the contingency plan for sediment disasters, which was proposed in this project.

- CEMADEN was supposed to apply the proposed methodology for issuing early warning to its system after the project termination. As of the time of ex-post evaluation (a meeting in January 2021), it has not happened, but the monitoring methodology that was developed in the project is now technologically ready to operate. In addition, CEMADEN, in cooperation with CENAD, has a plan to offer virtual training to the Civil Defense Bureau in each municipality on how to use the federal government's early warnings.

- The federal government expressed that it intends to refer to the Manuals on Plan Preparation for Countermeasures to Sediment Disasters for design, construction management, and fund management when it receives the construction application from state and municipal authorities. Further, related to such structural measures, JICA's collaboration program with the private sector is in progress to construct a Sabo dam,

based on Japanese technology, in Nova Furiburgo City (the project "Steel, Slit Dam and Sabo Soil-cement Gravity Dam" Nippon Steel Metal Products, Co., Ltd). In addition, this project's follow-up technical cooperation project, "Capacity Development Project for Structural Measures against Sediment related Disaster for Resilient Cities," aims to support pertinent Brazilian staff to gain knowledge and improve technologies related to disaster countermeasure constructions.

- Each concerned organization retained at least one staff who participated in the preparation of manuals under this project and gained new knowledge. The knowledge is thus still being shared within the respective organizations after the project completion. Therefore, project outputs are being passed down at least to some degree.

3.4.4 Financial Aspect for the Sustainability of Project Effects

As will be mentioned below, the overall federal budget for disaster risk management decreased, but the budget for training, which is beneficial for promoting the utilization of the project outputs, is provided. The budget for the Civil Defense Bureau of each pilot city continued to be allocated at a constant level. Therefore, the sustainability from the financial aspects is rated fair.

- As investigated in 3.2.2.1 "Achievement of Overall Goal," the budget of the federal government for disaster risk management related programs was decreased from BRL4.1 billion to BRL1.87 billion in the ongoing *PPA* (2020-2023). MCidades and MI were merged into MDR and went under a broad organizational reform. As a result of interviews with MDR officials, it was confirmed that MDR's disaster response-related budget was significantly reduced. Nevertheless, the *PPA* is not the only institution that reflects the project's outcomes. As mentioned in 3.4.3, CENAD, which is in the forefront of utilizing the project's outcome (GIDES system), has been receiving the budget for training purposes.

- The budget for civil defense bureaus on the state and municipal levels did not experience much change. In Nova Furiburgo City, a new budget law introduced budgetary items for various programs related to natural disaster risk management programs in October 2019. In addition, with regard to risk assessment, Rio de Janeiro State and Santa Catarina State provided a budget to conduct risk assessments in other areas in their states. Santa Catarina State has already started the risk assessment operation. On the other hand, it was reported that the budgets for urban planning and construction work within MDR decreased.

- In Brazil, the widespread COVID-19 pandemic since last year is an urgent challenge to be tackled. The budget has been allocated for disaster risk reduction and management, but the actual execution of related work may require some time.

Regarding policy and political commitments for the sustainability of project effects, the scope of the federal disaster risk management program has been reduced compared to the one during project implementation. However, project outputs are incorporated in disaster risk management plans on the state and municipal levels. Therefore, from the policy viewpoint, the project is partially sustainable. Related to the institutional aspect, the approval of Regulation No. 10593 of Law No. 12608 (December 2020) instituted the country's Disaster Risk Management System, and the protocol of early warning, proposed under this project, was adopted by all organizations involved in early warning. Concerning the organizational aspect, the collaborative structure that enabled regular consultations among the federal, state, and municipal authorities during the project implementation was not maintained after the project termination. Also, the three levels of governments all experienced some reorganization and staff decreases. However, these structural changes did not amount to a devastating impact that threatens the sustainability of project activities and outcomes. As for the technical aspect, the set of manuals produced in the project is made available to the public on MDR's website, and officials can refer to the manuals to work on their tasks. The protocols of risk evaluation and mapping, as well as early warning and disseminating risk information and other products, are being applied to other regions in the country. Therefore, the sustainability of the technical aspect is high. In terms of the financial aspect, the budget of the federal-level disaster risk management has decreased. Still, some funding was provided for the activities beneficial for the continuation and dissemination of the project's outputs, such as training programs for CENAD and dissemination activities for the project's outcomes.

The sustainability of project outputs has been mixed – some issues have been sustainable, whereas others have faced challenges. In light of the above, the overall sustainability is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project supports capacity building for the risk assessment on sediment disasters, formulating and implementing, based on such risk assessment, urban expansion plans and disaster prevention/rehabilitation/reconstruction plans, issuance of early warning and dissemination of risk information, and research and development on disaster monitoring as well as forecast and early warnings. Through capacity building activities, the project aims to improve Brazil's preparedness for disaster response and thereby contributes to strengthening its integrated national strategy for natural disaster risk management. This project is consistent with the needs of Brazil's

development plans and policies as well as the efforts made by the governments on federal, state, and municipal levels to prevent disasters. The project is aligned with the Japanese government's development aid policies of that time as well. Japan's advanced sediment disaster technologies also contributed to the project. In light of the above, the relevance of the project is high. The project delivered outputs related to capacity strengthening of pertinent organizations and agencies in four areas: risk assessment on sediment disasters; formulation and implementation of urban expansion plans as well as disaster prevention, rehabilitation, and reconstruction plans; protocol of early warning; and system of monitoring and prediction. The federal government officially approved manuals and other products of this project for these areas as the national guidelines to be referred in Brazil, and therefore, the effectiveness of the project is high. One of the verifiable indicators for the Overall Goal, i.e., project outputs will be reflected on the disaster risk management program in the *PPA* (2020-2023) at the time of the ex-post evaluation, was partially achieved. However, project outputs were incorporated in policies and training plans of federal government organizations and disaster risk reduction management plans of local governments. In addition, the project had many other positive impacts, including: raised awareness among federal and local authorities about the importance of coordination and cooperation for mainstreaming disaster reduction management; enabled the government to apply risk evaluation and hazard mapping to other locations; contributed to the research on sediment disaster risk in Brazil; led to the formation of JICA's new collaboration programs with the private sector; and had positive spill-over effects on other donor agencies. Therefore, the impact of this project is considered high. With regard to the efficiency, the delay in project implementation was managed within a minimal level, but the project has experienced some cost overrun and extension of the cooperation period. Therefore, the efficiency of the project is fair. Concerning the policy and political aspects of sustainability of project effects, the context as the federal government program has waned due to political influence and other factors; however, project outputs are partially incorporated in the activities of each federal government organization and the operations of local governments. As for institutional and organizational aspects, all project's products were enacted by federal and local authorities, but the collaborative institutional arrangement between federal and local governments, established under this project, is no longer functioning. The sustainability of technical aspects is high, as seen in the case of technologies mastered by participating organizations and agencies under the project. Concerning financial aspects, a certain level of the budget has been allocated by the federal government for training programs to disseminate project outputs and by municipal governments for disaster reduction activities. Considering the mixed results across aspects and organizations, the overall sustainability of this project is fair.

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

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

Maintenance of Collaboration Structure among Federal, State, and Municipal Authorities: for Dissemination and Revision of Manuals

The close consultation and collaboration among federal, state, and municipal authorities during the project were listed as one of the factors for this project's success. As time passes after the project termination, however, these organizations ceased to convene all in one place as they used to do during the project implementation. The set of manuals that summarized project outputs will need periodic reviews through exchanging views and reconciling differences among concerned organizations. Therefore, it is desirable if meetings will be planned and held periodically among pertinent organizations of a specific topic in each area as soon as possible.

4.2.2 Recommendations to JICA

Organization of follow-up seminars

There were many requests from the Brazilian side for the project's follow-up activities. It is recommended to hold seminar or workshop to continue Japanese cooperation with disaster prevention policies in Brazil, including follow-up the project activities, together with the purpose of upgrading the technologies and further disseminating the project's outputs to the rest of Brazil, if feasible, at the appropriate time. Through these activities, JICA can follow up technological challenges which Brazilian C/Ps may find. They will also help disseminate the project's knowledge to the newly assigned staff of pertinent organizations. Therefore, the follow-up seminars and workshops will solidify more firmly the effects and impacts of the project.

4.3 Lessons Learned

Development of Project Scope and Implementation Arrangements based on the Long-term Strategic Support for the Country's Disaster Management Operations

This project put into practice many points proposed by lessons learned based on a cross-sectional analysis of evaluation reports "Public Administration on Disaster Prevention: Strategic Approach to Support for Disaster Risk Reduction (Basic Requirements)"[9]. One knowledge lesson from past projects about the strategic approach for disaster management recommends "developing a long-

[9] JICA Report "Thematic Evaluation− Cross-sectional analysis of evaluation results: Extraction of practical knowledge lessons in the field of disaster prevention" (2014)
https://www.jica.go.jp/activities/evaluation/tech_ga/after/ku57pq00001cdfnb-att/201412_01.pdf
(As of September, 2021). Only Japanese version is available.

term system roadmap until disaster risk management starts to function as a social system, and adopting a strategic support approach that takes the fullest advantage of Japan's knowledge/expertise to meet the needs of the beneficiary country, and designing (inputs, project period and phasing) the project for capacity building of disaster risk management in a manner that ensures the achievement of project outcomes." This project was not conceived to put these knowledge lessons into practice, but is a good example of incorporating these lessons during the project formulation stage.

With regard to the project design that ensures the outcomes, this project secured superior Japanese experts who had the capability to deal with Brazilian C/Ps' high technical expertise, and were active on the frontline in their respective fields in Japan. The availability of exceptional talents is often limited, but efforts were made to secure their participation in advance. Also, the project placed a tactful and resourceful professional, as its Coordinator who was skilled at managing various organizations both in Brazil and Japan and acted as a pivotal person in the project implementation. Considering the strategic approach to supporting Brazil's disaster risk management from the early stage of project design, and constructing the institutional arrangement that can implement the plan without fail led to the project's success. Related to taking the full advantage of Japan's knowledge/expertise to meet the needs of the beneficiary country, the impact went well beyond this project. When this project was being implemented, some technical needs of the Brazilian C/Ps came to light. To disseminate superior technologies of the Japanese private sector in the field of disaster risk reduction, a few private sector collaborating programs were developed. It can be said that Japan has contributed to the mainstreaming of disaster risk reduction in Brazil in line with the "Sendai Framework for Disaster Risk Reduction 2015-2030" adopted by the Third UN World Conference on Disaster Risk Reduction.

Related to the implementation arrangement and activity, there are some issues to be considered when formulating projects for Brazil. Brazil has abundant human resources, not only in the government, but also at universities, research organizations, and the private sector. While developing manuals and other products, C/Ps mobilized researcher groups and private sector consultants to assist manual development and review of their contents. Both Brazilian and Japanese personnel involved in this project later expressed that it would have been better to engage these researchers and private consultants from the start. Since government organizations and staffing are often influenced by political factors, involving actors that will not be affected by a change in administration will ensure the continuation of the project outputs and sustainability after the project. Selecting personnel to engage in the project from a broad perspective and provide for the participation of these researchers from the early stage of planning should be considered. Regarding the collaborative operation system among various federal and local organizations including the above-mentioned relevant parties, it would have been better to incorporate the project activity that all relevant parties discuss a mechanism that enables their continued

cooperation after the project completion and make efforts such as establishing the government as an official committee or working group by the end of the project.

End

Federative Republic of Brazil

FY2020 Ex-Post Evaluation of Technical Cooperation Project

"The Project on Nationwide Dissemination of Community Policing"

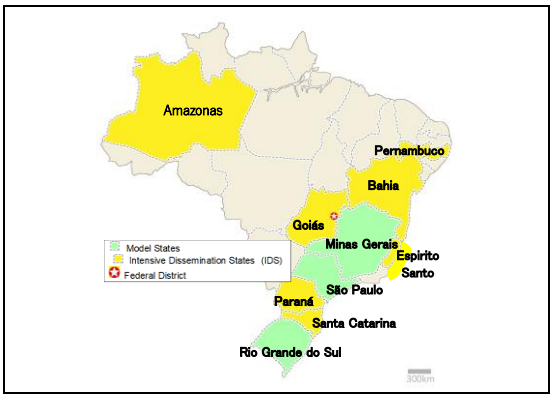
External Evaluator: Mitsue Mishima, OPMAC Corporation

0. Summary

The project aimed to promote the dissemination of community policing in Brazil: (1) to enhance the capacity of the National Security Bureau of the Ministry of Justice of Brazil (Secretaria Nacional de Segurança Pública, hereinafter referred to as "SENASP") for information collection and management, and to disseminate and strengthen the efforts of community policing in each state, (2) to strengthen community policing in model states, i.e., São Paulo State Police, Minas Gerais State Police, and Rio Grande do Sul State Police, and (3) to establish a system to disseminate community policing independently and sustainably by the relevant institutions in Brazil through strengthening the capacity of SENASP and the three model states leading to effective support for other states and contributing to the dissemination of community policing appropriate to the situation in Brazil. The project is highly relevant since it is consistent with development plan and policy, and with the needs of the implementing agencies for capacity development and strengthening of the dissemination system. The project also matched Japanese ODA policy. Community policing in the Intensive Dissemination States has been developed by the outputs of enhancement of promotion capacity and strengthening of the dissemination system of SENASP and the three model states. This was achieved through the seminars and training of the project. *National Guidelines of Community Police* was then established as a legal document, which was also an important step forward in building a system for disseminating community policing for the relevant institutions. The effectiveness and impacts of the project are high, with impacts such as improving the motivation of Brazilian police officers for community policing, crime prevention, and technical transfer to Central American countries. The efficiency is fair because, although the project period was within the plan, the project cost was slightly higher than the plan. Although differences should be noted in the community police activities of each state, there is almost no concern that the efforts of community policing in Brazil as a whole will be significantly weakened in terms of policy and political commitment, institutional/organizational, technical and financial aspects. Therefore, the sustainability of the project effects is high.

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

1. Project Description



Project Site

João Teodoro Community Base of Security in Sorocaba in São Paulo State

1.1 Background

In the Federative Republic of Brazil (hereinafter referred to as "Brazil"), the figures for the numbers of homicides, robbery, and injuries are high in the world, and improving security is a social issue. At the time of planning, with upcoming international events such as the Olympic Games and with an increase in investment and business expansion by Japanese and other foreign companies, improving and maintaining security throughout Brazil had become even more important.

The Brazilian police are divided into two types, the military police (Polícia Militar) of each state and the civil police (Polícia Civil) which is in charge of criminal investigation and the arrest of suspects for the purpose of maintaining public order and crime prevention. In addition, some cities have set up a Civil Guard (Guarda Civil). SENASP, which formulates national public security policies and promotes and supports the implementation of respective independent state policies, established a *National Unified System for Public Security* (*Sistema Único de Segurança Pública*, hereinafter referred to as "*SUSP*") (2000) in order to integrate these police organizations. With the aim of drastically reforming the organization of the police with the participation of civil society through the Community Safety Council (Conselho Comunitário de Segurança, hereinafter referred to as "CONSEG"), the national government has taken concrete measures to prevent crime and to promote community police activities, promoting this at the national level and together with states and municipalities. Under *SUSP*, the introduction, dissemination, and enhancement of community police activities have been promoted nationwide, with efforts such as the *National Program for Public Security with Citizens* (*Programa Nacional de Segurança Pública com Cidadania*, hereinafter referred to as "*PRONASCI*") (2007). Since the latter half of 2006, SENASP has conducted community police training courses throughout the country.

The São Paulo State Military Police, which is responsible for maintaining the security of São Paulo state, the largest metropolitan area in South America, announced the introduction of

community policing in the 1990s through interacting with citizens and establishing relationships of trust with them, thus tackling crime prevention, which was indispensable. As part of the cooperation to support this initiative, since 2000, JICA has promoted the dissemination of community policing in Brazil, introducing the community police activities of Japan as an example, through various types of cooperation such as national/issue-specific training, short-term expert dispatch, and technical cooperation. Two technical cooperation projects were implemented: the "Community Policing Project" (2005-2008) and the "Project on Implementation of Community Policing using the Koban System" (2008-2011).

While the cooperation of JICA continued, there were differences in the quality and level of efforts at each police box within a state, even in the state of São Paulo, where community policing was said to be the most advanced in Brazil. In Brazil as a whole, the degree of dissemination of community policing and the level of efforts differed greatly depending on the state, and thus the dissemination and establishment of community policing throughout Brazil remained a critical concern. With this background, support from Japan was requested to improve and maintain the quality of community policing in São Paulo State, as well as to disseminate and establish it more firmly in other states.

1.2 Project Outline

In order to promote the dissemination of community policing in Brazil, the project aimed: (1) to enhance the capacity of the SENASP for information collection and management, and for the promotion of the dissemination and the strengthening of community policing in each state (Output 1 & 2), (2) to strengthen community policing in the model states, i.e., the São Paulo State Police (hereinafter referred to as "PMESP"), the Minas Gerais State Police (hereinafter referred to as "PMMG") , and the Rio Grande do Sul State Police (hereinafter referred to as "BMRS") (Output 3 ~5), (3) to establish a system to disseminate community policing independently and sustainably by the relevant institutions in Brazil through strengthening the capacity of SENASP and the three model states to effectively support other states (Output 6), leading to the dissemination of community policing appropriate to the situation of Brazil.

Overall Goal		Brazilian community policing is being disseminated by Brazilian related organizations.
Project Purpose		A nationwide system for continuous and self-reliant dissemination of community policing by Brazilian related organizations is established.
Outputs	Output 1	The capacity of SENASP for collecting and managing information on community policing is enhanced in order to facilitate dissemination of community policing in Brazil.
	Output 2	The capacity of SENASP for inducting new activities of community policing is enhanced, by regional agreements.
	Output 3	Community policing activities by PMESP are improved.
	Output 4	Community policing activities by PMMG are improved.

	Output 5	Community policing activities by BMRS are improved.
	Output 6	The capacity of SENASP, PMESP, PMMG and BMRS for providing effective assistance to other states is enhanced in order to facilitate dissemination of community policing in Brazil.
Total Cost (Japanese Side)		211 million yen
Period of Cooperation		January 2015-January 2018
Target Area		Federal District (Brasilia), São Paulo, Minas Gerais, Rio Grande do Sul, Amazonas, Bahia, Pernambuco, Espírito Santo, Goiás, Paraná, Santa Catarina States
Implementing Agency		SENASP, PMESP, PMMG, BMRS
Other Relevant Agencies/ Organizations		State polices of Intensive Dissemination States (hereinafter referred to as "IDS" IDS includes Federal District). The targets are 8 locations: Federal District (Brasilia), Amazonas, Bahia, Pernambuco, Espírito Santo, Goiás, Paraná, Santa Catarina States.
Supporting Agency in Japan		National Police Agency
Related Projects		[JICA Technical Cooperation Projects] ・ Community Policing Project (January 2005-March 2008) ・ Project on Implementation of Community Policing using the Koban System (November 2008-November 2011) ・ Community policing course based on Koban system (The third country training courses targeting Latin and Central American countries, fiscal year 2011 to 2013)

Japan and Brazil, respective "Community policing"

Japanese community policing has the task of ensuring a safe life through close contact with the local community, cooperating with local residents, companies, local governments, etc., based on police boxes (Koban) and residential police boxes (Chuzaisho) located all over Japan. Community police activities in Japan are "patrol / patrol contact in areas under jurisdiction", "response to reports of lost and found items", "geographical guidance", "initial response in the event of any incident/accident", "crime prevention guidance", "criminal arrest", "crime prevention activities", "traffic guidance and control", and "accident prevention activities" . *1

"Community policing" in Brazil, "Policiamento Comunitário" in Portuguese, is not necessarily equivalent to Japanese community policing. For example, at the security community bases (Base Comunitária de Segurança, hereinafter referred to as "BCS", also called "Koban") established in the state of São Paulo with reference to the Japanese police boxes, philanthropic activities are carried out with the local communities. These include activities to deepen exchanges with local residents through the provision of events (Christmas events, sports classes, movie screenings, free medical examinations by dentists, etc.), which are different from the main activities of community policing in Japan. On the other hand, the "arrest of criminals" which is part of Japanese community policing activities is not included in the scope of work of the Brazilian state police. As for the organizational network, the Japanese community policing has national unified guidelines, and police officers develop their careers by experiencing the work at a police box. However in Brazil, each state police independently formulates policies and thus the contents and the position of community policing in the respective organizational structure* 2 and the way BCS locations are arranged differently according to each state. As mentioned above, the usage and specific contents of the word "community policing" do not always match between Japan and Brazil. Various efforts are being made in the policies of each state police in Brazil, which is a point that should also be noted.

*1:Home page of National Police Agency https://www.npa.go.jp/about/recruitment/police/job/area.html (as of June 30th in 2021).
*2:The organizational structure of each state police consists of Area Policing Command (Comando de Policiamento de Área), Battalions (Batalhão), Companies (Companhia), etc., and the positions of police officers are Colonel (Coronel), Lieutenant colonel (Tenente-Coronel), and Major (Major), Captain (Capitão), Lieutenant (Primeiro-tenente), Ensign (Segundo-tenente), and Sergeant (Sargento). These basic positions are common to each state to some extent, however, the composition of departments differs from state to state according to the operation policy of each state.

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

At the terminal evaluation (2017), the project purpose was judged to have been "partially achieved". Justifications for this were that the dissemination of community policing in Brazil had steadily progressed, and, in Amazonas state as an example of IDS, that the state police and the civil police in charge of the investigation department closely exchanged information on security, referring to deepening ties with local residents through patrol contact with each small district in the area under their jurisdiction. It was also stated that the *National Guidelines of Community Police* (*Diretriz Nacional de Polícia Comunitária*) was expected to be enacted after August 2018.

1.3.2 Achievement Status of the Overall Goal at the Terminal Evaluation

The overall goal was judged to be "partially expected to be achieved". According to the questionnaire at the terminal evaluation, Japanese experts and the Brazilian counterparts (hereinafter referred to as "C/P") pointed out concerns about constant financial support and further long-term efforts by the Federal government, SENASP, for disseminating the good practices of the model states to IDS and other states in the future. That which was described as "dissemination to all Brazilian states" as the indicator of the overall goal was determined as "all states that had concluded a technical cooperation agreement" at the time of the terminal evaluation.

1.3.3 Recommendations from the Terminal Evaluation

[Recommendation to the Brazilian Implementing Agencies after Project Completion]

Recommendation	Situation at the time of ex-post evaluation
1. Preparation of a community policing guidelines	In April 2019, *National Guidelines of Community Police* was enacted.
2. Introduction of a nationwide community policing certification (reward) system	Although there is no nationwide common community police certification (reward) system, the International Course for Disseminator of Community Policing-Koban system (Curso Internacional de Multiplicador de Polícia Comunitária-Sistema Koban, hereinafter referred to as "CIMPC-SK") issues a course completion certificate.

2. Outline of the Evaluation Study

2.1 External Evaluator

Mitsue Mishima, OPMAC Corporation

2.2 Duration of Evaluation Study

The ex-post evaluation study was conducted with the following schedule:

Duration of the Study: October 2020-December 2021

Duration of the Field Study: March 3, 5, 2021 (by a local consultant only in São Paulo State)

2.3 Constraints during the Evaluation Study

Due to the coronavirus pandemic within Brazil, external evaluators could not travel there, and field survey assistants could not visit project sites outside of the state of São Paulo. The external evaluator and local assistant conducted hearing with the executing agency and related agencies through on-line meetings. Information was collected from all IDS by using questionnaires, and among them, information about four states on the contribution of this project was collected and evaluated as case studies.

Regarding the overall goal indicator, that is, the initiation of specific efforts for the community policing in all states, the situations of all states could not be confirmed with SENASP and thus the evaluation was conducted within the range that could be confirmed.

In addition, since technical cooperation aimed at dissemination nationwide was implemented before the implementation of this project, the effectiveness and impacts of the project include the outcomes of the activities and outputs of technical cooperation prior to the project, and therefore, the part of evaluation on the effectiveness and impacts by this project only is limited.

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

3.1 Relevance (Rating: ③[2])

3.1.1 Consistency with the Development Plan of Brazil

This project has been consistent with the policies during project implementation since the ex-ante evaluation.

At the time of the project plan, *the National Multi-Annual Plan* (*Plano Plurianual*, hereafter referred to as "*PPA*") (2012-2015) aimed at "public security with citizens" (Segurança Pública com Cidadania) in order to eradicate violence and murder. The *PPA* (2016-2019) during project implementation stated that SENASP would work with the state and municipal public security organizations to strengthen concrete crime prevention activities through community policing. Furthermore, SENASP prepared a draft plan/policy to put *SUSP* into practice during project implementation and this became *the Public Security and Social Defense Plan/Policy* (2018-2028) enacted in 2018, the year when the project was completed. In particular, it was stated that community policing would be expanded to prevent crime in areas where there were many cases of violence against women, such as domestic violence.

As mentioned above, the promotion of community policing has been consistently implemented as one pillar of federal government policy, and the further strengthening and nationwide dissemination of the community policing of the project were in line with federal government policy.

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

3.1.2 Consistency with the Development Needs of Brazil

The project meets the needs of Brazil.

The crime rates for murder, robbery, injury, etc. in Brazil were high internationally both at the time of the project planning and during implementation. For example, according to the statistics of the United Nations Office on Drugs and Crime (UNODC), the number of homicides was 28.6 per 100,000 in 2015 and 27.4 in 2018, at the time of the project planning. This was five times as many in Brazil than the global average of 5.8 per 100,000 in 2018. Therefore, there has been a great need to continue focusing on security improvement measures during the period of project implementation and this will continue into the future.

During the project period, SENASP implemented the *Programa Patrulha Maria da Penha*[3]", an anti-domestic violence program in Brazil, and "the *Programa Educacional de Resistência às Drogas*" (hereinafter referred to as "*PROERD*"), a Drug Resistance Educational Program. In implementing the program, it was stated that patrols and patrol contacts in each province would directly reach out to local residents to make efforts for crime prevention. For this reason, there was a high necessity for police officers to practice the community policing approach of working with local residents based on BCS.

3.1.3 Consistency with Japan's ODA Policy

The public safety (police) sector was stated as a priority area for "countermeasures for urban problems and environmental/disaster prevention" in Japan's country specific ODA policy for Brazil, and a contribution to the improvement of security deterioration due to urbanization was expected.

In the third country training "Community Policing Course Based on the Koban System", which was conducted from fiscal year 2011 to 2013 prior to implementation of the project, the police of Costa Rica, Guatemala, Honduras, El Salvador, etc. participated in the training conducted in Brazil. The results of the technical cooperation in regional police activities in Brazil therefore have disseminated not only domestically but also to Central American countries. This was a contribution to the priority area in the "Triangular Cooperation Assistance" policy for Brazil, and is recognized as being consistent with Japan's ODA policy.

3.1.4 Appropriateness of the Project Plan and Approach

It was planned that the project would be continued based on the evaluations and lessons learned from the two technical cooperation projects in Brazil that had already taken place by that time. The terminal evaluation of JICA technical cooperation in 2011 indicated that the number of

[3] The program name is the name of an activist who opposed domestic violence against women.

crimes in the entire state was declining, implying that the introduction of Koban may have played an important role[4]. Reviewing JICA technical cooperation up to that point in a survey by SENASP, it was also evaluated that the efforts of community policing could contribute to crime control[5]. In addition, in the evaluation of previous technical cooperation, it was pointed out that the presence of Japanese police officers itself led to the promotion of community policing and to motivating Brazilian police officers to engage in it. It can be said that exchanging work cultures between the Japanese and Brazilian police had been significant (refer to Column 1). By continuing to dispatch Japanese police officers, the plan for this project was to have a larger number of Brazilian state police officers motivated for community policing, attempting further expansion in wider areas together with the consolidation of community policing, with SENASP and the police in the three states where community policing activities were advanced as the implementing agency.

In Brazil, which has a Federal system, the authority of SENASP toward state police is limited to the formulation of national guidelines and some financial assistance, while the administrative authority of each state government is strong and the state police functions as an organization under each state, following the command of the Governor. The project purpose in the plan was to "promote community policing in an appropriate manner for each state" in the IDS target states, while the overall goal was the same for all states. Based on the results of the previous technical cooperation, it was judged that the direction of the project was appropriate.

However, the project plan did not include a definition and monitoring of the contents of concrete activities for model states and their respective state police for the indicator of the project purpose, "Concrete actions for promoting community policing in the appropriate manner of each state initiated in the IDS." Therefore, the contribution of the project in the causal relationship of the activities of each institution of the project→Outputs→achievement of project purpose could not be clearly confirmed in the records during project implementation. It can be said that there was room for improvement in this regard for more effective project monitoring and management[6].

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[4] "Terminal Evaluation Report of Project on Implementation of Community Policing using the Koban System in the Federal Republic of Brazil" (2011) p.16-17. In this project, the community policing in São Paulo was strengthened, and the project supported the dissemination of the model of community policing efforts to other states, referring to the BCS in São Paulo as an example.

[5] Rio Grande do Sul Federal University "3.The Community Policing Program in Brazil: Evaluation on Public Security Policy Proposals (Universidade Federal do Rio Grande do Sul "3. Programas de Polícia Comunitária no Brasil: Avaliacão de Propostas de Políticas Públicas de Segranca") in "Collection thinking Public Security Volume 3" (Coleção Pensando a Segurança Pública Volume 3) published by Ministry of Justice in 2013, also evaluated JICA technical cooperation by 2011.

[6] It was considered important that as output indicators the project showed not only the number of seminars held/attended and the number of participants in training in Japan, but also presented the record of how the results have improved the community policing as a monitoring indicator, to evaluate this and publish it for society. When interviewing Instituto Sou da Paz, a NGO based in São Paulo (established in 1997 to advise on Brazilian security improvement policies and raise awareness of crime prevention), which cooperated during the technical cooperation of the "Project on Implementation of Community Policing using the Koban System", this point was addressed. It seems that it was a good idea to include such evaluation monitoring from the civil society side.

In addition, during implementation, the work of SENASP stagnated due to the impeachment trial of the President of Brazil, and the personnel in charge of the project was frequently changed. There were a few personnel of SENASP in charge of community policing who also engaged in other tasks. For these reasons, it was difficult to investigate the activities of community policing in the country and devote sufficient time to gathering information on good practices and effects, and a systematic compilation of such lessons was not undertaken. However, it would have been better had such a systematic compilation been carried out when collecting information from each state. In the case of Brazil, it was possible to predict the high possibility of political risk, the risk of frequent staff changes at the federal agencies, and the workload of SENASP personnel, thus it was important that the project was planned considering such risks. In addition to SENASP, research institutes and university researchers in Brazil also conduct research on the theme of community policing, and the project could have incorporated these activities in the project plan, contracting out such work to compile the lessons learned at SENASP from each state.

Column 1: Cultural exchange of the work spirit of Japan and Brazil through the cooperation of community policing

Regarding the Japanese technical cooperation for Brazilian community policing, "... the presence of the Japanese police leads to enhance the motivation (of the Brazilian police)" ("Terminal evaluation report on Community Policing Project", February 2007, p. 39), "The dispatch of Japanese experts to the states participating in this project has the effect of accelerating the awareness of both the military police and the public, and this can be confirmed by the fact that it has been widely covered by the mainstream media." ("Terminal evaluation report on Project on Implementation of Community Policing using the Koban System" July 2011, p. 14) were pointed out and the report stated that the existence itself of the dispatched Japanese police officers was significant.

It seems that the background for this was the high level of trust that the public in Brazil has built with the Japanese-Brazilian society. It was pointed out in the terminal evaluation of these past projects that Japanese Brazilian police officers also contributed to the dissemination of the Koban system, which began in the state of São Paulo, where there are many Japanese Brazilians (Nikkei).

Before the start of this project, in June 2014, the commander of PMESP at that time, General Commander Meila, responded to an interview with the director of the JICA Brazil office and explained the reason why he chose the Japanese community police system as a model, as follows:

*"Koban in Japan not only play a major role in deterring and preventing crime, but also in work rooted in the community, such as communicating with residents and protecting the safety of the community in cooperation with the residents. There was a police box similar to the Japanese one in Sao Paulo, but there was almost no communication with the local residents ... (Omitted). Compared to the systems of Western countries, Japan's community policing system is based on long experience. We judged that it was the most suitable for Brazilian culture and society, so we asked Japan for assistance."**

Considering that the breakthrough for effective implementation of community policing in Brazil was to know, see and experience the ideas and approaches of different societies, in a sense the project also had an aspect of the cultural exchange of the work spirit of the activities of community policing.

*Website https://www.jica.go.jp/brazil/office/information/articles/20140613.html (as of June 2014)

There were some improvements needed in the method of setting indicators for achieving the project purpose (setting specific indicators based on the different efforts of each state) in order to aim for better project implementation. However, based on the above, it can be seen that this

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

3.2 Effectiveness and Impacts[7] (Rating: ③)

In the ex-post evaluation of this project, the evaluation will be based on the indicators of the project design matrix (hereinafter referred to as "PDM") at the time of the terminal evaluation. During project implementation, no official document allowing confirmation of the specific contents and numerical targets of the PDM indicators was agreed by the relevant organizations of the project as, at the time of project planning, it was planned that these would be set after the commencement of the project. Therefore, the project purpose indicator "Concrete actions for promoting community policing in the appropriate manner of each state are initiated in the Intensive Dissemination States." was examined focusing on the viewpoints of "policy and/or guidelines", "strengthening the community policing system", "development of contents of community policing activities", and "improvement of the community policing training courses and/or instructor training", after analyzing the indicators monitored by Japanese experts (guidelines of community policing, the establishment of community policing management and promotion systems, etc.) and the answers to the questionnaires with the implementing agencies and each state of IDS.

3.2.1 Effectiveness

3.2.1.1 Achievement of Project Purpose

It is judged that the project purpose "A nationwide system for continuous and self-reliant dissemination of community policing by Brazilian related organizations is established." has been achieved. Through the implementation of the project seminars and training shown below, the capacity development of the implementing agencies (SENASP and three model states) was achieved, leading to concrete efforts to promote community policing in each area of IDS.

(1) Implementation of seminars and training for the achievement of outputs

Table 1 shows the activity results of the project seminars and training.

A total of 14 CIMP-SK courses were carried out in the three model states related to the capacity development of SENASP (Output 1) and to the strengthening of the capacity of SENASP and three model states for effective support of community policing for other states (Output 6). All states except for the state of Rio de Janeiro participated.

As for the strengthening of community policing in the three model states (Outputs 3 to 5), community policing seminars, mainly targeting police officers within the state, were held five times in Minas Gerais, three times in São Paulo, and four times in Rio Grande do Sul.

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

Participants numbered 680 in Sao Paulo, about 1,800 in Minas Gerais, and more than 1,000 in Rio Grande do Sul.

In addition, community policing seminars, which included lectures by Japanese experts, were held in all IDS. These were held 29 times in total, including those held in states other than IDS, with a total of more than 3,000 participants. Seminars held in various regions were also attended by the general public in some states. Japanese short-term experts visited IDS intensively to provide guidance, and after visiting the three model states, visited each IDS two or three times to provide technical guidance.

Table 1: Number of Activities by State

(Amount of Training, Participants in Training, Technical Visits)

SENASP/State/Federal District	Number of Participants Training in Japan	Number of CIMPC-SK Held in Model States[1]	Number of Participants in CIMPC-SK Held in Model States[2]	Number of Community Policing Seminars Hosted by Model States	Number of Participants in Community Policing Seminars in Model States[3]	Number of Community Policing Seminars Hosted by IDS and Others	Number of Participants Community Policing Seminars by IDS and Others[4]	Number of Technical Visits to IDS by Japanese Experts
SENASP	**6**				**12**			
Acre	0		12					
Alagoas	2		15					
Amapá	1		13					
Amazonas	5		11			1	150	3
Bahia	5		11			3	135	2
Ceará	1		10					
Espírito Santo	5		13			4	1,121	3
Goiás	5		13			3	540	3
Maranhão	1		10					
Mato Grosso	1		9		1	1	130	
Mato Grosso do Sul	2		12			1	30	
Minas Gerais	9	5	31	5	1,810			
Pará	2		14		1	2	150	
Paraíba	1		13					
Paraná	4		11			2	140	2
Pernambuco	1		10			1	200	2
Piauí	1		14		2			
Rio de Janeiro	0		0			2	38	2
Rio Grande do Norte	1		15					
Rio Grande do Sul	8	4	14	4	1,040	2	70	
Rondônia	1		8					
Roraima	1		10					
Santa Catarina	4		11			3	350	3
São Paulo	8	5	15	3	680			
Sergipe	0		2					
Tocantins	2		13			1	202	
Distrito Federal	4		4			3	90	3
Other			9					
Total	**81**	**14**	**323**	**12**	**3,546**	**29**	**3,346**	**23**

Model States　Intensive Dessemination States（IDS）　CIMPC-SK: International Course for Course for Disseminator of Community Policing - Koban System

Source：JICA Documents

Note 1: During fiscal year 2017, the same course was conducted divided into a few times. The first time: September 18 to 21 in 2017 (PMESP, PMMG), The second time: Septermber 25 to 28 in 2017(PMESP,PMMG,BMRS), The third time : October 2 to 5, 2017 （PMESP,PMMG,BMRS）

2: There were 9 participants other than those coming from the states in Brazil.

3: SENASP participated as an implementing agency.

4: Participants of the seminars are primarily from the state police, however citizens also participated in some states: 80 participants in Santa Catarina State, 25 participants in Paraná, 70 participnats in Goiás, 50 participants in Tocantins, 100 participants in Matto Grosso, 120 participants in Espírito Santo are also included in the total number of participants. Some states also received police officer participants from other states.

Source: Website
https://www.brigadamilitar.rs.gov.br/seminarios-60d24c75f28d9 as of July 2021

Photo: Community Policing Seminar in the State of Rio Grade do Sul
(Held on Novemer 2, 2017)

(2) Achieving the Outputs of the capacity development of SENASP and three model states

Regarding the capacity development of SENASP and the executing agencies in the three model states as a result of the implementation of seminars and other project activities, Table 2 shows the questionnaire responses from each organization and evaluation by Japanese experts. Judging from this information, it is considered that the outputs, capacity development for the dissemination of community policing of SENASP and the three states have been achieved. These project outputs are regarded to have contributed to the project purpose: the establishment of a system for disseminating community policing in Brazil.

Table 2: Contribution to the Dissemination of Community Policing within Brazil

Implementing Agency	Outputs for Capacity Development by the Time of Project Completion
SENASP	**The capacity development of SENASP to promote efforts to disseminate and strengthen community policing in each state is generally considered to have been achieved.** Judgment basis: While SENASP did not take the initiative to conduct an independent information gathering survey on the state of practice of community policing in all states, they did collect information, for example, through CIMPC-SK they obtained information on good practices of model states including its effect, and also the examples of participating states. The teaching materials used for this course were revised during the project implementation period, and will be implemented from 2021 using the distant learning system of SENASP. It was decided that classes on the doctrine of community police would be implemented using the Internet, followed by on-site training. Although information on the status of the practice of community policing in each state was not systematically compiled as a survey report during the implementation period of this project, SENASP did promote "technical cooperation agreements on community policing" with each state and those agreements were signed with all except Sergipe and Rio de Janeiro states. With these agreements, a foundation has been established to organize the experiences of each state. In addition, SENASP established communication routes with the regional police coordinators in each state.
PMESP	**Strengthening of community policing by PMESP is considered to have been achieved.** Judgment basis: PMESP had introduced BCS in urban areas and BCSD (Base Comunitária de Segurança Distrital, "Chuzaisho" in rural areas, with reference to the Japanese Koban system, for about 20 years before this project and based on their experiences they disseminated community policing to other states and Central American countries during project implementation, for which they received recognition. Within the project implementation period, PMESP started neighborhood solidarity programs (Programa Vizinhança Solidária, hereinafter referred to as "PVS") with various stakeholders in the community, such as companies, schools, and shops, etc., to promote activities whereby local residents could be actively involved in the improvement of security. The establishment of "School

	patrols (Patrulha Escolar)" and the revision of the permit system for the sale of alcohol by restaurants, which were mentioned in the terminal evaluation, were implemented in parallel with PVS. There was sufficient experience to show examples of activities to other states, including the achievements of JICA technical cooperation by that time.
PMMG	**<u>Strengthening of PMMG's community policing is considered to have been achieved.</u>** Judgment basis: PMMG places emphasis on crime prevention activities, called Prevenção Ativa (*PPA*), and community policing positioned as *PPA*. At the start of the project, PMMG, covering an extensive area, rapidly increased the number of community security bases (Base Segurança Comunitária, hereinafter referred to as BSC*, consisting of one van and two bicycles), including locations other than in the capital. For BSC activities, 154 vehicles were deployed. Practical training at BSC was conducted for students of the police academy. In 2017, a series of BSC was set up at 86 locations in the capital city, Belo Horizonte. In addition, PMMG has made efforts to implement PROERD promoted by the federal government, a protection network formation similar to PVS in São Paulo, whereby local residents (neighborhood residents, shops, farm owners, etc.) are involved in activities to maintain security. Activities include rural patrols, domestic violence prevention patrols, etc. Furthermore, PMMG actively conducted the exchange of information with other states and seminar hosts, which has been recognized as a contribution to the domestic dissemination system of community policing. *Note: PMMG has called mobile police boxes as BSC since 2017.
BMRS	**<u>Strengthening of BMRS community policing is considered to have been achieved.</u>** Judgment basis: BMRS did not have its own doctrine and manual like the states of São Paulo and Minas Gerais. However, they were prepared and issued by a state police officer who participated in training in Japan in April 2015. During the project implementation, community policing took place as an important part of violent crime prevention and civil protection, and in 2015 when the project started, there was the establishment of the Assistant Bureau to the Primary Prevention Program (Adjuntoria de Programas de Prevenção Primária), in the third Section in the General Staff Headquarters of the commander of BMRS. The team in charge in this Bureau is engaged in community policing. The guidelines of community policing have been in force since 2015 as state police guidelines. BMRS has promoted community policing through the implementation of mobile police boxes (Base Comunitária Movel, hereinafter referred to as "BCM") and establishment of bases (Nucleo) through the signing of agreements with the city government, similar to "Chuzaisho" in Japan. Statistical data has been collected, monitored and analyzed on a regular basis for these activities, and information has also been gathered on cases which have become references for other states. BMRS has also actively cooperated in the response to inquiries from other states, which has recognized as a contribution to the domestic dissemination system.

Source: JICA documents, answers to questionnaires by implementing agencies, hearings with implementation agencies and Japanese experts.

Source: PMMG

Photo: PMMG Community Security Base (BSC)

(3) Achievement of the Indicator of Project Purpose

Table 3 summarizes the answers to the questionnaires with each IDS state and the evaluations of Japanese experts at the time of the ex-post evaluation. As concrete actions for the promotion

of community policing, it was confirmed that all IDS had made progress in any of the following areas: “policy and/or guidelines”, “strengthening the community policing system”, “development of the contents of community policing activities”, “improvement of the community policing training courses and/or instructor training”. Therefore, it is judged that the project purpose of this project had been generally achieved by the end of the project.

An overview of the efforts of each IDS state is as follows: (1)Promotion of understanding and the establishment of the concept of community policing, (2) Establishment of community policing courses, police academy classes and basic training, (3) Legalization of community policing and the installation of sections in charge of community policing, (4) Development of the activities of BCS and BCM, a cost reduction in comparison to BCS, and the setting up of bases according to needs, (5) Effective practice of community policing in ongoing public security programs, (6) Development of community policing in the context of local circumstances such as rural patrols and PVS, and (7) Establishment of new CONSEG in each region or the development of their activities. These are considered to have been implemented according to the situation of each state.

Table 3: Achievement of the Project Purpose

Project Purpose				
A nationwide system for continuous and self-reliant dissemination of community policing by Brazilian related organizations is established.				
Indicator				
Concrete actions for promoting community policing in the appropriate manner of each state are initiated in the Intensive Dissemination States.				
Achievement				
According to the answers to the questionnaire by IDS police, during project implementation, there were concrete actions in each IDS below, and thus the indicator of project purpose was considered to be achieved.				
State Police in IDS	**Areas for the Promotion of Community Policing**			
	[Policy and/or guidelines]	**[Strengthening the system]**	**[Development of contents of activities]**	**[Improvement of the training courses and/or instructor training]**
Amazonas		✔	✔	
Bahia	✔	✔	✔	✔
Espírito Santo	✔		✔	
Goiás	✔	✔	✔	✔
Paraná	✔		✔	✔
Pernambuco	✔	✔	✔	✔
Santa Catarina	✔		✔	
Distrito Federal	✔	✔	✔	✔

Source: JICA documents, answers to the questionnaire with each IDS, hearings with implementing agencies and Japanese experts

Note: Items with “✔” were that IDS describes the areas as “developed during project implementation” in their answers to the questionnaire. There may be cases that were not mentioned since they had been completed and therefore were not developed during project implementation. Thus, the areas without “✓” does not necessarily indicate that IDS has not tackled these areas.

One of the factors that promoted community policing during the implementation of the project was that the target IDS overlapped with the states targeted for dissemination in the technical cooperation implemented prior to this project[8]. The effects on those states are considered to have included improvement of the organizational structure and the continuation of the effect of the starting of new community policing in preceding project before the commencement of this project. In addition, during the implementation period of this project, the federal government focused on drug prevention education programs, domestic violence countermeasure programs, school patrol programs, etc., which further raised awareness of community policing.

Based on the answers to the questionnaires from each IDS, further hearings about the specific contribution of this project were conducted with four states as examples (one state each was selected from the north, northeast, central, and southeast areas in consideration of the differences in the development of community policing and geography). In Bahia state, Japanese experts provided intensive guidance on the model BCS as the foundation for the subsequent expansion of the BCS network. Bahia state police also created their own teaching materials using the SENASP teaching materials. The Goiás state police pointed out that the promotion of community policing had been speeded up by this project, referring to the advice of Japanese experts in formulating a strategic plan for community policing, and the activities of Japanese community policing in rural patrols. Espírito Santo state police stated that the evaluation of them by Japanese police officers and police officers in other states had been a motivation for improving their activities.

Source: Goiás state policing

Photo: Community Visits by Goiás State Police

The significance of this project is that, through interaction with police officers in Japan which has an international reputation for good security, and with police officers in other states, the activities of each state have been strengthened and developed, overcoming the limited motivation towards individual efforts for community policing within the Brazilian police organization. This was achieved by police officers in each state police office applying what they had learned to the

[8] Five places: Espírito Santo, Minas Gerais, Federal District, Goiás, Bahia

activities of their own state police. Of course, due to the shortages of personnel and in the budgets for operation and maintenance there were cases in the technical cooperation before this project where BCS was not sustainable, where lost and found activities did not meet the needs of society, or where understanding of community police did not penetrate into part of the organization. Based on the lessons learned from the past, however, this project aimed to develop activities suitable for the situation in each area under the initiative of each state. Judging from actual activities of community policing in each state and the results of the hearings with them, it is considered that reference was made to Japan's community policing, especially in "patrol/patrol contact in areas under the jurisdiction", "crime prevention guidance to prevent crime", and "crime prevention activities". It can be said that each state has adopted and developed community policing according to its own situation.

The formulation of the *National Guidelines of Community Police* was important as a benchmark for the project purpose "to establish a system to disseminate the community policing" although it was not included in the activities and indicators of the project. Draft guidelines were started to be prepared around the end of this project and the *National Guidelines of Community Police* were officially enacted as a legal document in 2019, the year after the end of the project. This laid an important foundation for a system to disseminate regional police activities independently and continuously in the related organizations of Brazil.

As a result of the activities of the project, the capacity to disseminate and strengthen the community policing of SENASP and the three model states was improved, and along with these results, the installation of BCS and BCM has increased in each IDS and the Federal District, Brasilia. In addition, there has also been the development of rural patrol programs, the strengthening of cooperation with CONSEG, and the strengthening of community policing in connection with drug prevention education programs and domestic violence countermeasure programs, which have been the focus of the federal government. It is probable that this had the effect of promoting community policing. Based on the above, as a result of the outputs of the activities of this project, it is considered that the project purpose has been achieved. A system to disseminate community policing has been established among the related organizations in Brazil, with the core organizations of the federal and model states.

3.2.2 Impacts

The achievements in the project purpose have been continuously undertaken since the end of the project. Regarding the achievement of the overall goal, as mentioned in "2.3. Constraints during the Evaluation Study", it was not possible to confirm the situation in all states through SENASP. Therefore, the ex-post evaluation verified whether dissemination from the model states and IDS to other states had been carried out independently and analysis took place within the range where the information could be confirmed.

3.2.2.1 Achievement of Overall Goal

According to SENASP, the number of community policing seminars held in each state has been increasing since the end of this project, and since the *National Guidelines of Community Police* were enforced, guidelines for community policing have been formulated in each state. In the local area patrol program that SENASP has been working on throughout Brazil, states taking the initiative have included Tocantins and Matt Grosso states, which were not model states and the IDS of this project. Therefore, the overall goals are being partially achieved and are expected to be achieved in the future from the point of view of the following:

- There are states other than the IDS that participated in this project or in training and seminars conducted before this project. Furthermore, according to SENASP, there are more than 2,500 CONSEGs nationwide, and SENASP is working as a federal government agency at the National Public Security Council through CONSEGs nationwide to maintain and strengthen public security in collaboration with local communities. It is possible that this is a movement toward achieving the overall goal. The concept of community policing for crime prevention is cross-sectoral, and recognizing this, SENASP has positioned it as part of the national public security activities and is continuously working on it and is strengthening it for the future.
- SENASP, the three model states, and the IDS that are active in disseminating experience, have played a central role in diffusing and promoting the community policing of their own states to other states. According to the three model states, at the request of five states other than IDS (Rondônia, Ceará, Piauí, Alagoas, and Rio Grande do Norte states) information was provided on the policies and initiatives of community policing. In IDS, Pernambuco, Bahia, and Santa Catarina have already disseminated their own community policing activities to other states through seminars and individual inquiries during the implementation of the project. Those states have shown an intention to actively continue with it. The current situation is that the model states and the states that have advanced to the level next to the model states are further promoting community policing to other states.
- In addition, even after the end of this project, international community policing seminars are held once a year jointly by the Government of Japan and SENASP, with participation from states nationwide. There is mutual learning through examples and a continuing opportunity to exchange information. The coordinators in charge of community policing in each state routinely contact and exchange information each other by means of SNS.

Table 4: Achievement of the Overall Goal

Overall Goal	Indicator	Actual
Brazilian community policing is being disseminated by Brazilian related organizations.	Concrete actions for promoting community policing in the appropriate manner of each state are initiated in all the states in Brazil.	**Partially achieved.** ・ According to SENASP, the number of community policing seminars held has been increasing in each state since the end of this project in 2018. As well as the model states and IDS of the project, seminars have been held in Alagoas, Amapá, Ceará, Pará, Roraima, and Tocantins states. ・ All states participated in the formulation of the *National Guidelines of Community Police* enacted in 2019. Standard guidelines for community policing were presented in Brazil. In line with this, community policing operational policies and guidelines have been established in states other than the model states and IDS. ・ Since the completion of the project, SENASP has been promoting the implementation of rural patrols together with the National Agricultural Federation, and all states have participated in the situation analysis. In addition to IDS, Goiás state and Federal Districts, Matt Grosso state has also progressed with implementation. ・ Matt Grosso state was introduced as an advanced example of the Maria da Penha Patrol Program that entails community policing, in addition to the model State and IDS Amazonas, Bahia, Federal District, São Paulo, Minas Gerais, and Rio Grande do Sul.

Source: JICA documents, answer to questionnaires by SENASP and each state, and results of interview with relevant organizations

3.2.2.2 Other Positive and Negative Impacts

The following points were recognized as other impacts of this project.

(1) Psychological Changes in the Efforts of Brazilian Police Officers to Implement Community Policing

Through the questionnaires and opinions given at the time of the interviews with SENASP, police officers in the model states, and IDS, there had been "psychological impacts" in a good sense through learning from community policing in Japan and other states, which had also been the case in evaluations of previous technical cooperation projects. Many said that knowledge of the experience of Japan and the Japanese police themselves had enhanced the work spirit in the field. For example, it was said that "the community policing became rooted as a philosophy of the work", "Police officers' motivation to engage in community policing improved", and "Police officers came to have the opposite idea to the traditional police model, which had a direct impact".

At the same time, some police officers pointed out that "police officers learned how to interact with the local communities and how to arbitrate with people" and that "police officers improved methods of analysis of crime through interaction with the local community." The motivation to engage in community policing seems to have increased by the learning of something new from the different approach and seeing its effectiveness as a result. Although Japan's

community policing is institutionally different to that of Brazil, observing the activities of Japanese police officers and accepting their visits to receive technical guidance and evaluation of activities has had an impact on the mindset of promoting crime prevention while cooperating with local communities, which is seen as important and effective. This has become the driving force for commitment to community policing in Brazil.

(2) Changes in the Perception Local Residents have of the State Police

In answer to the question regarding the ex-post evaluation, several states pointed out that the impact that the activities of the community police had "made the relationship with local residents closer and improved the perception that the residents have of the state police." Another positive impact mentioned when interviewing BCS police officers and local residents and when visiting several BCS in suburban São Paulo city and in São Paulo state included increased confidence in the state police (refer to Column 2). In Minas Gerais state, the MDA Institute (Instituto MDA Pesquisa)[9] has conducted a survey of changes in residents' impression of the state police before and after the establishment of the BSC, and it was found that the establishment of the BSC generally led to an increase in satisfaction about the police (refer to Column 3).

Column 2: Visit to BCS in São Paulo State

In this ex-post evaluation, a local consultant visited four BCS (Panamericano BCS in São Paulo city, the capital of São Paulo state, Britânia BCS, Remédios BCS in Osasco, and João Teodoro BCS in Sorocaba) to observe the current status of activities.

Since the 2000s, technical cooperation had been provided to the state of São Paulo for community policing with reference to the Koban system. The activities of the community police were established in these BCS and have been carried out since. Although there are differences in the number of personnel, space, and contents of the cooperation with local governments and local communities (corporations, residents, volunteer groups) that can be confirmed in each BCS, there are many initiatives that started in 2015-2017, during the project implementation. Besides sports and seasonal events, Remédios BCS and Britannia BCS have had PVS since 2015 when this project was being implemented and Panamericana BCS started PVS in 2020. In addition, Remédios BCS started awareness activities of community policing for junior high school students in 2015, and Panamericana BCS has done the same, starting in 2017. In the opinion of BCS police officers, PVS has been used to raise the awareness of residents that they could maintain the safety of areas by themselves rather than leaving it to the government and the police. Based on the idea that what you can solve by yourself will be solved by yourself, BCS police officers, for example, explained that they inform local residents that they can call 190 by themselves if they have any problems, or they can work together with local residents to avoid security risk factors. In addition, some BCS police officers commented that, in spite of the increase and decrease in the crime rate seen from statistics, local residents said that they felt more secure on regular visits to shops, etc., through PVS.

Signboards affixed by participating households and businesses of PVS of João Teodoro BCS

According to Lieutenant Ciampone, who was in charge of community policing at the PMESP Domestic and Foreign Affairs Bureau, and who accompanied the local consultant on the BCS visit, there was a relatively large personnel change in the area of the community police in 2017, and many JICA project participants left the

[9] The institute was established in 1988 by professors of Federal University of Lavras in Minas Gerais state.

community policing area. Nevertheless, he affirmed that it is still regarded positively as leading to improvement in the recognition of the importance of community policing within the organization including in personnel transfers since human resources with a deepened understanding of the know-how of community policing in Japan are transferred and assigned to each department of the police organization. In addition, the curriculum of community policing has been incorporated into the human resources development program of the entire state police, and a system has been established to award certificates to those who have completed the program. From this, it can be said that the establishment of the certification system aimed at by the JICA project has been achieved, and that all police officers have been able to deepen their understanding of community policing through this system.

Reception counter inside Remédios BCS

When the chairman of CONSEG was interviewed about the evaluation of BCS at João Teodoro BCS, he said "The presence of Koban, which has police officers who keep in touch with the local community and attends to the needs of residents kindly, enhances the sense of security of the residents. Through social contribution activities, the image that the task of police officers is not only catching criminals was conveyed to the residents, and the distance between the state police and local residents was shortened."

(3) Contribution to Crime Prevention

In response to the questionnaire for this project evaluation, several states pointed out that community policing was considered to have contributed to the prevention of crime and thus a reduction in the number of crimes. According to a survey by the MDA Institute in Minas Gerais state, local residents around the BSC are less likely to be victims of crime as a result of engaging in BSC-based community policing, and the crime rate has shown a decreasing tendency since the year the BSC was established (refer to Column 3).

(4) Spillover effects on Central American Countries

After the implementation of this project, the Guatemala "Project for Strengthening of police Human Resources through the Promotion of Community Police Philosophy" (2016-2019), the El Salvador "Project for the Consolidation of the Implementation of the New Police Model based on the Philosophy of Community Police in El Salvador" (2015-2020) were started, and the state police in Brazil, with PMESP as a center, have been supporting the introduction and dissemination of Community Policing in these Central American countries. Thus, following the cooperation of the Brazilian state police in third country training in Central American countries before the implementation of the project, there have continued to be spillover effects on the community policing of the countries even after the start of the project.

The overall goal of the project, progressing the efforts of states other than IDS, coupled with the effects of the preceding projects, is considered to be already partly achieved. In addition, the project, being stimulated by the activities of Japan and other states, has had some positive impacts such as increasing the motivation of the state police towards local police activities,

changing awareness of security activities on the part of local residents, and contributing to crime prevention. Furthermore, with the state of São Paulo as a center, the project has supported the introduction of community policing in Central American countries. Since the project, community policing exchanges have been continuously carried out between Japan and Brazil. All is evidence of the spread of various positive impacts.

Column 3: Survey on Residents' Perception of BSC in Belo Horizonte City, Minas Gerais State

In response to the questionnaire, PMMG explained the MDA Institute's "Perception of the Population in Belo Horizonte City in relation to Crime and the Minas Gerais Military Police Services (Percepções da População de Belo Horizonte em Relação à Criminalidade e aos Serviço da Polícia)" (2018).

A perception survey was conducted twice in October 2017 and in May 2018 with 86 BSC established in Belo Horizonte in 2017 to analyze changes. Surveys were conducted targeting groups living or doing business within 400 m of the BSC, with a sample size of 20 people x 86 locations = 1,720 people, 75% of residents and 25% of shops. In the interviews, the percentage of "feeling very safe or safe during the day" was 51.5% in the first survey and 54.3% in the second survey, an increase of 3 points. In addition, when compared with the average value of answers to the same question for all residents, including residents other than those around the BSC, the percentage of people who felt safe in the area around BSC was 12.5 points higher. Thus, the result showed that the percentage of people in the group around BSC feeling safe was more than for the other group.

Regarding satisfaction with the existence of the state police, 61.6% of the residents surveyed in the first survey answered that they were "very satisfied or satisfied", while in the second survey, this increased by 6 points to 67.7%. Meanwhile, the satisfaction level of the residents living within 400 m around the BSC was 66.0% in the first survey increasing to 71.4% in the second survey. The survey showed that the satisfaction level of the residents around the BSC was high and this suggested that the establishment of BSC may have contributed to the improvement of residents' satisfaction with the state police.

Regarding the question of whether they have been victims of any crime in the past 12 months in the capital Belo Horizonte, 19.7% said yes in the first survey and 16.4% in the second survey, a decrease of 3.3 points. In the answers from the group of residents 400 m around the BSC only, the percentage decreased from 18.4% to 14.9%, implying that residents around the BSC were less likely to be victims of crime.

In Minas Gerais state, after the study confirmed the effectiveness of BSC, the number of BSC installed in the state increased further, and as of 2020, a total of 220 BSC were deployed in the state. Including the results of this survey, Minas Gerais reviewed community policing to date, and a report "Diagnosis of the Implementation of Community Police-Koban System-and Variations of Community Bases" (Diagnóstico de Implementação da Polícia Comunitária-Sistema Koban- e Variaveis de Bases Comunitárias) was compiled in 2019.

Regarding the crime statistics for the entire state of Minas Gerais, the crime rate decreased significantly between 2017, after the increase in BSC, and 2020. For example, the number of homicides of 20.1 per 100,000 in 2016 has decreased year by year since 2017, to 11.53 in 2020. It is the PMMG analysis that the strengthening BSC has contributed to this reduction in crime rates.

With the support of a series of Japanese technical cooperation for community policing over the past 20 years, beginning with technical cooperation with PMESP, Japan's community policing has matured and developed in each state of Brazil, integrating with the respective social cultures. Around the end of the project, the *National Guidelines of Community Police* which SENASP started to draft with the cooperation of state police nationwide and which became a national decree in 2019, could be a compilation of the knowledge gained from the cooperation with Japan up to that time. The effectiveness and impacts are high since, as mentioned above, a system to promote community policing nationwide has been established in Brazil, the implementation of community policing in each state has been further promoted, and

positive impacts have been observed such as the psychological impact on Brazilian police officers regarding community policing, improvements in local residents' perceptions of the state police, a contribution to crime prevention depending on the states, and derived effects on Central American countries.

3.3 Efficiency (Rating: ②)

3.3.1 Inputs

Table 5 below shows the actual results at the time of project completion in comparison to the plan at the time of the detailed planning survey of the project. From the evaluation of the project input and the activities of Brazilian and Japanese experts, it can be evaluated that the inputs and the activities of each country led to the achievement of outputs.

Table 5: Inputs for the Project

Inputs	Plan	Actual
(1) Experts	Long-term experts 36 person/months X 2 persons*Total about 72 person/ months (Chief Advisor/Community Policing, Coordinator/Plan for Dissemination) Short-term experts (Community Policing) according to necessity	Long-term experts (Chief Advisor/Community Policing, Coordinator/Plan for Dissemination) 3 persons Short-term experts (Community Policing) 12 persons
(2) Trainees received	Training in Japan (Community Policing)	Training in "Community Policing" implemented 6 times (81 trainees received in total)
(3) Activity Cost in the field (Local Cost)	Cost for training and seminars implemented in Brazil	29.882 (million yen) (main inputs are the costs related to interpreters)
(4) Japanese Side Total Project Cost	Approximately 200 million yen	211 million yen

Source: JICA documents

3.3.2 Elements of Inputs

3.3.2.1 Project Cost

The total project cost is 105% of the plan. The cost increase of about 5% (about 10 million yen) is, according to the analysis of the terminal evaluation, due to the fact that state police other than the IDS also participated in the training in Japan, which resulted in the training cost exceeding the plan.

3.3.2.2 Project Period

Regarding the cooperation period, the plan was from January 2015 to December 2017 (36 months); however, the actual result was from January 2015 to January 2018 (37 months) (about 103% compared to the plan). This was because of the political turmoil caused by the impeachment trial of the President of Brazil in 2016. This meant that there was a delay in

activities due, for example, to that SENASP, mainly being in charge, not being able to hold the community policing international seminars; however, the project was almost completed by the planned timing.

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

3.4 Sustainability (Rating: ③)

3.4.1 Policy and Political Commitment for the Sustainability of Project Effects

The sustainability of policy and political involvement in community policing is high from the point of view of the following:

- *The National Plan for Public Security and Social Defense* (*Política Nacional de Segurança Pública e Defesa Social*) was announced in December 2018 as a policy of *SUSP*. This plan indicated efforts to develop community police activities, putting more emphasis on social participation in security issues. Action guidelines were presented for improvement of the control and prevention mechanism for violent crimes and for improvement in residents' awareness of security.
- The decree *National Guidelines of Community Police* enacted in April 2019 describes the strategy and philosophy for proximity between the police and the community, and is to be undertaken nationwide.
- *The Strategic Plan of the Ministry of Justice and Public Security* (2020-2023) states that community crime prevention activities will be carried out in particular.
- There were no particular concerns regarding political involvement at the time of the ex-post evaluation.

3.4.2 Institutional/Organizational Aspect for the Sustainability of Project Effects

Based on the following evidence, it is evaluated that there is sustainability of the system for promoting community policing nationwide in cooperation with SENASP, the three model states and IDS where states were involved in the project.

- *The National Plan for Community Policing* (*Plano Nacional de Polícia Comunitária*) in the end of the legalized *National Guidelines of Community Policing*, clearly stated that SENASP will work on community policing, taking synergistic effects, cooperation and joint responsibility with domestic organizations.
- Since 2019, the Division of Preventive Policing (Coordenação de Políticas de Policiamento Preventivo), the General Coordination Department of Policy for Society (Coordenação Geral de Política para Sociedade), has been in charge of community policing within SENASP. Although it cannot be said that the number of personnel in

charge of community policing in SENASP is sufficient, there have been no changes in the SENASP system or roles that would have a negative impact on the sustainability of community policing. Community policing itself is a common theme that is also emphasized as an approach to programs in other fields of SENASP, and, together with the personnel in charge of those programs, SENASP has the system to support the implementation of state police in accordance with the national guidelines of community policing.

- Although the organizational situation of each state police activity department is different in each of the three model states, the promotion of community policing is rooted within each organization and appears to be sustainable. In São Paulo state, there is a division in charge of community police activities in the Directorate of Community Policing and Human Right (Diretoria de Polícia Comunitária e Direitos Humanos), and in Rio Grande do Sul state, a team of the Assistant Bureau to the Primary Prevention Program is in charge, under the third Section in the General Staff Headquarters of the Commander of BMRS. In Minas Gerais, the Operations Bureau has a department which specializes in community policing, and thus an organization is set up for sustainable activities.
- Among IDS, Espírito Santo state was concerned about the sustainability of activities due to a significant decrease in the number of personnel in the state police. Bahia state also pointed out an insufficient number of personnel. However, there were no comments specifically from other states.
- According to SENASP, in 2019 after the end of this project, a national conference of community policing officers in each state was held to exchange experiences and good practices. SENASP has created a contact list of community policing coordinators in each state across the country and they are in constant contact.

3.4.3 Technical Aspect for the Sustainability of Project Effects

Based on the following points, it is evaluated that there is sustainability in the technical side of the dissemination of community policing in SENASP, the three model states, and the IDS.

- After the project was completed, SENASP conducted technical visits to the state of Amapá, Ceará, Paraiva, Roraima, and Tocantins other than IDS.
- SENASP has accumulated a track record of conducting seminars and various kinds of training so far, and SENASP staff includes those sent from each state police, making it relatively easy to exchange the experiences of community policing of each state through on-site experience and the personnel sent from the states. Under the “National Guideline of Community Police”, a budget was obtained and it was planned that training for disseminators (Multiplicador) and promoters (Promotor) of community policing would be carried out using online teaching materials prepared before the end of this project.

Such training plans reflect knowledge of previous technical cooperation projects and it seems that there have been almost no problems with the teaching methods or the contents of the training materials.

- At police academies in three model states and other states, the community policing course is a basic course for police officers and will continue to be so in the future.
- Exchanges of information through community policing coordinators in each state are still ongoing through email lists and WhatsApp apps. Information on useful lessons are shared and this is reflected in respective activities. The model states were highly motivated towards the hosting of training for other states during the implementation of this project and continue to disseminate their own experience. In addition, they are enthusiastic about disseminating their experience outside the model states such as Bahia, and it is expected that the activities of exchange information aimed at disseminating community policing in Brazil will continue, mainly in these states as a core.

3.4.4 Financial Aspect for the Sustainability of Project Effects

The financial sustainability of SENASP, the three model states, and IDS has been observed to some extent from the following points of view.

- Training for community policing would be conducted from 2020 onwards with the budget of the Education and Management Bureau (SEGEN) of the Ministry of Justice and Public Security instead that of SENASP, and a training plan has been formulated.
- According to reports from the model states, the budget for programs related to community policing in each state has been met to a certain extent each year.
- According to responses to the questionnaire from SENASP, the three model states and IDS, budgets have been significantly reduced and then the activities were decreased in relation to community policing in area such as Paraná state. No such responses were forthcoming from other states.

This project is consistent with SENASP's strategy for crime prevention through community policing, and national policies and plans for public security and social defense, and will promote community police activities nationwide in cooperation with SENASP and the three model states. The system was put in place and regional police activities were incorporated into the organization in the form of each state. On the technical side, the momentum to further develop the activities is being cultivated by accumulating the experience of the community police activities so far. There is a future ongoing training plan to promote community police activities improved by SENASP and the model states. On the financial side, in some states, activities have been reduced due to the influence of the state's financial situation, but it is unlikely that regional police activities will be significantly reduced in Brazil as a whole in the future. From the above, the sustainability is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The project aimed to promote the dissemination of community policing in Brazil: (1) to enhance the capacity of SENASP for information collection and management, and to disseminate and strengthen the efforts of community policing in each state, (2) to strengthen community policing in the model states, i.e., PMESP, PMMG, BMRS, and (3) to establish a system to disseminate community policing independently and sustainably by the relevant institutions in Brazil through strengthening the capacity of SENASP and the three model states leading to effective support for other states and contributing to the dissemination of community policing appropriate to the situation in Brazil. The project is highly relevant since it is consistent with development plan and policy, and with the needs of the implementing agencies for capacity development and strengthening of the dissemination system. The project also matched Japanese ODA policy. Community policing in the Intensive Dissemination States has been developed by the outputs of enhancement of promotion capacity and strengthening of the dissemination system of SENASP and the three model states. This was achieved through the seminars and training of the project. *National Guidelines of Community Police* was then established as a legal document, which was also an important step forward in building a system for disseminating community policing for the relevant institutions. The effectiveness and impact of the project are high, with impacts such as improving the motivation of Brazilian police officers for community policing, crime prevention, and technical transfer to Central American countries. The efficiency is fair because, although the project period was within the plan, the project cost was slightly higher than the plan. Although differences should be noted in the community police activities of each state, there is almost no concern that the efforts of community policing in Brazil as a whole will be significantly weakened in terms of policy and political commitment, institutional/organizational, technical and financial aspects. Therefore, the sustainability of the project effects is high.

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

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

<u>Systematization of Good Practices of Community Policing Accumulated in Brazil</u>

In the project, it was expected that SENASP would summarize the efforts being made to promote the activities of the community police in each state. A report has not yet been prepared but it is planned that one will be compiled in the future. To systematize the experiences compiled nationwide, describing in what cases and in what kind of community police activities are effective, and to reflect this information in future policies would be meaningful. At an appropriate time in the future, SENASP and the model states will play a central role in

outsourcing to research institutes so that good practices can be systematized and analysis compiled. It is recommended that these are utilized in the community policing training programs of SENASP and each state, with distribution from SENASP to each state.

4.2.2 Recommendations to JICA

Continuous Implementation of Information Exchange between Japan and Brazil for Community Policing

There were many requests expressed during the ex-post evaluation by the Brazilian side for continuous implementation of such seminars and training in Japan. They said that knowing Japan's experience was useful for each state police to consider the activities of community police and that this also enhanced their motivation. Seminars and training in Japan have provided opportunities for Brazilian and Japanese police officers to exchange information and reflect on their respective community policing, and for JICA to maintain and develop the outputs of their activities in Brazil, leading to the development of support for third countries. Outside the framework of the project, the International Seminar on Community Policing has been continuously held every year since 2011, co-sponsored by the Embassy of Japan in Brazil, JICA, and SENASP in Brazil. It is hoped that JICA will continue to support seminars and training in Japan to the extent possible, and establish a continuous platform for information exchange between Japan and Brazil. It is, therefore, considered preferable to outsource Brazilian researchers, etc., in order to verify the degree of contribution, including added value, with the support of JICA, and to connect this with concrete actions to improve security through community policing.

4.3 Lessons Learned

Widespread Social Participation in Community Policing: Involvement of Research Institutes and Civil Society Organizations

In the project, it was expected that SENASP would compile the good practices of each state; however since SENASP has various tasks in addition to community policing, it appears that it has been difficult to allocate the necessary time to this work. In addition, the organizational structure of the government is often greatly affected by politics. Community policing requires the participation of a wide range of organizations, and in Brazil there are excellent research institutes, researchers of community policing, and civil society organizations such as local NGOs in the target fields. It could be a good idea, for example, for such organizations to participate in the project through the compiling of good practices. The compilation of good practices could have progressed from the planning stage to during the project implementation, with an analysis of each stakeholder in Brazil in the project and with a consideration of how such research institutes might have been involved in the project design. In this way, even if any changes happen in the

government and state police organizations, such knowledge could be retained in and transmitted from the academic sector for the future. In Minas Gerais state, PMMG outsourced investigations of the opinions of residents regarding community policing, and feedback, to a research. It would also have been a good idea for SENASP and each state police to proceed with the project in cooperation with the academic sector and include this in the project activity plan, implementing the feedback of research results to the operation field.

Long-term Support for Symbolic Projects of Japan-Brazil Interaction

JICA's cooperation in the field of community policing, which started in the 2000s, has reached the point of institutionalization in Brazil after about 20 years. It started with various, more or less successful, initiatives based on Koban in Japan which finally came to be widely recognized by the state police in Brazil. Since, from the behavior of Nikkei in Brazil, there is an impression that Japanese people can be trusted, it is very encouraging for the Brazilian police to learn from the Japanese police and to carry out activities in Brazil together with Japanese police officers. There were many on the Brazilian side who said that this had led to a major change in awareness of the efforts needed for the work.

A change of consciousness is difficult to achieve with sufficient results in the short term, and an enhancement of awareness and institutional reform can only be achieved in the long term through 20 years of systematic trial and error. The project became a symbol of cultural exchange between Japan and Brazil, and it was very significant that the concept of Japanese community policing spread widely into the society even if the form of implementation changed. Starting from Brazil, this also led to triangular cooperation in which Brazil supports neighboring countries. With all this in mind, when taking up such a project, it is important to formulate a long-term plan with the idea in mind of disseminating it to neighboring countries. If the project is expected to be effective in the long-term, dividing the project into its implementation phases in advance would also be necessary.

In the case of this project. the community policing guidelines were established after the end of the project; however, the formulation of national guidelines to encourage each state to take action could have been included in the project activities from the time of project planning, with the aim of nationwide dissemination at the end of long-term support. Learning from the examples of the model states, the project design could have placed emphasis on how each IDS analyzes the challenges of strengthening community policing according to the situation of its own state, and tackles them as main issues of the project. Project experts could then encourage specific actions and monitor them in each state.

End

Attached Table 1: Achievement of Project Purpose and Efforts after Project Completion

Amazonas State Police	**[Strengthening the System]** District Control Program (Programa Ronda no Bairro), which started in 2012, became productive with the introduction of the Japanese model of patrol contact through community policing training course 1, strengthening its structure and philosophy of implementation. The program helped to implement and expand the idea of the "Protected Neighbor Network Project" which had been presented in JICA project community policing courses since 2015. The local residents' security network which was proposed by a participant in the seminar of the JICA project brought a change in awareness and at the same time this was institutionalized in the state police. **[Development of the Contents of Activities]** Through visits to schools, local areas, and social welfare institutions, the activities of community police became steadily consolidated. Interaction with the residents are conducted at "Community Relationship and Visibility Points (Os Pontos de Relacionamento Comunitário e Visibilidade: PRCVs*)". *Aiming at a visual effect, the police vehicle and the police officers are deployed around the market where people gather. The police officers take part in active police work by staying outside the vehicle and interacting with people.
Bahia State Police	**[Policy and/or Guidelines]** The State Public Security System Strategic Plan (PLANES) (2017-2025) was formulated by the State Public Security Bureau (SSP) (2017). The plan has the objective of optimizing crime prevention activities, setting the community policing philosophy at its center. Ordinances and manuals were formulated to guide the application of community policing and outreach activities. As a measure for the promotion of community policing, the state police established and introduced a performance evaluation system of activity points, and also determined to renew and disseminate the theory of community policing, implementing a review every year. In the "Participating Government Program" (formulated in 2018), in order to visualize the public security activities for the community, the Community Base of Security (BCS) was given as the activity location of the police. Regulations on Social Support Project Management (2019) and the State decree and manual (2019) were established to indicate the direction of community police activity and close contact with local areas. The book "Community Police in Bahia" (2019) was published. **[Strengthening the System]** The first BCS was established in the Carabar district in 2011, with the commencement of the "Pact for Life (Pacto pela Vida)" program aimed at eradicating violence. By 2018, 19 BCS had been established in the state. In 2014, the Community Policing Human Right Department (DPCDH) was established in the organization of PMBA, and the community policing instructor network was established and expanded. **[Development of the Contents of Activities]** Expansion of social participation in security issues through the establishment of CONSEG. **[Improvement of the Training Courses and/or Instructor Trainings]** Continuous implementation of training for community policing promoters and disseminators. To promote the activities of the community police, DPCDH created training courses and theoretical teaching materials for the dissemination of community policing throughout the state of Bahia. There is a promoter training course for community policing as a state-specific initiative, and participants ranging from executive officers to their subordinate officers participate in the class regardless of their position. Distance learning is provided, where 19 BCS good practice experiences are exchanged in the state.
Espírito Santo State Police	**[Policy and/or Guidelines]** The "Regional Patrol Program" of the State of Espírito Santo (PMES) was restructured by the internal regulations (2017), and the guidelines for involvement in CONSEG were stipulated by internal regulations (2018). Regulations on the use of BCM were formulated in the internal regulations (2018). Community Policing Policy was formulated (2019). **[Development of the Contents of Activities]** Although it was difficult to continue public policy due to a shortage of police officers, progress was made on individual issues. Support for the establishment of the CONSEG Federation, encouragement activities for local security by residents through the creation of instruction manuals and pamphlets for CONSEG (2019). Participation of state police officers in PROERD and implementation of school patrols. Vehicles were acquired for PROERD, Maria da Penha Patrol, regional patrols (2019). 40 BCMs and 60 patrol vehicles were obtained with financial support through the "Citizen Safety Project" (2018-2022) which was implemented with the Inter-American Development Bank (2018). Patrol activities were developed and expanded.

Goiás State Police	**[Policy and/or Guidelines]** Provisions for community policing in the 2016-2022 Strategic Plan. The Goiás community policing model is that all police officers proactively and preventively conduct community visits, social support visits, community meetings, monitoring, and performance measurement, in accordance with the Operation Standard Procedure (POP) established in 2016. **[Strengthening the System]** Creation of the Rural Police Company (organizing what was previously conducted as a Rural Area Geo-reference Patrol). Creation of Maria da Penha Company as a measure against domestic violence. Training and seminars related to community policing are handled by Section 3 of the Community Police Center (CPC), which was established in 2013. **[Development of the Contents of Activities]** Implementation of rural area patrols, neighborhood solidarity programs, safe shops programs, children's band programs, safe walking with police officers, Maria da Penha patrols. Supporting CONSEG's coordination and organization to disseminate the community police philosophy and fund projects or programs. **[Improvement of the Training Courses and/or Instructor Trainings]** Establishment of training programs for community police promoters in the community police center. Specialization and human resource development lectures for police officers regarding research on community police. Master's/MBA thesis writing on community policing.
Paraná State Police	**[Policy and/or Guidelines]** Setting an action plan to improve and disseminate the quality of community police activities. **[Development of the Contents of Activities]** During the project from 2015 to 2018, police officer training, video conferences, community meetings, CONSEG, local schools patrol accompanied by parents, and other programs mentioned above were continuously implemented; however, from 2019 to 2020, the budget has been significantly reduced. On the other hand, APP-190 was set up to report to the police using an app which has helped local residents to interact online. **[Improvement of the Training Courses and/or Instructor Trainings]** Community police philosophy dissemination training. From 2005 to the present, these have been conducted for more than 4,000 police officers The courses were conducted by the Department of Education and Research, and a curriculum was incorporated for disseminating community police activities within the state of Paraná. *The Community Police Coordination Division was in charge of the community police-related efforts at the time of project implementation. However, in recent years, the number of staff in charge of community police has been decreasing.
Pernambuco State Police	**[Policy and/or Guidelines]** Enactment of the State Law which legislates the Pernambuco State Criminal Violence Social Prevention Policy (May 2019). Supplementing the community police provisions to the State Security Law, one of the main laws that sets the policy for the entire state. The state police announced the state's community police planning policy, which stipulates the introduction of the community police and Koban system, with reference to the *National Guidelines of Community Police* and others (December 2019). **[Strengthening the System]** Participants in the International Seminar on Community Police Disseminators in Minas Gerais and training in Japan in 2017 used those experience to develop community police activities in two cities within the 23rd Company Division with reference to Koban system, then became company commanders in 2019. **[Development of the Contents of Activities]** A community police coordinator who participated in the training in Japan established "Our Presence, Your Safety Project (Projeto Nossa Presença, Sua Segurança)" (August 2018) based on the experience, and adopted the Koban system as a community police model. Introduction of mobile alarm programs at community police bases, strategy / mapping activities in community police departments, using drones, establishment/implementation of virtual safety networks (neighborhood resident network, shop network, educational facility network), etc. By sharing the experience in Japan during a month of technical guidance by a Japanese short-term expert, the community police activities in Pernambuco were reviewed and this led to concrete activities. **[Dissemination to Other Area]** Introduction of the experience of inter-exchange in San Salvador, the capital of El Salvador (in November 2018, at an international crime prevention seminar held by the city with the support of JICA).

Santa Catarina State Police	**[Policy and/or Guidelines]** Formulation of *the State of Santa Catarina Public Security Plan for 2018-2028* (2018) which aims at strengthening active social participation with a community police philosophy and preventive public security policy. Permit to create CONSEG under the State Decree No. 1,456 dated January 26, 2018, and amend it (State Decree No. 794 dated August 18, 2020). Approval of the CONSEG Regulations based on this State Decree (Resolution No. 2/CSSPPO /SC dated November 20, 2020). **[Development of the Contents of Activities]** Established CONSEG (88 locations from 2015 to 2017) and reunified CONSEG (5 locations from 2015 to 2017). Priorities are placed for each CONSEG and the issues identified are resolved in partnership with the police. **[Improvement of the Training Courses and/or Instructor Trainings]** From 2015 to 2017, 19 community police courses were held for both human resource development of public security personnel and members of local communities. Of these, 7 were related to raising awareness, and 12 were related to crime prevention, such as the causes of crime and violence.
Federal District Police	**[Policy and/or Guidelines]** In 2016, the process of community police strategy modernization started. Created "Community Policing Manual". As Ministerial Ordinance No. 1,145 of 2020, *the strategic plan for 2011-2022* was updated and reviewed, and goals for the community police strategy as the Federal District Military Police (PMDF) were stated. In *the Public Security Policy Plan* (2020-2021) (Ministerial Ordinance No. 1,141, 2020), the goals of the Community Police Division were stated. **[Strengthening the System]** Activities will be implemented at the PMDF Public Security Police Center (CPSP) during 2021 with the aim of continuing to promote the dissemination of community police activities (community police specialization training, publicity of community police manuals, implementation of workshops on the theme of community police in different units within the organization, inspection visits with the objective supervision and support for implementing units of community police strategies, coordination of community police strategies through the systematization of data obtained from monthly reports) **[Development of the Contents of Activities]** A company of PMDF located in all administrative areas within the Federal District conducts community police activities in addition to normal police ones. Seeking for the cooperation of CONSEG, to establish the philosophy of community policing. Community police activities in collaboration with the community to build a solidarity crime prevention network with neighbors and store owners. **[Improvement of the Training Courses and/or Instructor Trainings]** Focusing on training police officers with a community police philosophy. As a part of this, a seminar on the theme of community police was held in 2017 in the Federal District.

Source: JICA documents, answers to the questionnaire with each IDS, hearings from implementing agencies and Japanese experts

Attached Table 2: Opinions on the Contribution of the Project to Strengthening Community Policing

Amazonas State Police
➢ The district patrol program has improved after the project in terms of the number and method of visits and meetings with local residents. In addition, the importance of the activities has become better recognized within the organization, and we have begun to publicize the fact that these activities are being carried out to the local residents and make efforts to conduct the activities practically. The know-how of most of the activities introduced was gained through training for disseminators of community police activities.
Bahia State Police
➢ Utilizing SENASP's remote training materials, developing human resources in the inland areas of the state. ➢ In March 2015, the strategy for the "model Koban" concept was determined, and short-term experts of the project were dispatched to provide intensive guidance to the Koban for two weeks, using Koban in the Bairro da Paz in the suburbs of the state capital as a model. This guideline for model Koban served as a standard for the development of community police activities in the state and subsequent activities among IDS, and it is the foundation to achieve the project goal of building a system to disseminate community police activities independently and continuously.
Goiás State Police
➢ The advice of Japanese experts contributed to the state planning of community police activities. After the seminar by Japanese experts, there was a meeting with executives, where the experts suggested the importance of human resource development, at first introducing and modeling the community police with focus on a specific place. ➢ There were many things learned from the experience in Japan in the development of rural patrol activities. Patrols visit rural cooperatives to see what they produce, what farm machinery they own, how many employees they have, and their criminal history. All of these referred to Japanese good practices. ➢ This project has accelerated the speed of the promotion of community police activities. Without this project, the current situation might not have been achieved. When an outsider comes and recommends something, it is taken seriously, making people move. Brazil often places emphasis on individualism ("my" and "I"), but Japan has a high sense of community and cooperation. This difference brings awareness to Brazilians.
Espírito Santo State Police
➢ What was impressive in the training in Japan was the deep involvement of local residents through volunteer activities and the fact that the current police system has been maintained for more than a century since it was established. ➢ There was a Japanese expert who stayed in the Chuzaisho for a month, and he paid particular attention to meetings with local communities, measures to reduce crime, and the topography of urban areas. It was good that the person in charge in Brazil, accepted Japanese experts and their evaluation on points such as dialogue with the community and the sharing of crime prevention information. ➢ The participation of police officers from other states and Japanese police officers helps maintain motivation for seminar participants. Through this, the concept of the community police is incorporated into daily work for the first time. Unless a seminar is held, it would be difficult to know what was going on in other states. ➢ When the Inter-American Development Bank project set up a BCM on an NPC at the end of 2018, it was necessary to train 240 police officers. At that time, there was an instruction to incorporate the concept of community police into the project and refer to the Japanese police system. Specifically, good practices were adopted such as deciding the police officers assigned to the base for a longer period of time (extending the interval of personnel changes) and dividing the areas of which they are in charge.

Source: JICA documents, answer to the questionnaires with each state, interviews with relevant personnel

Republic of Guatemala

FY 2020 Ex-Post Evaluation of Japanese ODA Loan Project

"ZONAPAZ Road Improvement Project"

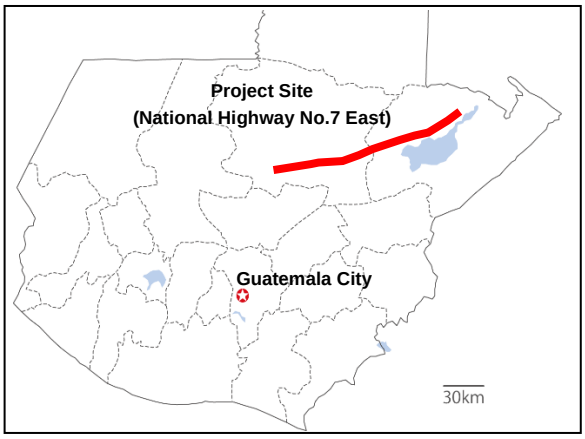
External Evaluator: Hajime Sonoda, Global Group 21 Japan, Inc.

0. Summary

"ZONAPAZ Road Improvement Project" (hereinafter referred to as "the Project") was implemented for the purpose of ensuring a means of transportation in the ZONAPAZ, an area severely damaged by the civil war in Guatemala, by improving National Highway No.7 East (hereinafter referred to as "RN-7E") which intersects the area, an access road to the municipality and rural roads in the area, thereby contributing to improvement of the living standard of local residents as well as the establishment of peace and reduction of poverty through revitalization of the local economy. The Project is highly relevant to the development policies and development needs of Guatemala and Japan's ODA policy. Therefore, the relevance of the Project is high. While the construction on RN-7E has been completed at three of the total four sections, it is still suspended at one remaining section as of March 2021. The access road was completed as planned and rural roads were also completed although the target sections were changed. Both the project cost and project period significantly exceeded the plan. Therefore, the efficiency of the Project is low. Although the pavement of some parts of RN-7E is incomplete, the planned outcomes of the Project, such as an increased traffic volume, shorter travelling time, reduction in the number of road closures due to natural disasters have been achieved, and it is considered to contribute to the socioeconomic development of areas along the route. Therefore, the effectiveness and impacts of the Project are high. As far as the operation and maintenance of the Project are concerned, although there are no problems in the technical aspect, coordination efforts are required in terms of its institutional / organizational and financial aspects regarding transfer of the maintenance responsibility for access roads to the Road Maintenance Executing Unit (hereinafter referred to as "COVIAL"). In the financial aspect, the maintenance of rural roads faces a constraint in terms of the funding sources. As such, the situation of road operation and maintenance is not necessarily good. Therefore, the sustainability of the Project is fair.

In the light of the above, the Project is evaluated as partially satisfactory.

1. Project Description



Project Location

National Highway No.7 East (Section 4)

1.1 Background

The civil war in Guatemala lasted for 36 years from 1960 to December 1996 when the Government of Guatemala signed the Peace Accords with the anti-government forces. The areas most severely affected by the war as they had been controlled by the anti-government forces were then designated as the ZONAPAZ of which the reconstruction and development were promised by the government.[1] While roads constitute the principal means of transportation in Guatemala, the slow infrastructure development partly affected by the civil war constituted a constraint for socioeconomic development. Most local residents of the Department of Alta Verapaz, part of the ZONAPAZ, and its neighboring Department of Izabal (combined population of approximately 1.67 million in 2016), are indigenous people primarily engaged in agriculture and animal husbandry. The average poverty rate of 70.3% in 2001 was far higher than the national average of 54.3%. RN-7E which intersects both departments was unpaved despite its important status and was frequently impassable during the rainy season, constituting a major factor for the slow development along its route.

Against this background, the Government of Guatemala made a request for an ODA loan project to improve RN-7E and secondary roads to the Government of Japan in 2003 and the loan agreement for the Project was signed in 2006.

1.2 Project Outline

The Project aimed at ensuring a means of transportation in the ZONAPAZ by improving RN-7E, an access road to the municipality and rural roads in the area, thereby contributing to improvement of the standard of living of local residents as well as the establishment of peace and reduction of poverty through revitalization of the local economy.

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[1] The ZONAPAZ is a geographical area most affected by the civil war as it had been controlled by anti-government forces. It is made up of eight Departments: Quetzaltemango, Huehuetenango, Quiche, San Marcos, Totonicapan, Solola, Alta Verapaz and Baja Verapaz.

Loan Approved Amount / Disbursed Amount	7,357 million yen / 7,349 million yen
Exchange of Notes Date / Loan Agreement Signing Date	February 2006 / February 2006
Terms and Conditions	Interest Rate: 0.75% Repayment Period: 40 years (Grace Period: 10 years) Conditions for Procurement: General untied
Borrower / Executing Agencies	Republic of Guatemala / Direction General of Road (DGC) of Ministry of Communication, Infrastructure and Housing, Institute of Municipal Development (INFOM)
Project Completion	Not yet completed as of March 2021 (disbursement was completed in May 2005)
Target Area	Alta Verapaz Department, Izabal Department (Eastern Guatemala)
Main Contractors	Tokura Corporation (Japan), Biotecnologias Energeticas de Guatemala (Guatemala), Samkye Construction Co., Ltd. (Republic of Korea) (JV), Constructora Nacional, Sociedad Anonima (Guatemala)
Main Consultant	Katahira & Engineers International (Japan)
Related Studies	① Detailed Engineering Design for National Highway Route-7 East (World Bank), December 2000 ② Special Assistance for Project Formulation (SAPROF) for ZONAPAZ Road Improvement Project (JICA): (1) September 2003, (2) September 2004 ③ Supplemental Study for ZONAPAZ Road Improvement Project (JICA), July 2005
Related Projects	Rural and Main Roads Rehabilitation Project (July 2007) ZONAPAZ Road Improvement Project (2) (November 2012)

2. Outline of the Evaluation Study

2.1 External Evaluator

Hajime Sonoda (Global Group 21 Japan, Inc.)

2.2 Duration of Evaluation Study

The ex-post evaluation study for the Project was conducted over the following period.

Duration of the Study: October 2020 –December 2021

Duration of the Field Survey: January – March 2021 (by local consultants)

2.3 Constraints During the Evaluation Study

Due to the pandemic of COVID-19, the external evaluator did not travel to Guatemala, and the interviews with the executing agencies, the field inspection of the road sections constructed under the Project, and the interviews with the road users and others were conducted by a local consultant. Using information obtained by the local consultant, the external evaluator conducted the ex-post evaluation of the Project.

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

3.1 Relevance (Rating: ③[3])

3.1.1 Consistency with the Development Plans of Guatemala

At the time of the planning of the Project (2006), the Berger administration adopted such development themes in its National Development Plan (2004 – 2008) as "solidarity" (social security, education, promotion of social participation), "growth" (development of transportation infrastructure and creation of employment) and "competitiveness" (export promotion, support for small and medium enterprises, support for productivity increase). In the plan, development of the ZONAPAZ based on the peace cooperation in the post-civil war period was given the status of the highest priority and national reconciliation efforts were promoted through various social development programs, and the improvement of roads was prioritized to avoid the ZONAPAZ being left behind the national development. In Guatemala's Road Development Plan (2000 – 2010), the Project was given a high level of priority as it was considered to make a great contribution to improvement of the standard of living of local residents in less developed areas of the country. RN-7E was designated as a supplementary corridor in the Pueblo to Panama Plan,[4] which was part of the Central American Integration System initiative, and was expected to play an important role as part of an international trunk road running from southern Mexico to Honduras and Belize via Guatemala.

The National Development Plan approved by the Government of Guatemala in 2014 emphasized the acceleration of inclusive economic growth, elimination of inequality and disparities, and strengthening of social protection policies, identifying poverty alleviation as the biggest challenge. Moreover, the plan called for the improvement of residents' access to services

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2 A: Highly satisfactory; B: Satisfactory; C: Partially satisfactory; D: Unsatisfactory

3 ③: High, ②: Fair, ①: Low

4 The Puebla to Panama Plan is a wide area development plan jointly announced by Central American countries and the Government of Mexico in June 2001.

through road improvement and the facilitation of exchanges among rural areas and also between rural areas and the outer areas as the first steps for integral rural development. The Road Development Plan (final draft as of March 2021) being prepared by the Direction General of Roads (hereinafter referred to as "DGC") of the Ministry of Communication, Infrastructure and Housing proposes a road improvement program based on the analysis results of the current situation of each section of trunk roads nationwide and the importance of individual roads in terms of the socioeconomic development of Guatemala. As RN-7E is very important from the viewpoints of economic growth, regional integration, reduction of regional disparities, and social development, it has a high priority for improvement. The status of RN-7E as part of the International Network of Mesoamerican Highways which has inherited the Pueblo to Panama Plan remains unchanged at the time of this ex-post evaluation.

Based on the above, the Project has been relevant to the development plan of Guatemala both at the time of planning and ex-post evaluation.

3.1.2 Consistency with the Development Needs of Guatemala

As described in "1.1 Background," development of the road network, including RN-7E, had been slow at the time of project planning in the target area, constituting a constraint to the area's socioeconomic development.

At the time of this ex-post evaluation, the importance of RN-7E is still high and there has been a massive increase in the traffic volume using this road (see the section on "Effectiveness"), maintaining the necessity for the Project.

Based on the above, the Project has been relevant to the development needs of Guatemala at the time of both its planning and ex-post evaluation.

3.1.3 Consistency with Japan's ODA Policy

In the Implementation Policies for Overseas Economic Cooperation at the time of planning, JICA identified "assistance for poverty reduction" and "infrastructure development for sustainable growth" as priority areas, emphasizing the assistance designed to promote sustainable growth through the development of social and economic infrastructure, including roads. JICA also considers "assistance for peace building" to be an important area. As the Government of Guatemala considered the "consolidation of peace" and "eradication of poverty" to be priority issues for the ZONAPAZ, the necessity and relevance of the Project to assist socioeconomic development in the target area were high.

3.1.4 Appropriateness of the Project Plan and Approach

Under the Project, part of the construction contract was cancelled and re-contracted, leaving one section incomplete as detailed in "3.2 Efficiency". This was due to a significant increase in

the project cost, delayed payment by the executing agency and abandonment of the construction by some contractors.[5]

At the time of planning, the project cost for RN-7E was estimated through the results of JICA studies (Related Studies ② and ③ of "1.2 Project Outline") based on the results of the Detailed Engineering Design for RN-7E of the World Bank conducted in 2000 (Related Study ①). The report for the last study by JICA (Related Study ③) pointed out that adequate estimates of the work volume and project cost based on the World Bank's study would not be feasible because the plan based on the latter was likely prepared without a topographical survey and contained many calculation errors. However, this report simply confirmed the necessity for DGC to prepare a detailed design study with new topographical survey, before the tender for the civil works, and was not followed up by an additional study. Consequently, the estimated project cost at the time of signing the loan agreement was not revised. Therefore, it can be pointed out that the insufficient accuracy of the studies which formed the basis for estimating the project cost at the time of project planning was one of the factors for the substantial increase in the project cost, significantly affecting the implementation of the Project. However, it cannot be said that this has affected the relevance of the Project.

Based on the above, the Project has been highly relevant to the Guatemala's development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating: ①)

3.2.1 Project Outputs

The planned and actual outputs of the Project are shown in Table 1.

(1) RN-7E and the Access Road (RN-7E to Senahú)

Under the Project, improvement of RN-7E and the access road was implemented with DGC acting as the executing agency. The consultant conducted the detailed design work for RN-7E and the access road in 2007. As this work found that the actual ground bearing capacity was smaller than assumed, it was necessary to change the specifications for the subgrade, base course and pavement, and more accurate estimation of the work volume led to an increase of the earth work, in particular, for slopes. In addition, rehabilitation-cum-improvement of the five bridges on RN-7E which had been damaged by a hurricane after project appraisal increased the cost. As it became clear that the project cost would substantially increase to 144% of the planned amount because of such situations, JICA agreed in May 2008 to increase the estimated project cost for RN-7E and the access road on the condition that any shortfall would be funded by the Guatemalan side.

[5] See "3.2 Efficiency" for details on the increase in operating expenses.

Following this decision of JICA, DGC decided that the work for Section 4 would be financed solely by the Guatemalan side without using the ODA loan and JICA agreed on this decision in November 2008. The contracts for the three sections (Sections 1, 2 and 3) of RN-7E and the access road which were covered by the ODA loan and the contract for Section 4 of RN-7E which was not covered by the ODA loan were signed in February – March 2009 and August 2012 respectively.

Table 1 Planned and Actual Outputs of the Project

Section	Planned	Actual	Remarks
Improvement of RN-7E	Asphalt pavement 161 km	Concrete pavement 161 km	
Section 1	51.1 km	49.0 km	67% was completed under the first contract and then fully completed in January 2020 under the second contract.
Section 2	38.2 km	38.0 km	Completed in March 2017.
Section 3	39.6 km	35.6 km (incomplete)	40% was completed by June 2013 when it was suspended. Part (4 km) was improved by the Guatemalan side with the cooperation of a nickel mining company and was outside the scope of the Project.
Section 4	32.1 km	38.3 km	Completed in November 2015. This section was extended eastwards, and this section was not covered by the ODA loan.
Improvement of an access road	Concrete pavement 25 km	Concrete pavement 21.6 km	Completed in October 2014.
Rehabilitation of rural roads	Gravel pavement 162 km	Gravel pavement 111.5 km	Total of 24 sections completed between 2009 and 2014 under five contracts. These were not covered by the ODA loan.

Source: Prepared based on the materials provided by JICA and the Executing Agencies.

For RN-7E, the improvement work was conducted for 161 km as planned, while there was a change in the road location and replacement of a target short section (4 – 5 km). However, the work for Section 3 is still suspended with a progress rate of 40% with some parts being unpaved even though the work on the base course has been completed throughout. As for the pavement, asphalt pavement was originally planned but was changed to concrete pavement after signing of the work contract in consideration of a likely increase in the traffic volume.[6] The access road was

[6] The study in 2003 (Related Study ②) proposed asphalt pavement based on the estimated traffic volume at the time. It subsequently became clear that there were plans to develop a nickel mine and a sugar plant along the route, making an increase of the traffic volume likely, mainly involving large vehicles. The detailed design had adopted asphalt pavement to suppress the project cost. After signing of the work contract, DGC reconsidered such advantages of concrete pavement as a high level of durability and lower maintenance cost and decided to change to concrete pavement on the assumption that the increase of the project cost (equivalent to 15 – 20% of the total project cost) would be shouldered by the Guatemalan side. JICA agreed on this decision.

generally completed as planned, while the total length was shortened due to changes in the road location.

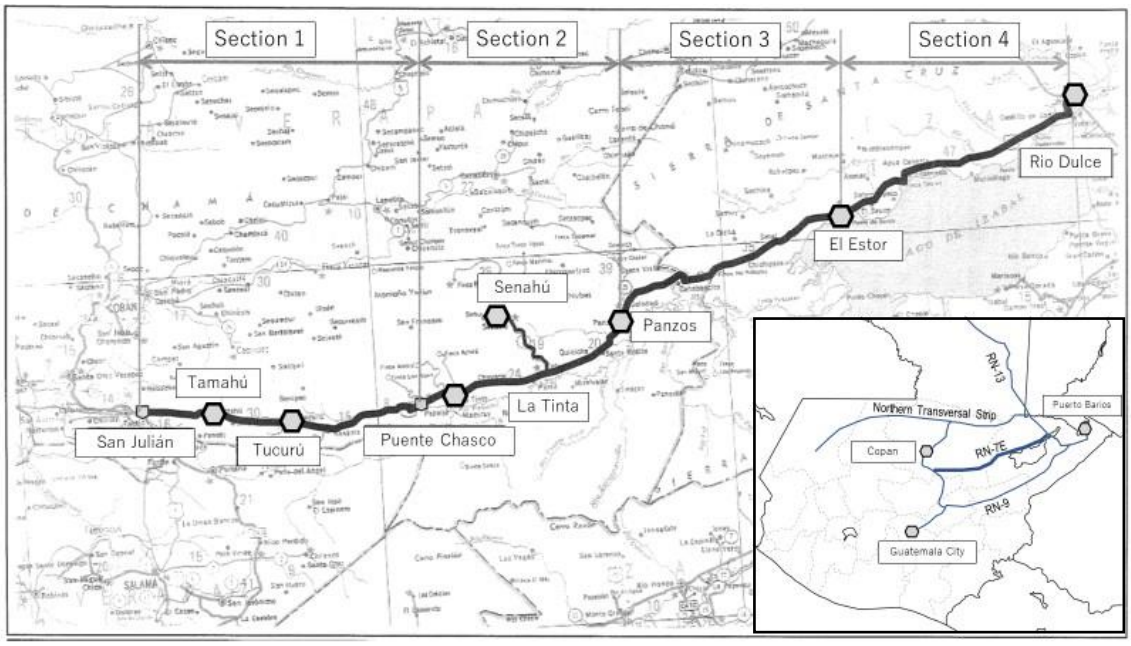


Figure 1 Sections of RN-7E and the Relationships with Other Arterial Roads

Unpaved part of Section 3

The access road to Senahú

At the construction stage for RN-7E, a series of problems occurred as described below.

- <u>Substantial increase in the period and cost of the Project due to design changes (all sections):</u> Hurricane Agatha in May 2010 and Tropical Depression 12E in October 2011 caused collapses, landslides and flooding along the target roads. Along with additional responding works including the repair of collapsed sites and the removal of sediment, a series of design

changes became necessary for rehabilitation and improvement, such as reinforcement of the drainage facilities and slope stabilization at vulnerable sites, strengthening of bridges, etc. Rain and flooding also made it necessary to suspend the works for long periods of time. Moreover, such additional works as bedrock drilling also became necessary because of the existence of a rock layer that was not anticipated during the detailed design, and the pavement was changed from asphalt to concrete pavement as described earlier. Because of these, the contracted amount increased by more than 30% from the originally planned amount, while the work period, except for Section 3 where the work has been suspended (described later), increased by an average of 3.3 times.

- Delayed payment to the contractors and the consultant (all sections): A new system to control government expenditure was introduced in Guatemala in 2010. Although the existing work contracts at that time were to be controlled by the new system, registration and transfer to the new system took a long time. Moreover, the imperfection of the new system frequently caused problems of non-payment and payment with long-time delay. Under such circumstances, payment by DGC to the contractors and the consultants was delayed from 2010 onwards. Due to the general election in 2015 and new budget act in 2017 stipulating stricter payment control, the payments for the unpaid amounts were made in 2018 or later. Meanwhile, JICA repeatedly held tripartite talks involving the DGC and the Ministry of Finance to urge a solution to the problem of delayed payment.

- Cancellation of the original contract and re-contracting for Section 1: In the case of Section 1, the relevant project cost substantially increased because of post-contract design changes as described earlier and a situation arose whereby the work could not be completed within the maximum threshold for expenditure.[7] In June 2013, the contractor involved (Tokura Corporation) requested midway termination of the contract to the Executing Agency and both sides agreed on cancellation of the contract. This was approved by JICA in May 2014. The work progress rate at that time was approximately 70%. Subsequently, after completion of the settlement and cancellation procedures of the contract, DGC signed a new work contract with another enterprise in December 2017 and the work for Section 1 was completed in January 2020.

- Suspension of the work for Section 3: In the case of Section 3, delayed payment by DGC led to suspension of the work by the contractor (Biotecnologias Energeticas de Guatemala / Samkye Construction Co., Ltd.) in June 2013.[8] After the resolution of the non-payment

[7] Laws of Guatemala authorize an increase of the contracted amount for public works approved by the government up to a maximum of 40%.

[8] The work for Section 3 was hampered by local residents who wanted the purchase of construction materials from them at high prices and the improvement of village facilities. However, such protests could not have been the direct

problem, the contractors did not arrange workers and equipment, withdrew from the work and did not agree on talks with DGC. The work progress rate was approximately 40%. At the time of this ex-post evaluation, DGC is in the process of legal proceedings regarding the completion bond against the contractor. As the next contract cannot proceed unless this completion bond is paid, there is currently no prospect of the recommencement and completion of the work for Section 3. Meanwhile, the entire base course has been completed with some parts unpaved, making it possible for vehicles to travel at some speed. However, Cahaboncito Bridge of Section 3 remains unimproved and has only one lane with weight restriction of 25 tons.

(2) Rural Roads

INFOM also acted as the executing agency responsible for the rehabilitation of rural roads in the Project. At the time of planning, rehabilitation of 162 km of rural roads out of some 330 km of the rural roads in the target area was intended.[9] In reality, a total of 111.7 km of rural roads in 24 sections was rehabilitated by 2014. The rural road rehabilitation was originally planned to be implemented over three fiscal years from FY 2008 to FY 2010. In FY 2008, the work proceeded as planned and 33.0 km of 14 sections was completed in 2009.[10] In FY 2009, the work was scheduled for six sections and the work for 13.5 km in four sections was completed in 2011. The work for the remaining two sections for 30 km could not start because of the delays in land acquisition and inability of existing bridges to support heavy machinery, resulting in cancellation of the contract with the contractor. In FY 2010, the required budget was not appropriated due to the tight government finance which prioritized rehabilitation of the damages caused by Hurricane Agatha, and no project-related work was undertaken. Subsequently in FY 2013, rehabilitation work was conducted in six sections, including two sections where no work had taken place in FY 2009, for a total length of 65.0 km and this work was completed in 2014.

reason for suspension of the work because the contractors did not restart the work even after the ending of the opposition by residents.

9 The target municipalities for the rehabilitation of rural roads were Tamahú, Tucurú, La Tinta, Senahú, Panzós and El Estor along the route of RN-7 East.

10 Of these 14 sections, three sections with the total length of 6.7 km were rehabilitated again in 2019. Although INFOM implemented the work under the budget of the Project, it is not included in the outputs because of duplication of the targeted sections.

Rural roads rehabilitated by the Project

3.2.2 Project Inputs

3.2.2.1 Project Cost

The planned total project cost at the time of planning was 9,810 million yen (approved ODA loan amount: 7,357 million yen). The actual project cost up to the time of the ex-post evaluation is 17,045 million yen (174% of the planned amount, ODA loan amount: 7,349 million yen), far exceeding the planned cost (Table 2). When the planned cost of each component is compared to the actual cost taking into consideration price escalation, physical contingency, administrative cost and taxes, the actual costs of the improvement of RN-7E and access roads, rehabilitation of rural roads and consulting service components are 189%, 94% and 188% of the relevant planned costs. In view of the facts that part of the work for RN-7E has not been completed and the actual total length of rehabilitated rural roads is less than planned, the efficiency of the project cost is judged to be low.

The project cost for RN-7E and access roads increased because of the changed road specifications, rehabilitation and improvement of facilities damaged by natural disasters and additional work necessitated by the actual topography and geology of the project area. It is now estimated that an increase of some 2,600 million yen and some 4,200 million yen had taken place up to the time of the detailed design and at the construction stage respectively. In addition, higher-than-expected price inflation is also thought to have contributed to the increase in project costs.[11]

[11] At the time of planning, it was assumed that prices would rise by about 2.4% per year, but the actual rate of price increase between 2005 and 2020 reached about 4.4%.

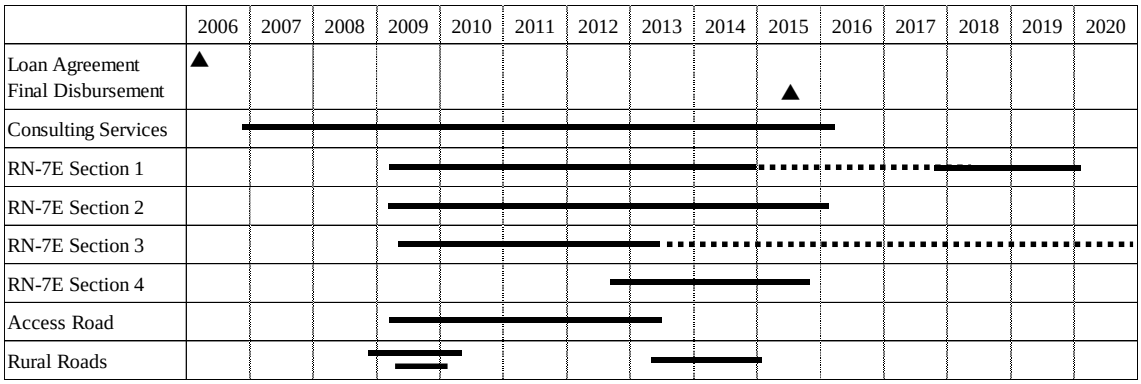
Table 2 Planned and Actual Project Costs

(Unit: Million Yen)

	Planed Amount			Actual Amount		
	ODA Loan	Guatemala	Total	ODA Loan	Guatemala	Total
RN-7E and Access Road	5,895	0	5,895	5,968	8,851	14,819
Rural Roads	0	435	435	0	543	543
Consulting Services	894	0	894	1,381	302	1,683
Price Escalation	413	16	429	0	0	0
Physical Contingency	155	157	312	0	0	0
Land Acquisition	0	501	501	0	(unknown)	(unknown)
Tax	0	944	944	0	(included in the above)	0
Administration Cost	0	400	400	0	(unknown)	(unknown)
Total	7,357	2,453	9,810	7,349	9,696	17,045

Source: Prepared based on the materials provided by JICA and the Executing Agencies.
Note: Exchange rates Planed amount: 1 Quetzal = 14.3 Yen
Actual amount: 1 Quetzal = 13.4 Yen (average for 2009 – 2020)

Table 3 Implementation Period of the Project (Actual)



Source: Prepared based on the materials provided by JICA and the Executing Agencies.
Note: The solid line indicates the construction implementation period and the dashed line indicates the construction interruption period.

3.2.2.2 Project Period

The Project was originally planned to be implemented for 63 months from the loan agreement in October 2005 to the completion of all the civil works in December 2010. In reality, however, the loan agreement was signed in February 2006 and the works was completed in January 2020 except for Section 3 of RN-7E (Table 3). The project period up to April 2021 was 183 months which is 290% of the originally planned period, significantly exceeding the planned period. The deadline for final loan disbursement was extended from June 2012 to May 2015. Although some 40% of the works for Section 3 was completed, the works have been suspended since 2013 without prospect of the timing for its recommencement. As such, the Project has not been

completed yet. The reasons for the substantial increase in the project period and for the incomplete works for Section 3 have already been explained earlier. Based on the above, the efficiency of the project period is judged to be low.

As a result, both the project cost and project period significantly exceeded the plan. Therefore, efficiency of the Project is low.

3.3 Effectiveness and Impacts[12] (Rating:③)

3.3.1 Effectiveness

3.3.1.1 National Highway 7 East (RN-7E)

The purpose of the Project was to ensure a means of transportation in the ZONAPAZ by improving RN-7E and access roads to a municipality and rural roads in the area. Three indicators were set for RN-7E regarding an increase in the traffic volume, reduction in the travelling time and reduction in the number of road closures due to natural disasters. The status of the achievement of these indicators is shown in Table 4.

Table 4 Planned and Actual Performance of Operation and Effect Indicators (RN-7E)

	Reference Value	Planned	Actual
Annual average daily traffic (vehicles / day; by sections)	309 – 802 (2004)	1,121 – 2,208 (2021)	821 – 2,598 (2021)
Travelling time (minutes; Sections 1 through 4)	383 (2004)	214 (at project completion)	213 (2021)
Road closure due to natural disasters (hours / year; by sections)	120 – 240 (2004)	12 – 24 (at project completion)	5 – 20 (2019)

Sources: The reference and target values are based on JICA materials and the actual values are based on DGC materials.
Note: Some of the reference and planned values of the average annual daily traffic volume were modified. See the Note for Table 5.

Further details of the state of achievement of each indicator for RN-7E and the situation of ensuring a means of transportation with access roads and rural roads are analyzed below.

(1) Increase of traffic volume

The planned and actual average daily traffic volumes on RN-7E are shown in Table 5. The average traffic volume increased from 538 vehicles/day in 2004 to 1,744 vehicles / day in 2021. The traffic volume in 2010 was below the planned volume, presumably because the work was in progress or not yet started in individual sections. In 2021 when the work has generally been

[12] The effectiveness is rated in consideration of not only the effects but also the impacts.

completed, the traffic volume exceeded the planned volume except in Section 4,[13] producing an achievement ratio of 113% for the planned average traffic volume.

Table 5 Planned and Actual Average Annual Daily Traffic

(Unit: vehicles / day)

Section	Baseline (2004)	Planned (2010)	Actual (2010)	Planned (2021)	Actual (2021)	Planned / Actual Ratio
Section 1	802	1,502	837	2,208	2,598	118%
Section 2	637	1,185	1,000	1,723	2,030	118%
Section 3	309	768	385	1,121	1,528	136%
Section 4	402*	764*	484	1,145*	821	72%
Average**	562	1,099	694	1,614	1,846	114%

Sources: The actual volume in 2010 is based on data provided by DGC. The actual volume in 2021 is established by converting the results of a 12-hour traffic volume survey conducted at the time of ex-post evaluation to the average daily traffic volume using information provided by DGC.

Notes: (*) The reference values and planned values for 2010 and 2021 are based on the estimated traffic volumes in the Supplementary Study in 2005. However, as the reference value for the traffic volume referred to at the time of planning for Section 4 was extremely high compared to that for other sections, there is a possibility that measurement was conducted in an urban area. As this data could not be used as it is for comparison with actual data, a compensated value using the traffic data for other sections and the actual traffic volume data at standard measuring locations of DGC is listed here as a value for reference purposes. (**) A weighted average based on the extension of each section at the time of planning.

For the period from 2004 to 2010, the traffic volume increased at an annual rate of approximately 3.6%. The annual rate of increase subsequently increased to 9% up to 2021. Based on these figures, it is inferred that induced traffic (traffic which has increased above the expected increase of the existing traffic volume induced by the development along the road in response to the road improvement) of more than 80% of the existing traffic has been generated by the Project, suggesting a major economic impact of the Project.[14] Based on the above, the achievement level regarding the traffic is judged to be “high”.

[13] According to the results of interviews with officials and residents of municipalities along the route of RN-7 East, the reasons for the smaller traffic volume increase in Section 4 compared to the other sections would be (i) some 6 km stretch from the end of Section 4 to RN-13 (outside the scope of the Project) is unpaved, (ii) road closure by residents wanting to express their displeasure with the government frequently occurs in areas through which Section 4 passes and (iii) local community organizations establish check points and charge a toll.

[14] At the time of planning, the induced traffic was estimated to be around 50% of the existing traffic.

Table 6 Trends of Traffic Volume by Vehicle Type

(Annual Average Daily Traffic: vehicles / day)

	All Vehicles	Traffic Volume / Composition by Vehicle Type (Average for Sections 1 through 4)				
		Passenger Vehicles	Pick-Up Trucks	Medium Size Trucks	Large Trucks	Buses and Mini-Buses
2003	403 (100%)	50 (12.4%)	166 (41.1%)	151 (37.5%)	3 (0.8%)	34 (8.2%)
2010	694 (100%)	82 (11.8%)	261 (37.6%)	282 (40.5%)	11 (1.7%)	58 (8.4%)
2021	1,846 (100%)	706 (38.2%)	564 (30.6%)	289 (15.6%)	25 (1.4%)	261 (14.1%)

Sources: The actual volume in 2010 is based on data provided by DGC. The actual volume in 2021 is established by converting the results of a 12-hour traffic volume survey conducted at the time of ex-post evaluation to the average daily traffic volume using information provided by DGC.

Note: A pick-up truck means a 4WD cargo bed, a medium-size truck means a truck with up to four axles and a large truck means a truck with five or more axles. A weighted average based on the extension of each section at the time of planning.

The composition of vehicles in 2010 was similar to that in 2003 (Table 6). Since 2010, however, the ratio of passenger vehicles has considerably increased with their number growing by more than eight times. Meanwhile, the traffic of medium size trucks has not increased much and their ratio has significantly dropped. While the traffic of buses and mini-buses has recorded a large increase, the increase in the number of mini-buses is the dominant factor. In short, the scale of increase in large vehicles (trucks and buses) has been small while that in smaller vehicles, such as passenger vehicles, pick-up trucks and mini-buses, has been large, presumably because the improved road surface has made it easier for small vehicles (especially passenger cars) to use RN-7E of which the previous poor surface made its use by small vehicles difficult.

(2) Reduction of travelling time

According to DGC, the travelling time between San Julian and Río Dulce (approximately 161 km) on RN-7E is 213 minutes (measured in January 2021), achieving the target value of 214 minutes. The average travelling speed is calculated to be approximately 45 km / hour. These findings largely coincide with the results of interviews with stakeholders. Although there are unpaved sections in Section 3, the road surface conditions are not bad due to the completion of the base course, allowing vehicles to travel at some speed. Therefore, the achievement level regarding the travelling time is high.

(3) Reduction of road closures due to natural disasters

Section 1 of RN-7E passes through a mountainous area and has been subject to frequent road closures due to landslides and flooding caused by rain. According to DGC, Section 1 experienced

road closure lasting 5 – 20 hours due to a natural disaster in 2019 which was less than one-tenth of the pre-project level in 2004. In 2020, no road closure due to a natural disaster occurred.[15] This improvement is believed to be the result of the installation of such appropriate facilities as slope protection and road surface drainage for RN-7E under the Project and also an improved disaster-resistance performance through rehabilitation and improvement responding to the recent disaster damages to RN-7E. Therefore, the achievement level of the reduction of road closures due to disasters is high.

3.3.1.2 Access Road and Rural Roads

According to the results of interviews with the planning section of the City of Senahú which has an access road to RN-7E, the travelling time from the municipal office to RN-7E has been halved from one hour to 30 minutes due to the implementation of the Project.

Meanwhile, the residents of villages where rural roads were rehabilitated under the Project (hereinafter referred to as "target villages") say that the travelling time from the village to RN-7E or municipal offices has been shortened. There are reports from the villages far from RN-7E or in mountainous areas that vehicles can now enter the village more easily and they can cover a distance, which used to take several hours on foot, now in less than one hour by vehicle. Although the field survey found that some of the 24 sections of rural roads rehabilitated under the Project are not necessarily well maintained (refer "3.4 Sustainability"), they are passable by motorcycles, moto-taxis (small three-wheel taxis), passenger vehicles, pick-up trucks, mini-buses, and small / medium size trucks throughout the year, substantially increasing the traffic volume. However, one section appears to be not used often as the road conditions have badly deteriorated since the completion of the Project.[16]

Based on the above, the purpose of the Project to "ensure a means of transportation in the target area" is judged to have been achieved.

3.3.2 Impacts

3.3.2.1 Intended Impacts

By securing a means of transportation, the Project was expected to contribute to the establishment of peace and reduction of poverty through improvement of the living standard of residents and revitalization of economy in the local area. The social and economic impacts of the Project are analyzed below based on the findings of the qualitative survey taking the changes in

[15] Residents along the route of RN-7E sometimes close the road to express their opposition to government policy (no direct relation to the Project). In 2019, road closure up to 85 hours a year occurred depending on section but such closure is not included in assessment of the performance of the relevant indicator.

[16] Villagers now primarily use a different route.

use of the target roads of the Project into consideration.[17]

(1) Changes in road use

As mentioned earlier, the traffic volume of RN-7E has substantially increased, especially the number of small vehicles. The origin and destination survey (OD survey) conducted by the SAPROF Study in 2004 found that local traffic along the route accounted for approximately 40% of the total traffic. Cobán, which is the capital of the Department of Alta Verapaz and a trading center for agricultural products, Guatemala City, the capital of Guatemala, and Puerto Barrios, a municipality with a container port (see Fig. 1), accounted for some 30%, 20% and 10% of the origin and destination respectively of the traffic on RN-7E. Although an OD survey was not conducted as part of this ex-post evaluation, the qualitative survey results suggest the following changes in the use of RN-7E.

- Based on the findings that; the increase in the number of small vehicles was larger than that in large vehicles; a number of target villages reported that some residents had newly purchased motorcycles or moto-taxis to start their transportation services; and many villagers reported that they went to town (the location of the municipal office) more often, it is believed that the traffic within the area along the route has increased significantly.

- An interview with the Puerto Barrios Customs found that 90% of the cargo traffic for import and export using the port as the origin or destination is to and from the capital via RN-9, while remaining 10% is for other areas. Transportation between Puerto Barrios and the Department of Alta Verapaz almost exclusively uses RN-13 and Northern Transit Strip, instead of RN-7E. This suggests that the traffic volume of RN-7E to and from Puerto Barrios has not much increased. However, cooperatives of producers exporting organic coffee, cacao, honey, etc. along the route of RN-7E have expressed the opinion that they welcome the improvement of RN-7E in the direction of Puerto Barrios.

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[17] As a qualitative survey, interviews were made with those stakeholders listed below by the local consultant on behalf of the external evaluator.

- MANPOLIZA (Association of Municipalities of Polochic and Izabal: further explanation is given below)
- Municipalities along the RN-7 East: Tamahú, Tucurú, La Tinta, Senahú, Panzós and El Estor (mayor, deputy mayor, head of planning, etc.) of each municipality
- Target villages: Community leaders (members of the community development committee, educational / health extension workers, members of women's association, members of water committee, etc.) of the 19 villages using the rural roads included in the Project
- NGOs: FUNDEA (Entrepreneurship and Agricultural Development Association); APODIP (Association of Organic Producers for Integral Development of Polochic); ADRI (Association for Integral Rural Development)
- Transportation industry: GRETEXPOL (Union of Interurban Hauliers of Polochic); Monja Blanca (bus operator); Carlo Gonzales (a haulier)
- Others: PNC (Police); Puerto Barrios Customs; Guatemala Chamber of Commerce and Industry

MANPOLIZA was originally established for the main purpose of facilitating road improvement under the Project as an association of local municipalities, but has widened the scope of its activities by the time of ex-post evaluation to include social development (education, medical care, housing improvement, food and nutrition security, road improvement, etc.), agricultural and forestry development and environmental education.

- Factors found through the qualitative survey affecting the less obvious increase in the traffic of large vehicles often used for long distance transportation are; (i) there remains a single lane bridge which has not been rehabilitated in Section 3, (ii) the road width of those sections passing through urban areas is narrow, making large vehicles spend more time to navigate (especially in Tamahú, Tucurú and Panzós), and (iii) there are sections where local residents have set up a check point or charge a toll fee and where road robberies frequently take place.

The traffic on rural roads of the target villages has significantly increased with the greater use of motorcycles, passenger vehicles, pick-up trucks and moto-taxis. Some residents have newly purchased a motorcycle or moto-taxi to start their own transport services. The number of visits by local residents to a nearby town or visits to villages by middlemen for agricultural products have substantially increased. No concrete information has been obtained on the change of use of the access road by Senahú residents.

(2) Economic impacts

In the qualitative survey, many of the respondents expressed the opinion that the improvement of RN-7E, access roads and rural roads under the Project has significantly contributed to the revitalization of economic activities along RN-7E. More specific reports are listed below.

- Many nationwide chains of pharmacies, stores selling daily necessities, restaurants have opened branches in cities along RN-7E. There are also new hardware stores, stores selling building materials and machine repair shops.
- A major bus company has opened six depots along RN-7E to provide courier services in towns.
- Many middlemen for agricultural products now visit the target villages. In the past, villagers carried their products themselves to the market in a nearby town, used the vehicle of a hauler or saw only one middleman. Since the completion of the Project, it has been unnecessary to carry products, and now visit multiple middlemen. This new situation has led to a reduction of the transportation cost (lowered transportation fees for less vehicle damage and shorter travelling time, and less damages on product due to the improved road conditions), increased selling prices due to competition, expansion of the potential markets (shipment to the market in other municipalities) and increased production and diversification of cash crops, such as coffee, spice (cardamom), vegetables (broccoli and tomatoes), etc. The purchase of fertilizer, agrochemicals from a middleman or hauler has also increased.
- New shops have opened in the target villages. Some villages now have such shops as a puncture repair shop, mobile phone shop, flour mill and welding shop. Peddlers and goods delivery trucks began to enter the villages, expanding the range of goods that could be

purchased in the villages.

- The volume of tree felling and hauling has increased as the roads can now be used by trailers. A new quarry has opened.
- Ore from a newly opened nickel mine along the route of RN-7E is transported to a smelting works in El Estor and the refined nickel is transported to Puerto Barrios via Rio Dulce.

(3) Social impacts

The following positive social impacts of the Project have been reported.

- It has become easier to travel from the target villages to town, making it more convenient to conduct administrative procedures at the municipal office, visit to a bank, shopping, etc.
- More residents now travel a long distance to work or for temporary migration to another city or the capital for labor.
- As ambulances now have access to the target villages, the prompt transportation of patients to health centers in town or the hospital in Cobán has become possible.
- The target villages are now frequently visited by the police. Although there are no special security problems in areas along RN-7E, the possibility of a quick police response at the time of an emergency has contributed to improving the overall public security.
- According to the local police, road robberies occur less because of the increased speed of vehicles. There are not many traffic accidents. Meanwhile, it has been pointed out in some target villages that traffic accidents involving speeding motorcycles do occur on RN-7E.

The qualitative survey did not produce any concrete information regarding the contribution of the Project to peace building. According to one NGO (FUNDEA) operating in the target area, there had been chronic poverty in the area since the 1980's with limited access to medical and educational services and technology due to its isolated status. However, the situation has been gradually improving with the efforts of NGOs, cooperatives, banks and educational / medical institutions. Local residents made no reference to a problem of public security and the crime rate in the area is lower than the national average. The return of displaced persons to the area is steadily progressing,[18] suggesting that peace has been firmly established as 15 years have passed since the signing of the Peace Accords. Judging from the reality of the social and economic impacts

[18] According to statistics of the National Police of Guatemala, both the number of extortions / robberies and the number of homicides per population in the six municipalities along RN-7E in 2020 are lower than the national average. Data supplied by the International Organization for Migration puts the number of returnees to the area from the US at 35 in 2016, 36 in 2017, 216 in 2018 and 412 in 2019, indicating a trend of increase.

described above, there is no question that the Project has facilitated socioeconomic interchanges and integration between areas along RN-7E and other areas. Therefore, the Project is considered to have indirectly contributed to the consolidation or preservation of peace.

3.3.2.2 Other Positive and Negative Impacts

(1) Environmental impacts

The civil work contracts for the Project included environmental engineering specifications and the contractors conducted environmental management by posting environmental officers familiar with environmental evaluation and environmental management measures. The actual measures included the greening of spoil banks, greening using local species, slope protection and ground conservation utilizing hedges and tree planting. No serious impact of the project-related work on the environment has been reported.

The qualitative survey found some concern by local municipalities regarding environmental destruction as better access made possible by the Project has led to increased felling and collection of firewood. In regard to rural roads (without pavement) and the unpaved sections of RN-7E, a lot of dust is produced by passing vehicles and some concern was expressed by the residents along the route about the need for frequent cleaning and washing as well as for health issues. At the section of RN-7E used by the mining company, water sprinkling is conducted by the company to suppress dust. While RN-7E used to experience frequent landslides during the rainy season, the employment of adequate slope protection works under the Project has reduced both the frequency and scale of landslides. It can be said that the Project has contributed to strengthening the resilience and adaptability of the transportation network to natural disasters.

(2) Social impacts

The work for RN-7E and access roads did not involve any resettlement of residents. No problems have been reported regarding land acquisition.[19]

Some of the target sections of rural roads were changed because of difficulty involved in land acquisition (refer "3.2 Efficiency"). At rehabilitated sections, no specific environmental or social problems have been reported apart from complaints about dust.

The consultant for the Project conducted training on the prevention of infectious diseases, including HIV, for employees of the contractors, and also provided environmental education (tree planting) as well as traffic safety education in the form of lectures held in local municipalities along RN-7E. Even though no concrete information was obtained regarding the results of such training and education, the MANPOLIZA has stated that the traffic safety education has been useful for the prevention of traffic accidents.

[19] Information on the area of land acquired, amount of compensation paid, etc. could not be obtained from DGC, the executing agency.

To summarize effectiveness and impacts based on the above, although some sections of RN-7E have not yet been paved, it is still possible for vehicles to travel at some speed in these sections. The Project has achieved the expected positive effects, such as an increased traffic volume, reduction of the travelling time and road closures due to natural disasters and is believed to have contributed to social and economic development in areas along the route. Therefore, the effectiveness and impacts of the Project are high.

3.4 Sustainability (Rating: ③)

3.4.1 Institutional / Organizational Aspects of Operation and Maintenance

(1) RN-7E and access road

While DGC used to have direct responsibility for road maintenance in Guatemala, COVIAL was established in 1997 under the direct control of the Ministry of Communication, Infrastructure and Housing. Using the fuel tax as the earmarked revenue source, COVIAL now entrusts the maintenance of national roads, departmental roads and some rural / municipal roads to the private sector. The original plan was for DGC to conduct the improvement work for RN-7E and access roads (departmental road) among the roads targeted by the Project and to transfer the responsibility for their maintenance to COVIAL on completion of the work.

COVIAL has 93 staff members (as of March 1, 2021), including 15 management staff and 18 technical staff. The organizational system is compact because the actual maintenance work is entrusted to the private sector. Regular maintenance works include patching of cracks on the road surface, improvement of rainwater drainage, and construction of side ditches and retaining walls to stabilize slopes. Obstacles are removed from the road surface, road shoulders and side ditches. Vegetation control and cleaning of road signs and metal barriers are made. All structural components of bridges are inspected. When physical damage which compromises the safety of the structural components is found, either repair work or replacement work is carried out. The maintenance works conducted by private contractors are supervised in technical and administrative aspects by the engineers employed under a separate contract.

Of the work sections of RN-7E under the Project, Sections 2 and 4 have been transferred to COVIAL which maintains these sections by outsourcing.[20] The maintenance responsibility for Section 1, for which the improvement works were completed in January 2021, is scheduled to be transferred to COVIAL but the relevant procedure has not yet been completed as of March 2021. However, the field survey in March 2021 found that COVIAL is conducting emergency works to deal with landslides in this section. The civil works in Section 3 are not completed and the maintenance responsibility for this section is scheduled to be transferred to COVIAL upon

[20] For Sections 2 and 4, road pavement reshaping, securement of road drainage, cleaning and supervisory work are entrusted to the private sector.

completion. In some parts of Section 3, the mining company conducts maintenance work, including water sprinkling, free of charge.

The civil works for access roads under the Project were completed in 2013 and DGC had started the procedure to transfer their maintenance responsibility to COVIAL. However, COVIAL declined this transfer because the road conditions at some sections were poor due to landslides. No new transfer efforts have since been made. DGC replied to the questionnaire for the ex-post evaluation that this transfer had been completed but this understanding differs from that of COVIAL, making it unclear where the maintenance responsibility for access roads lies.

(2) Rural Roads

Each municipal government together with the community development council prepares a rural road maintenance plan and conducts improvement such as pavement, repair and other types of works depending on the available budget primarily before and after the rainy season. Because of budgetary restrictions, not all rural roads are subject to municipal maintenance work every year. Municipal governments make requests for the assistance of the departmental government or central government (army) to secure the use of the necessary heavy machinery. Meanwhile, INFOM has formulated a rural road rehabilitation program (2021 – 2025) which is similar to the Project and which covers the target area of the Project but no actual budget has been appropriated at the time of the ex-post evaluation. Because of the limitations of the maintenance by the municipal governments, communities along rural roads conduct simple repair works when necessary and they are almost entirely conducted by hand.

Based on the above, while no special problems exist with RN-7E and rural roads as far as the institutional / organizational aspect of operation and maintenance is concerned, coordination efforts between DGC and COVIAL are required regarding transfer of the maintenance responsibility for the access road.

3.4.2 Technical Aspects of Operation and Maintenance

Since its establishment in 1996, COVIAL has conducted maintenance of national and departmental roads (total length of approximately 4,900 km in FY 2018) and possesses a structure to manage various technical standards for road maintenance and many maintenance plans. While some parts of RN-7E and the access road improved under the Project are in mountainous areas and experience frequent landslides, no special technologies are required for their repair and maintenance. As such, it is believed that no special issues exist regarding the technical aspect of operation and maintenance.

After the completion of the rural road rehabilitation, INFOM conducted training on road maintenance, taking the opportunity of handing over the rural roads to the relevant municipalities. According to INFOM, these municipalities have not necessarily been implementing adequate

maintenance. In interviews with municipal officials, no technical issues were reported, while it was pointed out that the main problem for road maintenance was the financial constraint. In short, there appear to be no major technical constraints for the maintenance of rural roads even though the technical capability of municipal governments is not necessarily strong.

Based on the above, there are no major problems regarding the technical aspect of operation and maintenance.

3.4.3 Financial Aspects of Operation and Maintenance

The average annual budget of COVIAL in 2015 through 2018 was 984 million quetzal (approximately 14.8 billion yen based on 1 quetzal = 15 yen). The budget execution ratio was approximately 58%. As the revenue source is the fuel tax, the revenue is stable.[21] In 2020, the total budget of COVIAL was 1,344 million quetzal (approximately 20.2 billion yen). No special financial issues are found regarding the road maintenance work conducted by COVIAL.

Most municipalities targeted by the Project believe that financial constraint is the biggest problem for the maintenance of the rural roads. Each municipality plans and implements road maintenance work each year based on its usable budget and the necessity for such work for individual roads. Many of the rural roads targeted by the Project undergo municipal maintenance every two to three years but some rural roads have had no maintenance since the completion of their rehabilitation. Meanwhile, INFOM has a rural road rehabilitation program up to 2025 for the area targeted by the Project but this program has no concrete fund at the time of the ex-post evaluation.

Based on the above, there is some concern regarding rural roads in the financial aspect of operation and maintenance.

3.4.4 Status of Operation and Maintenance

(1) RN-7E and access road

In Section 1 and Section 2 where RN-7E runs through much mountainous and hilly terrain, some sites remain damaged by minor landslides or river erosion remain. The damages were originally caused by Hurricane Eta in November 2020 and other causes. COVIAL is conducting rehabilitation at some of these sites. In general, the conditions of the road surface and road signs of RN-7E are good and maintenance works by COVIAL were seen in Section 2. Section 3 where the improvement has not been completed has many unpaved sections and sections where only one side of the road is paved. The sprinkling of water to suppress dust by a mining company was seen. In Section 4, although the road surface conditions are good, there are sections where the road surface markings are not properly maintained. The access road to Senahú has unrepaired surface

[21] 1 quetzal per 1 gallon (3.8 litres) of gasoline is earmarked as the revenue for COVIAL.

cracks and minor landslides in some sections, but the overall road surface conditions are good.

Through the site inspection, the road conditions are judged to be “good” for 68% of the total length of RN-7E and access roads improved by the Project, “fair” for 22% and “poor” for 10%. Those judged to be “poor” correspond to the damaged sections in Section 1, unpaved sections in Section 3 and unpaved or unrepaired sections of access roads.

(2) Rural Roads

Through the field visits, the conditions of the entire rural road sections rehabilitated by the Project were assessed and found that the conditions are “good” for 56% of the total length of these roads, “fair” for 15% and “poor” for 29%. Those judged to be “poor” are sections where landslides or collapse of the shoulders has not been repaired at slope area and sections where the road surface has become bumpy because the poor drainage made the road surface muddy.

Based on the above, the maintenance situation of the target roads of the Project is judged to be “generally good” for RN-7E and access roads, and “not very good” for rural roads.

In summary, while no problems have been observed in the technical aspect of the operation and maintenance of the Project, coordination is required in terms of the institutional aspect regarding the transfer of road maintenance responsibility of the access road to COVIAL. For the financial aspect, there is a constraint regarding the financial sources for the maintenance of rural roads. The overall maintenance situation of the target roads is not necessarily good. Therefore, the sustainability of the project effects is fair.

4. Conclusions, Lessons Learned and Recommendations

4.1 Conclusion

The Project was implemented for the purpose of ensuring a means of transportation in the ZONAPAZ, an area severely damaged by the civil war in Guatemala, by improving RN-7E which intersects the area, an access road to the municipality and rural roads in the area, thereby contributing to improvement of the living standard of local residents as well as the establishment of peace and reduction of poverty through revitalization of the local economy. The Project is highly relevant to the development policies and development needs of Guatemala and Japan’s ODA policy. Therefore, the relevance of the Project is high. While the construction on RN-7E has been completed at three of the total four sections, it is still suspended at one remaining section as of March 2021. The access road was completed as planned and rural roads were also completed although the target sections were changed. Both the project cost and project period significantly exceeded the plan. Therefore, the efficiency of the Project is low. Although the pavement of some

parts of RN-7E is incomplete, the planned outcomes of the Project, such as an increased traffic volume, shorter travelling time, reduction in the number of road closures due to natural disasters have been achieved, and it is considered to contribute to the socioeconomic development of areas along the route. Therefore, the effectiveness and impacts of the Project are high. As far as the operation and maintenance of the Project are concerned, although there are no problems in the technical aspect, coordination efforts are required in terms of its institutional / organizational and financial aspects regarding transfer of the maintenance responsibility for access roads to COVIAL. In the financial aspect, the maintenance of rural roads faces a constraint in terms of the funding sources. As such, the situation of road operation and maintenance is not necessarily good. Therefore, the sustainability of the Project is fair.

In the light of the above, the Project is evaluated as partially satisfactory.

4.2 Recommendations

4.2.1 Recommendations for Implementation Agency

- DGC should re-contract the civil works for Section 3 of RN-7E so that the improvement can be completed as soon as possible. On completion of these works, DGC should promptly transfer the maintenance responsibility of Section 3 to COVIAL.
- DGC should complete the transfer of the maintenance responsibility of Section 1 of RN-7E and the access road to Senahú to COVIAL as soon as possible upon coordination with COVIAL.
- INFOM should secure the budget for the rural road rehabilitation program and conduct the necessary rehabilitation.

4.2.2 Recommendations to JICA

JICA should encourage DGC to implement the above recommendations and should monitor their implementation.

4.3 Lessons Learned

Proper estimation of the project cost

The substantial increase in the project cost over the planned cost escalated the financial burden on the recipient side, constituting one of the factors for the significant delay of the work implementation. Although the accuracy of the survey on which the project cost estimate was based was questionable at the time of planning, it had been decided that a study, including topographical survey to improve accuracy, would be conducted during the detailed design after the loan agreement. The road specifications and work volume were revised in the detailed design to reflect

the actual ground bearing capacity and topographical features. The project cost was increased because of such revision as well as the rehabilitation and improvement of bridges damaged by a hurricane. After the commencement of the works, project cost further increased by the change of the pavement from asphalt to concrete based on a judgement made by the executing agency, increased work volume due to the existence of an unexpected bedrock formation, suspension of the works due to natural disasters and works to restore and improve damaged infrastructure. On the other hand, some construction contracts were cancelled because payments from the executing agency to the contractors were delayed due to the changes in the government expenditure management system, and because there was a cap on the increase in the amount of public works contracts under the regulations of the recipient country.

In view of the above, it is important to properly plan the project cost prior to the loan agreement at the time of planning. Necessary additional surveys should be conducted based on the accuracy of the information used as the basis for calculating the project cost. In those areas prone to natural disasters, the possibility of an increase due to damage should be considered. In addition, if there are institutional restrictions on the increase in the contract amount of public works projects, it is necessary to further improve the accuracy of project cost estimates at the time of contracting to ensure that no increase over the limit occurs.

Comparison between plan / actual

Items	Plan	Actual
1. Output	<National Road: RN-7E> Asphalt pavement, 161 km <Access Road> Concrete pavement, 25 km <Rural Road> Gravel pavement, 162 km	<National Road: RN-7E> Asphalt pavement, 161 km (Partially incomplete as of March 2021) <Access Road> Concrete pavement, 21.6 km <Rural Road> Gravel pavement, 111.5 km (Some target sections were replaced.)
2. Project Period	October 2005 – December 2010 (63 months)	February 2006 – Partially incomplete as of March 2021 (183 months, 290% of the planned period)
3. Project Cost ODA Loan Fund by Guatemala Total Exchange rates	 7,357 million yen 2,453 million yen 9,810 million yen 1 quetzal = 14.3 yen (July 2005)	 7,349 million yen 9,696 million yen 17,045 million yen 1 quetzal = 13.4 yen (Average for 2009 – 2020)
4. Final Disbursement	May 2015	