Ex-Post Project Evaluation 2016 : Package III-5

(Nepal, Bhutan)

October 2017

JAPAN INTERNATIONAL COOPERATION AGENCY

JAPAN ECONOMIC RESEARCH INSTITUTE INC.

EV
JR
17-49

Disclaimer

This report compiles the result of the ex-post evaluations. These are conducted by external evaluators to ensure objectivity, and the views and recommendations herein do not necessarily reflect the official views and opinions of JICA. JICA is not responsible for the accuracy of English translation, and the Japanese version shall prevail in the event of any inconsistency with the English version.

Minor amendments may be made when the contents of this report is posted on JICA's website.

Comments by JICA and/or the Borrower (including the Executing Agency) may be added at the end of the evaluation report when the views held by them differ from those of the external evaluator.

Federal Democratic Republic of Nepal

FY2016 Ex-Post Evaluation of Technical Cooperation Project

"The Project for Promoting Peace Building and Democratization through the Capacity Development of the Media Sector in Nepal"

External Evaluator: Hisae Takahashi, Japan Economic Research Institute Inc.

0. Summary

This project was implemented to establish a model[1] of accurate, impartial and fair media in the democratizing process of Nepal through revision of media policy and reform of Radio Nepal[2] (RNE). The purpose of this project is consistent with the constitution, development policy and development need of Nepal, which have shown the importance of media in promoting the participation of the general public in the democratizing process. It is also consistent with Japan's ODA policy in Nepal, therefore, the relevance of this project is high. Through the project, the revised media policy, acts, regulations and guidelines, etc. which are in line with the current situation of the country, were created and the capacity of the RNE, which is expected to take a role as Public Service Broadcasting (PSB) [3], to produce fair and neutral programs, was improved. Furthermore, improving the reliability of RNE by audience was also confirmed. Mass Communication Policy (New media policy) in Nepal, which was prepared based on the revised media policy, has yet to reach the execution stage at the time of ex-post evaluation[4]. However, since the stakeholders of this project as well as major media were involved in drafting the same, they has come to share what a model of accurate, impartial and fair media should be and thus the project contributed to build an environment in which the role the media needs to play is respected. Accordingly, the effectiveness and impact of this project are high. Though the project period was within the plan, the project cost exceeded the plan, so the efficiency is judged to be fair. Regarding sustainability, while related policy and systems to support to execute media policy and materialize PSB[5] are confirmed, the

[1] The model represents how the media in a democratic state should function such as investigative reporting, fair journalism to election/politics and journalism ethics including human rights.

[2] Radio Nepal was established under the Ministry of Information and Communications of Nepal in 1951 and operated as the sole national radio station for 46 years till the first private radio station started broadcasting in 1997.

[3] National broadcasting is funded by the state. In some cases, broadcasting provides information strongly controlled by state power to the general public. Conversely, since the PSB is basically non-profit-making, it is normally funded partially by government and partially by a local body, with the reception fee paid by the TV holder and TV license fees. Since radio waves are basically public property, private broadcasting is also considered public in nature. However, they are distinguished with the label "Commercial broadcasting" since they aim to make a profit to remain in business.

[4] After the field survey of this ex-post evaluation, it was confirmed that *Gazette* (government's official journal) published the new media policy as of July 3, 2017. It means that the new media policy is now officially implemented in Nepal.

[5] At the time of ex-post evaluation, RNE has not shifted to PSB from state broadcasting directly operated by government. This evaluation report described the shift of RNE to PSB as well as movement toward the shift to PSB as "being PSB".

influences of the political situation in Nepal remain areas for concern. Where RNE takes the role of PSB, there is room for improvement in terms of a lack of staff numbers and financial aspects. Thus, the sustainability of the effect produced in this project is fair.

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

1. Project Description

Project Locations (Whole Nepal)

RNE Head Office

1.1 Background

The peace process of Nepal, which began in 2006 with the signing of the Comprehensive Peace Agreement (CPA), ended a decade of conflict between government of Nepal and the antigovernment force. Even after the CPA, however, discussions had ensued in Nepal as to how the media should report the news to avoid encouraging conflicts, including protest activities for claiming the rights by each ethnic group neglected by central government or by those of lower castes and violent activities by groups of youth activists under each of the political parties. There were also many cases, the accurate reports were not delivered to the regions on the peace process, the progress of discussion among parties and political issues. Moreover, media worker also did not have sufficient knowledge on issues facing Nepal such as the constitution-making process. Under such circumstances, Nepal was flooded with media beyond what its market could bear and the media did not play the expected role as “a monitor of development” due to access to the political parties for survival, intimidation and physical violence to medias which did not comply with certain parties and a lack of professionalism disguised as self-regulation for the self-protection of the journalists themselves.

The existing communication and broadcasting laws, under the jurisdiction of the Ministry of Information and Communications (MoIC), were formulated at the time of the sovereignty of the king and needed amending based on the current media surplus and with the political situation in mind. RNE is the state-owned radio broadcasting organization, broadcasting nationwide radio and providing multilingual news programs and others that take into account the multiple cultures. RNE was expected to play an important role in reports of elections, political activities or any disasters along with increasing

independence of broadcasting, organization and finance as part of the PSB process. However, difficulties in securing funding for the programs meant they had to depend on government publicity, which led to government restrictions hindering the freedom to edit programs. Besides, RNE had difficulties in securing resources to develop staff capacities and improve programs, resulting in low-level programming, poor sound quality and ultimately, a decline in the audience.

Under such circumstances, the government of Nepal requested technical cooperation from the Japanese government to revise media policy and enhance the institutional capacity of RNE as an accurate, impartial and fair media model, which led to the implementation of this project.

1.2 Project Outline

Overall Goal		Environment to respect the principle of accuracy, impartiality and fairness of media is enhanced.
Project Purpose		A model of accurate, impartial and fair media in the democratizing process is established (through revision of media policy, acts, regulation and guideline and reform of RNE).
Output(s)	Output 1	Draft of the revised media policy, act, regulations and guidelines are formulated by MoIC.
	Output 2	The function of RNE as a public broadcasting institution is enhanced.
Total Cost (Japanese Side)		340 million yen
Period of Cooperation		November 2010 – October 2013
Implementing Agency		Ministry of Information and Communications (MoIC) / Radio Nepal (RNE)
Other Relevant Agencies / Organizations		N/A
Supporting Agency /Organization in Japan		Ministry of Internal Affairs and Communications
Related Projects		【Technical Cooperation】"In-Country Training for Journalists for Promoting Peace through Media" (2009) 【Grant Aid】"The Project for the Improvement of Short Wave and Medium Wave Radio Broadcasting Stations" (September, 2006)

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

The media policy and acts -drafting process was mostly completed, with only consultation and promotion activities to the media remaining. RNE, as a PSB, was considered to be involved in the process of establishing the foundation of the independent editorial rights system, without any arbitrary interference by political parties and thus program editing, without any arbitrary interference by political parties

and thus considered likely to achieve the project purpose.

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

MoIC and other major Medias participating in the deliberations shared a common understanding to establish an accurate, impartial and fair media sector. The overall goal was expected to be achieved, provided the process of democratization could be maintained, amended media policies were transformed into law and executed and project activities and achievements adequately promoted.

1.3.3 Recommendations from the Terminal Evaluation

Recommendation by the time of project completion

1. The experts are expected, acting in coordination with the MoIC, to broaden the understanding on "a legal framework to assure democratic activities of the media", share its understanding and promote awareness on fair, impartial and accurate media.
2. RNE is expected to increase its independence by broadening the use of related manuals and guidelines, maintaining a neutral reporting attitude and promoting cooperation among departments toward improving the financial situation.

Recommendation by the time of project completion

1. MoIC is expected to maintain its policy direction, even after project completion, seek formal approval of policies and regulations and continue to improve the democratic media environment.
2. RNE is recommended to internally establish a core group and ensure established know-how accumulated in this project and ongoing operations.

2. Outline of the Evaluation Study

2.1 External Evaluator

Hisae Takahashi, Japan Economic Research Institute, Inc.[6]

2.2 Duration of Evaluation Study

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

Duration of the Study: September, 2016 – October, 2017

Duration of the Field Study: January 11 – January 27, 2017, April 22 – April 29, 2017

[6] Joined the evaluation team of Japan Economic Research Institute Inc. as a team member from Ernst & Young ShinNihon LLC.

3. Results of the Evaluation (Overall Rating: B[7])

3.1 Relevance (Rating: ③[8])

3.1.1 Consistency with the Development Plan of Nepal

At the time of the plan, Nepal was drafting the "National Development Strategy Paper" to develop a "Three-Year Interim Plan" (2010/11-2012/2013)[9]. The paper emphasized strengthening media to promote public participation in the democratization process and specified the creation of media policy, establishing related regulations on a timely basis and delivering an impartial, balanced and public-oriented program based on facts to the public as urgent issues. A "High-Level Committee" was also established under a decision by the interim government and appointed by the prime minister in 2006 in light of public broadcasting as part of a democratic society[10]. This committee, in which representatives of major media-related organizations and others participated, proposed a process allowing RNE and Nepal Television (NTV), the state broadcaster, to be PSB[11].

The "Interim Constitution, 2063", established in 2007, clearly cited media and press freedom, while the "Three-Year Plan" (2010/11-2012/2013), at the time of project completion, emphasized the further development and expansion of areas of information and communication, allowing the public to widely access information, which was shown having acknowledged the importance of the media in promoting public participation in the democratization process. The abovementioned "High-Level Committee" remained effective at the time of project completion.

The project purpose was to show the role and model to be played by media in a democratic nation and thus relevant to the Nepal constitution and development policy. These have focused on the role and strengthening of media as part of the democratization process at the time of planning and through project completion.

3.1.2 Consistency with the Development Needs of Nepal

Nepal was involved in the process of building a democratic nation at the time of the plan and the concept of a free and fair media remains in the nascent stages. Accordingly,

---

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

[8] ③: High, ②: Fair, ①: Low

[9] Although Nepal established the "10th Five-Year Plan" (2002-2007) in February 2003, a "Three-Year Interim Plan" (2007-2010) was developed in 2007 to fill the gap until the next "10th Five-Year Plan" was prepared due to the political circumstances prevailing during the constituent assembly election. With the political and financial circumstances in mind, although the next "Three-Year Interim Plan" (2010-2013) had been drafted at the time of the plan, it remained incomplete due to some delays.

[10] This committee was established by the decision of the interim government after the 2nd democracy movement and aimed to discuss the issues faced by air media. It featured participation from 13 people, including the chair of a major media-related organization in Nepal. It suggested restructuring RNE, NTV, Rastriya Samachar Samiti and Gorkhapatra Corporation along with securing freedom to edit, independence and fairness as state media which played important roles.

[11] Source: documents provided by JICA

information related to the peace process, the progress of discussion among the relevant parties in legislature parliament and political issues were not delivered accurately to the regions and media workers also lacked sufficient knowledge about the issues, such as formulation of a constitution, facing Nepal. Communication and broadcasting laws were formulated at the time of the sovereignty of the king and were required amendment based on the current situation and flood of incoming media. Also RNE, with a nationwide broadcasting network given expectations of its role as a PSB, struggled with issues such as financial deterioration, slumping program content and poor sound quality[12].

Nepal was still seeking how best to embark on the democratization process at the time of project completion and had to enhance the understanding of the media principle to political parties and promote a share of understanding for the role of journalism in a democratic nation. This was in order to strengthen sustaining policies and practices, and also to foster an accurate, impartial and fair media by the government and MoIC. Although information resources are expanded along with the rise in Internet or social media, online media was not included in the media policy at the time, prompting voices to revise media policy and regulations, including additional rules governing online information sources. Furthermore, RNE and NTV had many issues to be improved from the perspective of providing information to secure the public right to know on a timely basis, as a highly public form of media, commensurate with democratic standards for reporting and producing programs[13].

The revision of media policy and the capacity strengthening of RNE to be PSB were required at the time of the plan through to project completion. Accordingly, this project was relevant to the country's development needs.

3.1.3 Consistency with Japan's ODA Policy

Based on the ODA charter, Japan emphasized "democratization and peacebuilding" as one of its priority areas for supporting Nepal at the time of the plan and decided to provide timely support along with the democratic process[14]. The democratic process supporting the program, one of the priority areas, clearly indicated the need to promote "providing the public with impartial and fair information for the political process through media along with system development[15]. Accordingly, this project was relevant to Japan's ODA policy and the program policy in terms of capacity building of media as an important role for the country's democratic process.

---

[12] Source: documents provided by JICA
[13] Source: questionnaire and interview with MoIC
[14] Source: Japan's ODA Data by country 2010
[15] Source: documents provided by JICA

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

3.2 Effectiveness and Impact[16] (Rating: ③)

3.2.1 Effectiveness

3.2.1.1 (Project Output)

Under the project purpose of "A model of accurate, impartial and fair media in the democratizing process is established", this project aimed to achieve two aspects of the revision of media policy (output 1) and RNE reform as an expected role of PSB. Specifically, various working groups (WG) were established, as required, under the media policy task force[17] leading the activities of output 1 and the PSB preparation task force[18] leading the activities of output 2 of the project activities were implemented to achieve each output. (See below for the project implementation structure)

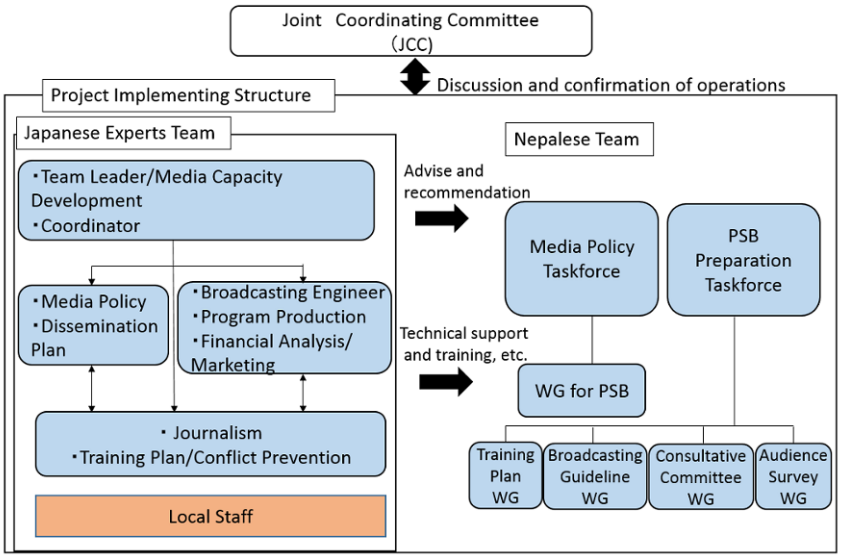


Figure 1 The Project Implementation Structure

Source: documents provided by JICA

Note 1: The Joint Coordination Committee (JCC) is the primary decision-making body, with members comprising implementing agencies, control authorities and the head of JICA local office, etc. As well as the members, all other related parties gather during the meeting to discuss and determine the relevant project issues.

Note 2: See footnotes 17 and 18 for details of each task force on the Nepal side. MoIC staff participated in the WG for PSB under the media policy task force, while RNE staff participated in four WGs under public broadcasting preparation task force.

---

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

[17] This task force mainly comprises board members of the Press Council Nepal and the Nepal journalist federation, in addition to MoIC staff.

[18] This task force comprises the RNE president, vice-president and heads of each of the technical, general affairs, sales and finance departments, etc.

The outputs of this project, required to achieve the project purpose, were mostly achieved at the time of project completion (See Table 1 for the achievement of each indicator).

(1) Creation of the revised media policy, act, regulations and guidelines

Based on revised plans prepared at the media task force, revised media policy[19] and seven related acts[20] for four major areas, including "broadcasting including online media", "press and printing", "cinema" and "advertisement" were finalized after the work process to reflect the results of discussion with stakeholders[21], comments provided through dissemination activities to journalists and responses obtained at the Consultative Committee (herein after policies and related acts revised during this project is referred to as "the revised media policy"). The revised media policy was submitted to the minister of MoIC upon approval of the JCC and formally approved by the minister in September 2013 (details of the drafting process are shown in Figure 2 below). The revised media policy incorporates "program production based on broadcasting ethics", "adequate media management with frequency management" and "media Code of Conduct", all which are required for the accurate, impartial and fair media model.

[19] The policy, overall goal and overall policy constitutes the general picture of the media policy, which clearly indicated the direction of the media aimed for, respecting the rights of the press, publications and broadcasting as basic rights guaranteed in the interim constitution.

[20] "Broadcasting act", "Public Service Broadcasting Act", "Radio Communication Act", "Press and Publication Act", "Cinema Act", "Advertisement Act" and "National Media Commission Act" are above 7 acts.

[21] Stakeholders include not only major media organizations, press, local media and media-related experts but various organizations for people left behind by the social mainstream due to issues of human rights, and those of women and native peoples, etc.

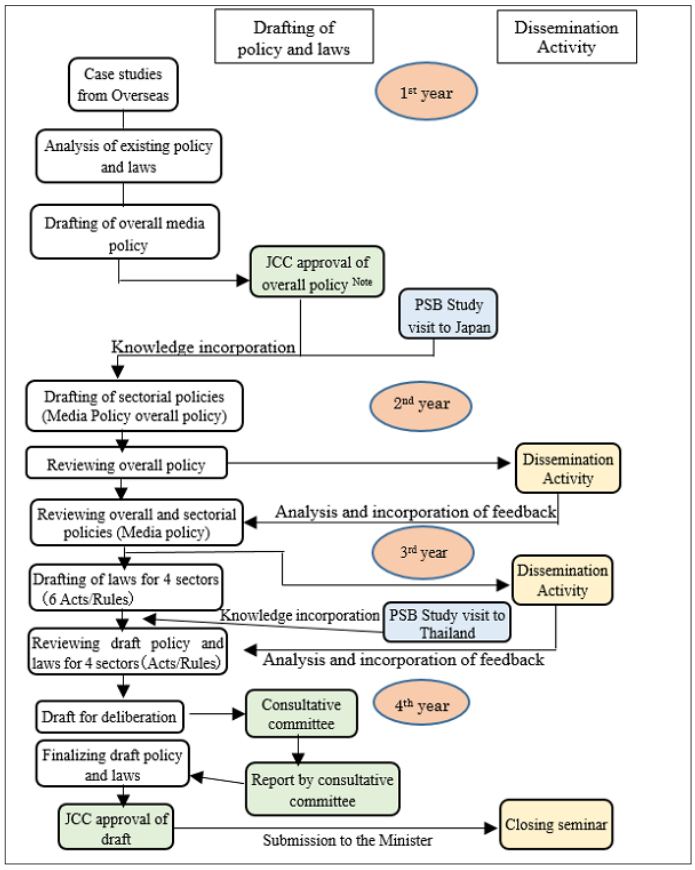


Figure 2 Process of Drafting the Policies and Related Laws

Source: documents provided by JICA
Note: JCC stands for Joint Coordination Committee. See Note 1 of Figure 1 for the detail.

(2) Strengthening of the RNE function as PSB

As a PSB function, RNE had to meet the following requirements[22]:

- have a function to monitor the program appropriately
- have necessary program standards and guidelines for monitoring
- have a program selection process free of dogmatic judgment and prejudice
- have a training program or system to improve technical skills and awareness of staff
- secure broadcasting service areas (coverage)
- have a strategy to restore their financial situation

Through the activities of PSB preparation Taskforce, Manuals for “Broadcasting guideline/program standard”, “monitoring methods of program” , “training plan” and “audience survey” were prepared in RNE and training to implement them were conducted for their staff. In addition, the newly installed FM transmission systems expanded the broadcasting service area. The internal reform of RNE also progressed as follows: as for strengthening the financial aspect of RNE, accounting software was

[22] Source: documents provided by JICA

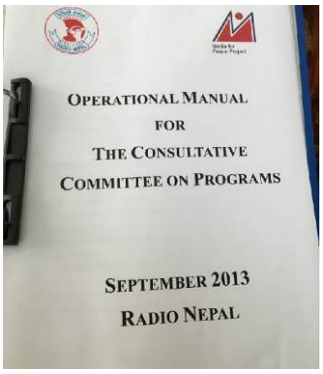
installed to capture the financial information more efficiently and the business strategy was reviewed to earn advertising fees through cooperation with business and program product sections.

Table 1 Achievement of Output Indicators (At the time of project completion)

Output 1 : Draft of the revised media policy, act, regulations and guidelines are formulated by MoIC.	
Indicators: Revised media policy, acts, regulations and guideline shall be formulated including ① to ③. ①Production of programs based on broadcast ethics ②Appropriate media control with control of frequencies ③Media Code of Conduct	Achieved The draft for legal issues for the four major categories was completed and they were later revised in the Consultative Committee. The revised policy, act and guidelines addressed the following contents: ① The draft of the Broadcasting Act required broadcasters to produce the Program Standards/Broadcasting Guideline, establish a Mock Committee on Programs, evaluate programs based on the program standards and open the result of committees to the general public. ②Broadcasters were classified into prominent broadcasters and commercial and noncommercial broadcasters and their responsibilities and rules were mentioned in the draft Broadcasting Act. The draft Radio Communication Act was also prepared by classifying community radio and prominent broadcasters, then controlling proper frequency management. ③The draft of broadcasting, press and publication, etc., required the concerned organizations to produce a Code of Conduct and open to public.
Output 2 : The functions of Radio Nepal as a public broadcasting institution are enhanced.	
Indicators 2-1: Improving the method of program monitoring of RNE	Achieved By implementing the project, simulated Mock Committees were also conducted for monitoring the programs. Details of the procedure for “Operation Manual for Consultative Committee on Programs” were also prepared by the project completion to continue to have committees.
Indicators 2-2: Establishment of process of program selection at RNE	Achieved The format for the radio program schedule was determined and introduced in program production team. It was used in the program proposal meetings conducted weekly and the program selection procedure was established. The program proposal sheet was then introduced and explained to regional branches for use.

Indicators 2-3: Development of a strategy to strengthen finance of RNE	<u>Achieved</u> A financial survey, analysis and a marketing survey were conducted by a subcontractor and a marketing strategy paper was prepared in the fourth year (September 2013). During the business workshop held in 2013, a new agreement for advertising amounting to one million Nepal Rupees (NPR)[23] (approximately 970,000 Japanese yen) was concluded. Besides, cost cutting measures including reductions of electricity/utility and personnel structure was raised. Installment of PC/accounting software for accounting management and trainings for the staffs helped improve the efficiency of the administration function of the financial department.
Indicators 2-4: Establishment of an in-house training system in RNE	<u>Achieved</u> Training Manual was prepared. By utilizing this manual, trainings were conducted, which included regional branches. Furthermore, RNE staff also participated in Journalist Training which was conducted by commissioned local subcontractors (See details to Indicator 1 of Project Purpose), which helped them learn about the know-how of the trainings from external experts, whereupon the training manual was revised and improved.
Indicator 3: Service coverage area of RNE is expanded.	<u>Achieved</u> Work to install FM transmission systems was completed and operations started in Chamelhill, which widely covered most of the Mid-Western region and Simbhanjyan, which covered the central region. The two new transmission stations cover an estimated population of about 1.4 million and 2.8 million people respectively, to whom the radio signal is relayed via RNE FM.

Source: Document provided by JCIA and interview survey with implementing agency



(Photo: left) Operation Manual for the Consultative Committee on Programs

(Photo: right) Antenna Tower of the FM Transmitting Station at Simbhanjyan

[23] 1NPR =approximately 0.97 Japanese yen (September 2013)

3.2.1.2 Achievement of Project Purpose

To realize the project purpose, "Establish a model of accurate, impartial and fair media in the democratizing process", two indicators have to be achieved, namely, (1) the revised media policy and acts have to be recognized by media-related persons and (2) to ensure RNE broadcast diverse culture programs and take the news of political parties from a fair and neutral standpoint. The achievement of the project purpose at the time of project completion is shown in Table 2.

(1) Revised media policy, act and regulations are recognized by the media-related persons. (Indicator 1)

During the project implementation, revised media policy was prepared and confirmed in the achievement of the project output. When revising the policy, feedback and recommendation from major stakeholders were reflected through their participation during the discussion in experts' meetings and workshop. Though some objections arose from a few organizations in the process, major stakeholders agreed and accepted the eight points[24] required for accurate, impartial and fair media and those points also achieved the consensus of the major media.

In this project, journalist training sessions were held not only in Kathmandu, the capital city, but also in the regions. The training sessions provided opportunities for journalists to learn the role of journalism based on revised media policy, as well as practical methods of researching and reporting. According to the journalists who participated in the training in the regions, they learned the importance of reporting balanced news, producing and reporting news based on fact and acting in line with the Code of Conduct as professional journalists in training. They also explained that what they learned was all new to them. Furthermore, there were some opinions as the training sessions changed their awareness as journalists and were a turning point for obtaining the required knowledge or technical capacity.

[24] 1) Transformation into a self-regulated structure from a government regulated structure, 2)Each media organization should create and disclose editorial standards or program standards and guidelines, 3) A Broadcast organization establish a consultative committee on program, and publishing a report on the committee opinion periodically, 4) an independently regulatory body check the self- regulation mechanisms of media organization as they properly manage editorial standards or program standards and the guidelines and cultivate sound media, 5)Abolish state-run broadcasting, establish PSB by securing a source of revenue and maintain an institutional body independent from the government through special revenue sources, 6) Eliminate government subsidy provided to the media, 7) the license period extended with the renew of the frequency license period shall be limited (proposed period is ten years), 8) When collecting comments on a draft media policy and acts, workshops were held and their contents were reported.

（2）To ensure RNE broadcasts diverse culture programs and takes news of parties from a fair and neutral perspective. (Indicator 2)

The function of RNE, program production and broadcasting, was getting standardized by utilizing the program standard or broadcasting guideline, etc. The activities of the Consultative Committee on program were also held in line with the prepared operation manual and can thus be said to have been established at the time of project completion. It was also confirmed that the capacity of RNE to broadcast and produce programs improved, based on the fact that the program was produced based on surveyed facts, which was unprecedented[25]. Besides, programs which provide solutions to day-to-day problems facing audiences[26] and new programs showing social issues taking the diverse culture[27] into consideration were produced via on-the-job training and broadcast as an RNE program. The result of the beneficiary survey[28] conducted during the ex-post evaluation confirmed that the satisfaction of respondents in terms of "accuracy", "fairness", "neutrality", "reliability" and "usefulness" of the RNE program after the project completion was slightly higher than for the other radio programs in each (See Figure 2).

[25] Several themes were proposed for production. Among them, the theme of domestic violence in the capital area was selected. The production division first engaged in brainstorming, while the research division visited police, domestic courts and NGOs, etc. for research. Subsequently, the results of the research were discussed, whereupon the proposal sheet was prepared. The program not only highlighted and reported feedback from victims but also those regarded as victimizers in interviews. Thus, RNE experienced the program production through facing the reality, which was different from the usual programs of RNE, namely predetermined harmony type of program production.

[26] For example, themes including "Quit smoking successfully" "Control utilization of plastic bags" were selected.

[27] Programs which introduce traditional events for Hindu, Christian and Islam.

[28] To measure the project effect, a beneficiary survey encompassing a total of 216 persons (102 for audiences in Kathmandu and 114 audiences in area newly open to FM broadcasting after installing FM transmission systems) was conducted in two areas. Details as follows: Gender: 133 male and 83 female, Age: 42 persons 18 - 29 years old, 64 30-39 years old, 52 40-49 years old, 35 50-59 years old and 23 persons aged above 60. Audience samples in Kathmandu were selected on the major roadsides of each of the municipalities according to population distribution in 11 Municipalities of Kathmandu, as was done by the consulting company during the project implementation. In the two areas where FM transmission systems were installed, audiences were selected by purposeful sampling at major roadsides in three districts selected after each area had been categorized into urban, mid-urban and mountain areas.

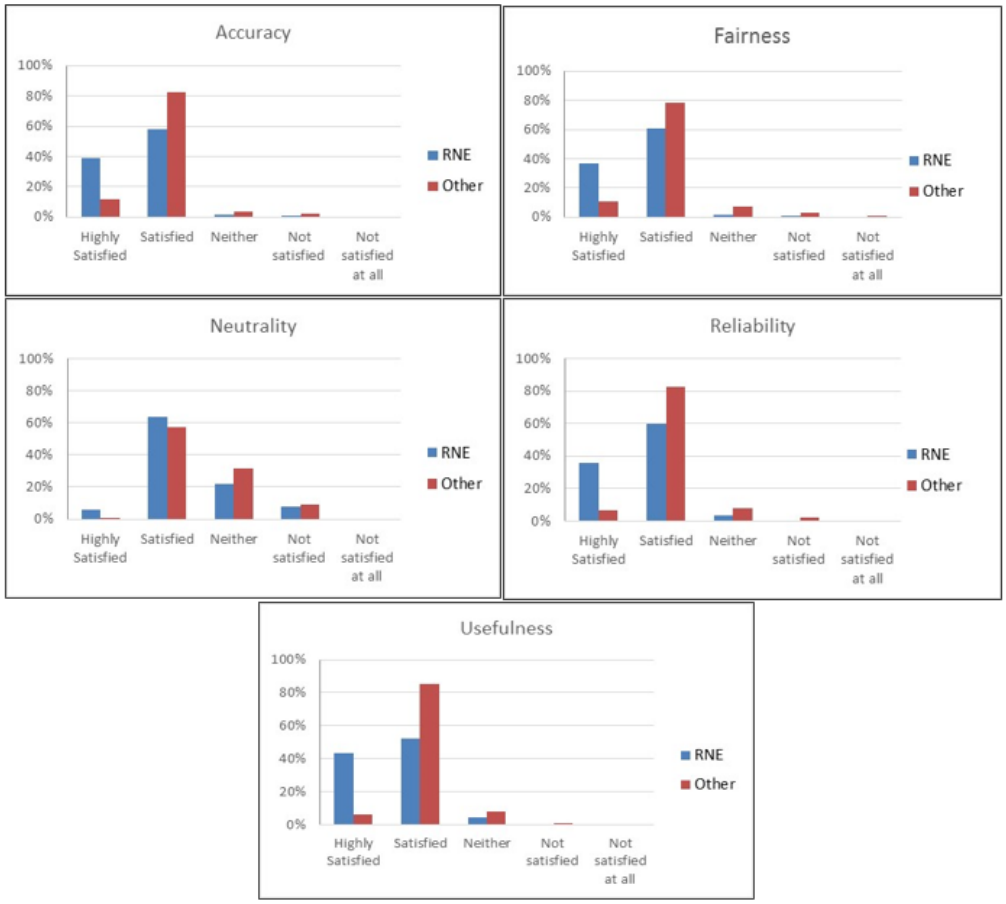


Figure 2 Satisfaction with Radio Programs

Source: Beneficiary survey

Table 2 Achievement of Project Purpose (At the time of Project Completion)

Project Purpose	A model of accurate, impartial and fair media in the democratizing process is established (through revision of media policy, acts, regulation and guideline and reform of RNE).
Indicator	Actual
1. Revised media policy, act and regulations are recognized by the media-related persons.	<Achieved> ・The draft of media policy, act and regulations were created. Through discussions in the experts' meeting and workshop, suggestions made by major stakeholders were reflected to revised version. ・As a part of dissemination activities and training sessions for revised media policy and guidelines, four journalist training sessions were held in total[29] in both Kathmandu and the regions, which enhanced their understanding of accurate, impartial and fair media in democratic society.

[29] Journalist training sessions were conducted at Kathmandu, Pokhara, Mahendranagar, Chitwan, Birtamod and Surket, in which 228 journalists participated in total. The main topics in the training sessions were Role of Journalism, Importance of social inclusiveness (Current situation and issues of media in Nepal), Case studies in other countries, Writing story based on field experience and presentation

2. To ensure RNE to broadcast diverse culture programs and take the news of parties from fair and neutral standpoint.	<Achieved> ・The program standard, broadcasting guideline, program proposal format and training manual were prepared and introduced toward PSB, which prioritized accuracy, efficiency and neutrality. ・Consideration of diverse cultures was ensured by producing and broadcasting news programs based on the research, caste issues and religious issues, etc. ・Two installed FM transmission systems expanded coverage population [Note] from approximately 0.9 million people to 4.24 million people. ・The result of the audience survey conducted at the time of terminal evaluation revealed satisfaction with RNE programs of 4.5 in terms of "accuracy", 4.3 for "fairness" and 3.9 for "neutrality" out of a total five points, which exceeded the figures for other radio broadcasting (4.1, 3.9 and 3.5 respectively).

Source: documents provided by JICA and implementing agency

Note: Coverage of the population was not calculated based on detailed site investigation, so the data was obtained independently by confirming the condition of reception via regional reporters through the implementing agency.

Implementing this project paved the way to create a revised media policy, which was done by bringing major stakeholders on board and getting their agreement. This, in turn, further improved understanding of revised media policies among media-related parties. Furthermore, with a system to produce and broadcast quality programs established, the audience survey result also showed that RNE's program outperformed other radio broadcasters in terms of satisfaction and neutrality. Thus, the project achieved its purpose and its effectiveness is high.

3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

"An environment, which respects the principle of accuracy, impartiality and the fairness of media is fostered," was expected as an impact of this project by achieving two indicators as follows: "to reform media policy, acts and indicators are taken into consideration, including the norms and the activity of major media organization" and "to promote people's reliability over RNE as accurate, impartial and fair media". During and even after the project implementation, the political situation in Nepal where the democratizing process was proceeding significantly affected the progress of approving and executing media policy and bills, required to achieve the overall goal. The following table shows the scope to which indicators of the overall goal were achieved:

Table 3　Achievement of Overall Goal（at the time of ex-post evaluation）

Overall Goal	Environment to respect the principle of accuracy, impartiality and fairness of media is enhanced.
Indicators	Actual
1. To reform media policy, acts and indicators are taken into consideration, including the activity of Federation of Nepali Journalists and major media organization	Largely achieved ・"National Mass Communication Policy 2016" (New media policy) was prepared and approved by the parliament in 2016. ・At the time of ex-post evaluation, new media policy was not yet implemented[30]. Accordingly, each media had yet to commit their norms and activities as specific actions. Conversely, it was confirmed that the Code of Conduct published by the Press Council Nepal, which all journalists need to follow, contains key points.
2. To promote people's reliability over RNE as accurate, impartial and fair media	Largely achieved ・RNE has continued their activities to produce programs to provide information which is fair, impartial and accurate. The result of the beneficiary survey for audiences revealed improved fairness, accuracy, neutrality, reliability and usefulness of RNE's program as of the ex-post evaluation compared to before the project (See Figure 3 on page 20). ・Meanwhile, RNE's financial aspect was another confirmed issue. Given that the main source is the government-allocated budget, the results of the beneficiary survey also showed that improvement in terms of neutrality was relatively lower than other items.

Source: documents provided by JICA, questionnaire and interview survey with implementing agency

(1) To reform media policy, acts and indicators are taken into consideration, including the activity of major media organization (Indicator 1)

At the time of the project completion, it was expected that the revised media policy and related act would be discussed and approved after the election. In Nepal, however, the government changed six times and the Secretary of MoIC also changed a total of nine times from the time of project planning to that of ex-post evaluation. During this period, some governments were negative toward democratization and deliberated media policy for an extended period.

Subsequently, the "National Mass Communication Policy 2016" (New Media Policy) was finalized at the high-level committee in 2016, submitted to the government in July and a new committee was established in MoIC to promote efforts to realize and enforce the policy in December. Besides, the MoIC also pointed out that revised media policy had not been properly handed over during

[30] As explained in footnote 4, new media policy has been officially announced on July 3, 2017 and implemented since then. This information is only taken as a reference in this report since the analysis and evaluation are basically made based on the information confirmed by the end of the field survey of the ex-post evaluation (April, 2017).

frequent changing of secretary or seniors in MoIC. This meant the new media policy may not have fully succeeded the revised media policy, which was the project output. Conversely, most of the members involved in discussing the new media policy were those involved in creating the revised media policy and related acts. Accordingly, it was confirmed that key factors and the foundation of the revised media policy were carried over to the new media policy during an interview with MoIC and project-related persons, including a lawyer adopting a role of law advisor of the project. Given the difficulty in comparing all items between revised and new media policies, it was verified that topics deemed indispensable in the revised media policy for the media in the democratizing nation (1. Regulation of Government/political party subsidy etc., 2) Regulation to eliminate the media monopoly, 3) Direction of the media for a democratizing nation) [31] and other important topics were addressed in the new media policy.

In addition, along with the above mentioned three topics which were pointed out as being important by the revised media policy, it was confirmed whether the description of the needs of PSB were transferred over or not in this ex-post evaluation. Then, all topics were included in the new media policy although each topic is expressed slightly differently as shown in the table below. Accordingly, it can be said that the essence and the basic idea of the revised media policy were transferred over to the new media policy.

Table 4 Revised and New Media Policies

Important topics	Summary	
	Revised Media Policy	New Media Policy
Regulation of Government Subsidy etc.	・To discourage cross-subsidies and thus ensure healthy development of the communication sector. ・To arrange the system to prevent any subsidies to be taken by any media businesses to ascertain freedom of the press.	・Although not conclusively including the term “No Subsidy”, the indirect expression, “To develop clean, healthy and ethical journalism by promoting mass media for self-regulation and self-evaluation” was addressed for not receiving influences from the government and other institutions. ・To discourage media, receiving subsidies or support from government or business entities, media sectors have to monitor and follow the Code of Conduct by the Press Council Nepal [32].

[31] Important topics which should be addressed in Media policy was identified by confirming with Senior Advisor who was involved in this project.

[32] The “Journalist Code of Conduct-2016”, published by the Press Council Nepal”, addressed that

No monopoly of media	・To make the necessary legal arrangements by reviewing international practices of investment limits in ownerships or operations of national publications or broadcasting services by a person, family or group so as to discourage the media monopoly or media concentration.	・ Legal arrangements shall be made to discourage media monopoly and media concentration and single individuals, families or groups may not hold decisive shares exceeded a certain rate in any types of media.
Direction of media for democratizing nation	・To ascertain the press freedom as per established norms and values for ideology and freedom of expression. ・To ascertain the situation of non-interference in journalist's professional activities. ・To develop the media sector as a tool to help promote democracy and peace. ・To inspire the media sector in terms of boosting people's awareness in areas of marginalized classes or women and other backward classes.	・Similar provisions as in revised media policy have been worded（To ascertain the freedom of ideology, expression, broadcasting, direction of media for a democratizing nation, refraining from control over journalist's professional activities and media as a tool to promote democracy and peace, etc.）
PSB	・To make arrangements to operate PSB in a fair and autonomous body by incorporating democratic norms and values as well as free journalism notion. ・To transform Radio Nepal and Nepal Television into a PSB agency.	・Establishment of PSB on a national level as an autonomous body ・Establishing PSB by transforming RNE and NTV to run as PSB fairly, impartially and responsibly.

Source: Revised media policy and new media policy (Available only in Nepalese)

In Nepal, since the process on deliberations to implement the policy are usually time-consuming, a certain period will be needed to implement the new media policy even from now. Accordingly, new media policy has not been officially implemented at the time of ex-post evaluation[33] and not all the media following the elements of the new media policy, meaning that the overall goal has not been achieved at 100%. However, the "Code of Conduct[34]" of Press Council Nepal[35], all the journalists are required to follow, specifies "Protection and promotion of press freedom" "Respect for

"Journalists and mass media should not receive any type of award, gift or special facility from any government body, non-governmental organization, business, organization or individual adversely affecting the professional norm".

[33] Refer to footnote 30.

[34] Press Council Nepal, "Journalist Code of Conduct - 2016".

[35] Press Council Nepal is an external body under MoIC and independent council which was set up to develop credible journalism and to promote the freedom of press.

human rights" "Dissemination of factual, balanced information". Furthermore, "accepting gift and reward from any governmental and non-governmental organization" is listed as works not to be carried out by journalists and mass media, thus the role of media need to fulfill and which revised and new media policy advocate, is confirmed in the Code of Conduct. As shown in Figure 2, the essence of revised and then new media policy as well as the principle of accurate, impartial and fair media is widely disseminated to stakeholders and the general public and the activities of journalists have also been impacted through awareness activities for workshop[36], experts' meetings[37], questionnaire[38], dissemination activities[39], etc. in addition to the Consultative Committee, in which major stakeholders participated.

（2）To promote people's reliability over RNE as accurate, impartial and fair media (Indicator 2)

RNE has continued the outputs generated under the project, such as a Consultative Committee and internal training, etc., even after project completion and it was confirmed that the necessary activities to produce the fair, neutral and accurate programs had been adopted as the RNE[40] system. When confirming the changes in the RNE program before and after the project during the beneficiary survey, it was confirmed that the perception of reliability on the part of the general public of RNE programs had improved. 98% of them answered that accuracy had also improved and 96% of them answered that fairness improved. 97% of them answered that reliability had improved and 96% of them answered that usefulness had also improved. 81% believed that neutrality had improved, which was relatively lower compared to others, then 15% saw no changes, as shown in the figure 3. This is because some general public understand RNE as a national broadcaster, so what RNE reports is biased toward the government, since RNE receives a government subsidy.

Furthermore, even after the project completed, RNE produces and reports on programs based on fact, those useful for the daily lives of audiences and programs

[36] Workshops were conducted to explain and collect the opinions for revised media policy by inviting totally 300 experts and stakeholders, including major media organizations such as broadcasting, newspapers, cinema and advertisements as well as associations of female journalists, ethnic minorities and organizations of journalists specialized in fields such as human rights, education and the economy and associations of lawyers.

[37] Workshop was conducted for experts related to media to engage in final discussions on the draft of the media policy, based on the views of people obtained from the workshops, questionnaires and via the website. About 60 people, including representatives of organizations playing key roles in the media sector in Nepal and senior journalists were invited.

[38] Stakeholders from a total of 583 organizations who were not invited to the workshop for budgetary and geographic reasons were sent questionnaire. The questionnaire, consisted of questions related to overall media policy, four areas and the full text of the revised draft media policy, were sent to them and collected.

[39] Commercials on media policy were aired on radio, TV and newspapers from December 2011 to January 2012.

[40] Source: Interview survey with RNE staff

which consider diverse cultures[41], which were not produced before the project, hence RNE's enhanced program production capacity. Despite the fact PSB has yet to materialize, audience satisfaction with RNE programs (at 95%), slightly exceeds the figure for other radio programs (91%), meaning that RNE is becoming a broadcast station which embodies an accurate, neutral and fair media (See Figure 4).

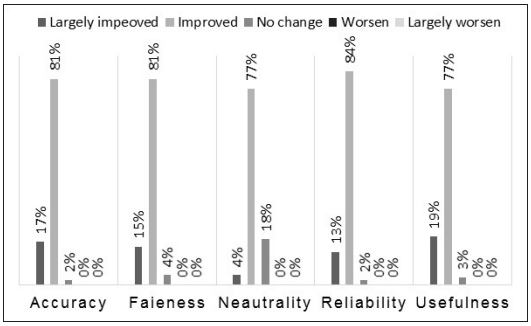


Figure 3
Comparison of satisfaction with RNE programs before and after the Project

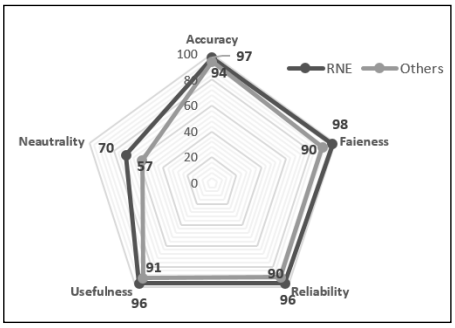


Figure 4
Satisfaction with RNE programs and others

Source: Beneficiary survey Source: Beneficiary survey

As stated above, the project has largely achieved its overall goal.

3.2.2.2 Other Positive and Negative Impacts

(1) Other Impact

According to the interview with the implementing agency, it was confirmed that no positive and negative impact on the natural environment occurred to due to project implementation, nor will this happen in future. Resettlement or land acquisition were also inapplicable for this project.

(2) Decline in complaints to media and violations of the Code of Conduct

Though similar to indicators for effectiveness and impact, the process for revising media policy gave the media and journalists an opportunity to reaffirm the role of the media. Actually, the Press Council Nepal also mentioned fewer cases had been reported to them regarding complaints or criticisms as well as violations of the Code of Conduct as defined by the Press Council Nepal. This is said to have helped generate the social spreading effect.

[41] In "JHANKAR", a magazine published by RNE, the news program for "Earthquake and its effect", programs useful for daily life such as "Preventive injection for child", "Gardening", "Mother's day", etc., as well as programs which consider diverse cultures including "New Year events by each ethnic group", "Eid (one of the two major festivals in the Muslim calendar) information" are scheduled in 2017.

(3) Broadcasting of RNE after the earthquake happened

The result of the beneficiary survey revealed a generally high perception of reliability for the RNE broadcasting service among the audience. One of the examples concerns RNE's post-earthquake service. While other forms of media stopped broadcasting or reported information not based on fact, which exacerbated public anxiety, RNE started their reporting on the earthquake and updated the situation for 24 hours from the day the earthquake occurred and continued providing the information to people in Nepal. Under circumstances where major public services stopped, RNE kept providing useful information for people such as accurate information on damage, venues for distributing food and safety confirmation information on missing persons, etc. Since then, the reliability to RNE, which kept their broadcasting services, is high and this case was universally referred to during any interviews with related institutions and audiences. While implementing this project, on-the-job training was conducted by Japanese experts for the program production team and news team, one of which involved them learning and experiencing how to produce the program on "Responsibilities of PSB in the event of a disaster". This is said to be one example demonstrating the output of the training sessions in the event of a massive earthquake.

Thanks to the project, media policy, act and regulations in Nepal were revised and the institutional capacity of RNE was enhanced toward PSB. Accordingly, the beneficiary explains that the accuracy, fairness and neutrality, etc. of RNE programs have improved. Due to the influence of the political situation in Nepal, media policy and related acts had not been executed at the time of the ex-post evaluation. However, a new media policy was approved by the government and major stakeholders enhanced their understanding of the role of media by getting involved in the discussion and the process for deliberation. This was also reflected in the Code of Conduct for journalist. Thus, though part of impact is said to be limited, it was confirmed that the other expected effects were largely generated and accordingly, its effectiveness and impact are high.

3.3 Efficiency (Rating ②)

3.3.1 Inputs

The planned and actual inputs of this project are shown in the table below.

Table 6 Planned and Actual Output of this Project

Inputs	Plan	Actual
Experts	Seven Long-tem (Team leader, Media policy, Broadcasting engineer, Program production, Financial analysis/Marketing, Journalism, Coordinator/Peacebuilding)	16 Long-term (86.8MM) (Team leader/Media Capacity Building, Media policy, Broadcasting engineer, Program production, Financial analysis/Marketing, Journalism, Training plan/Conflict Prevention, Dissemination plan/PR/Coordinator)
Trainees received	N.A.	Seven trainees in total (five trainees from MoIC, two from RNE)
Equipment	Required equipment, including an FM tower	FM transmitter, FM broadcast panel antenna system, receiver, PC, etc.
Training in third country	N.A.	Seven trainees in total (three from MoIC, two each from RNE and NTV)
Local operation cost	Contracts for local consultants, NGOs, etc.	83 million yen (Entrustment cost of audience surveys, market research, dissemination and training activities, hiring local consultants, travel expenses, communication and transportation expenses, document preparation cost and holding workshop, etc.)
Japanese Side Total Project Cost	280 million yen	340 million yen
Nepali Side Total Project Cost	1. Counterpart personnel Assignment Project manager (MoIC, RNE), Eight Taskforce members, Eight other counterpart personnel 2. Project office space 3. Project activities cost	1. Counterpart personnel Assignment Seven MoIC staff, 35 RNE staff, five NTV staff, one Press Council Nepal staff member and one FNJ staff member 2. Project Office 3. Project activities Utility costs for office space, travel expenses for C/P, renovation cost of the tower for antenna to install the FM transmission, electricity connection cost, construction costs of the shelter, meeting cost for local branches

Source: Document provided by JICA and implementing agency

3.3.1.1 Elements of Inputs

According to interviews with RNE staff and responses to questionnaires, it was noted that the number, expertise and period of dispatched experts sufficed for generating outputs and achieving project purposes. The numbers of Japanese experts exceeded the original plan as multiple persons were dispatched in areas for media policy, journalism, program production and financial analysis, etc. Training sessions in Japan and the third

country of Thailand were also conducted to gain insights into broadcast policies and general information on the media sector as well as PSB cases involving Japan and Thailand. The results of the questionnaire conducted after the training sessions to the participants of those training and interview surveys during the ex-post evaluation showed that the purpose of the training had largely been achieved and the contents and essence of the training sessions were appropriated. An FM transmission system was procured to directly contribute RNE as PSB to expand the scope of RNE coverage[42].

3.3.1.2 Project Cost

The actual project cost was approximately 350 million yen, which exceeded the original cost, approximately 280 million yen (125% of the original plan). The increased cost was due to the additional support for NTV (survey, issue analysis and grasp of finance current situation), which was not included in the original plan toward directing the integration of NTV and RNE during the movement for integration. Besides, the need to support RNE to prepare their financial report also emerged in the course of the first year of project implementation, which led to the project cost rising.

3.3.1.3 Project Period

The cooperation period of this project was planned to be for 36 months and the actual period was also 36 months from November 2010 to October 2013 (100% of the original plan).

As a consequence, although the project cost exceeded the original plan, the project period was as planned. Accordingly, efficiency of the project is fair.

3.4 Sustainability (Rating: ②)

3.4.1 Related Policy and Institutional Aspects for the Sustainability of Project Effects

The New Constitution, officially announced in 2015, clearly indicates “freedom of expression” and “the right to communication” and describes freedom of broadcasting and publication, as is the case in the interim constitution above. Also the country’s development plan at the time of ex-post evaluation, “13th Three-Year Plan” (2012/13 – 2015/16) specifies the action plans of “mass media to be responsible and accountable” and “RNE and NTV converted to PSB” in the information and communication field. The “14th Plan” (2016/17 – 2018/19) also aims to introduce a mechanism for RNE and NTV

[42] Baseline survey for coverage area was conducted and sites where enough population can be covered by installing the FM systems among the area where the receptions of short wave and medium wave were not available. Based on the survey result and the examination with Taskforce, installed sites were selected as Chamelhill and Simbhanjyang.

to be PSB, which led to the establishment of a "Media Action High-Level Committee" with the purpose of promoting (or legislating) the implementation of new media policy under the cabinet office in 2016. New constitution and the development plan indicate the direction in terms of the responsibilities of mass media and the high-level media committee supports the implementation of new media policy. Accordingly, it is obvious that sustainability was ensured from the policy aspect at the time of ex-post evaluation. However, concerns remain over the transition in the phase of implementing new media policy, which includes the possibilities of a slowdown for democratization and the loss of knowledge and experiences accumulated in the institution due to some political change.

3.4.2 Organizational Aspects for the Sustainability of Project Effects

The MoIC is expected to oversee the implementation of media policy as at the time of the plan, while RNE and NTV also continue to play the PSB role. Although they hadn't transformed to the PSB by the time of ex-post evaluation, the high-level media action committee established in 2016 plans to spearhead ongoing discussions toward promoting PSB[43]. Accordingly, it was ensured that they had established a structure for the detailed steps to PSB via discussion within the high-level committee in future.

In RNE, almost all staff associated with this project still remain and continue their activities. At the time of ex-post evaluation, of a total of 555 staff at RNE, 380 were full-time employees and 170 were contractors. The RNE hasn't recruited any new employees for the past 12 years and according to RNE staff, there are some staff shortages in areas such as finance, operation and maintenance of broadcasting equipment, news department editors as and technical staff for local stations. Although there is no concern over each daily work, an excessive workload can be seen in those departments, which should be minor issues of the RNE organization[44]

3.4.3 Technical Aspects for the Sustainability of Project Effects

RNE operates monitoring, a program selection process and internal training system utilized manuals for staff[45], which were introduced by the project, to function as PSB. An internal transfer is extremely limited in RNE and such staff worked for the project continued to the above activities as a core member. With adequate use of the program

[43] There was discussion over whether to integrate RNE with NTV as PSB at the time of the project plan and even during the implementation. However, the discussion of the direction for integration was suspended because they didn't proceed to discussion about PSB after the completion of the project. In future, these issues will be discussed at the high-level committee.

[44] According to the RNE staff, more staff may resign in 2017 and RNE plans to hire new employees in 2018.

[45] Training sessions cover wide-ranging topics, including planning of a radio program, production techniques including design and communication among departments.

committee and internal training and also the manuals and guidelines necessary to operate and maintain the FM transmitter, which were prepared and provided while implementing the project, the sustainability of the RNE head office in Kathmandu, the capital, is expected. Compared to the head office, the staff capacity of local station can still be improved from the aspect of the need to strengthen the capacity of program production and equipment maintenance and the issue of obtaining some spare parts for FM transmitters. Also at the time of ex-post evaluation, despite introducing accounting software to this project to enhance the financial management of RNE to be PSB, the accounting is operated manually in the same way RNE had done before the project, given the lack of capacity of any member of the finance department to operate the software system. In addition, there was a lack of skilled staff to prepare financial statements such as balance sheets and income statements and control the financial balance, although the accounting process was finalized and implemented to ensure appropriate financial management. Accordingly, some technical capacity issues remain, particularly in terms of finance, which are necessary for a sustainable effect (See 3.4.4 Financial Aspects for the Sustainability of Project Effects for details).

3.4.4 Financial Aspects for the Sustainability of Project Effects

Table 7 shows MoIC and RNE budgets distributed from the MoIC, which can secure a budget for activities under this project; not as a special project but as regular work[46]. The main RNE funding resource comes from a budget distributed from the MoIC and advertising revenue (See Tables 7 and 8). However, RNE's funding resources aren't fixed under the discussion of PSB, which is why financial sustainability was described as the key RNE issue even during the project implementation. Accordingly, this project supported to prepare action plans toward its financial consolidation and introduce accounting software for efficient accounting and proper financial statements, all which were intended to improve the financial structure and to secure a budget to cover the current balance. However, the software had not been used by the time of ex-post evaluation and contents of the action plan was not understood by the RNE financial staff properly, resulting in the current situation without any follow-up for most of the parts. RNE still prepares the financial statement on a cash basis, hence the difficulties of reading the project achievement on an accrued basis. Accordingly, based on the financial information provided by RNE, the data could not be analyzed to show the appropriate RNE balance.

[46] Source: documents provided by JICA and an interview survey with the MoIC

Table 7　MoIC and distributed RNE budget

(Unit: Million Nepal Rupee (NPR))

	2009/10	2013/14	2014/15	2015/16	2016/17
MoIC	2,203	3,319	3,743	3,736	4,132
－RNE	158	153	210	141	160

Source: documents provided by MoIC

Table 8　RNE's advertising Revenue

(Unit: Thousand NPR)

	2013/14	2014/15	2015/16	2016/17
Advertising Revenue	3,319	3,743	3,736	4,132

Source: documents provided by RNE

As confirmed with RNE, it was clarified that the project activities to improve the financial management capacity were not implemented with a proper set up, but mainly involved temporary staff, which was part of the impact from the cessation of financial technical support. At the time, since RNE was unable to accommodate skilled staff operating accounting software, the project hired temporary staff with basic PC proficiency and other skills needed and implemented the financial technical support. After the project period, despite plans to assign temporary staff as permanent employees, in fact RNE was unable to continue their contracts, which led to a suspension of activities obtained via accounting software and technical support. As a general rule, a state-owned broadcasting station operates via government subsidy and has no serious financial issues given regular financial management, since financial statements are prepared on a cash basis. However, RNE has been pointed out that RNE has to improve its financial management to properly analyze and determine profitability and payment capacity be PSB. Under circumstances where the transformation to PSB stalled after the project completion, RNE was not aggressively required to improve its financial situation, which was one of the factors that RNE failed to address. In future, RNE must re-examine each relevant aspect of financial management and face up to the issues required for improvement.

Some minor problems have been observed in terms of the organizational, technical and financial aspects. Accordingly, sustainability of the project effects is fair

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented to establish a model of accurate, impartial and fair media in the democratizing process of Nepal through revision of media policy and reform of

RNE. The purpose of this project is consistent with the constitution, development policy and development need of Nepal, which have shown the importance of media in promoting the participation of the general public in the democratizing process. It is also consistent with Japan's ODA policy in Nepal, therefore, the relevance of this project is high. Through the project, the revised media policy, acts, regulations and guidelines, etc. which are in line with the current situation of the country, were created and the capacity of the RNE, which is expected to take a role as PSB, to produce fair and neutral programs, was improved. Furthermore, improving the reliability of RNE by audience was also confirmed. New media policy in Nepal, which was prepared based on the revised media policy, has yet to reach the execution stage at the time of ex-post evaluation. However, since the stakeholders of this project as well as major media were involved in drafting the same, they has come to share what a model of accurate, impartial and fair media should be and thus the project contributed to build an environment in which the role the media needs to play is respected. Accordingly, the effectiveness and impact of this project are high. Though the project period was within the plan, the project cost exceeded the plan, so the efficiency is judged to be fair. Regarding sustainability, while related policy and systems to support to execute media policy and materialize PSB are confirmed, the influences of the political situation in Nepal remain areas for concern. Where RNE takes the role of PSB, there is room for improvement in terms of a lack of staff numbers and financial aspects. Thus, the sustainability of the effect produced in this project is fair.

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

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

・ Recommendations to RNE

In the coming years, RNE must establish a sound financial management structure to maintain fair and neutral programs and continue broadcasting as a PSB. Firstly, RNE is expected to review and implement the recommendations for a sound financial management structure as shown in this project so as to establish a structure whereby the current financial situation can be understood and analyzed. In particular, it is desirable to change the single entry on a cash basis to double entry on an accrued basis of the accounting method and prepare financial statements to show income and expenditure, cash flow and account balance.

4.2.2 Recommendations to JICA

・ RNE's transformation to PSB was temporarily suspended due to repeated changes of government, but is now expected to accelerate the transformation by the established

high-level committee in 2016. The implementing agencies acclaimed “the action plans toward public broadcasting” shown in this project for the transformation to PSB, the outline of which was reflected in the new media policy. Accordingly, it is considered that JICA periodically reviews its progress, examines the action plans toward PSB, monitors the progress of implementation and share its progress, as part of efforts to help promote the country’s PSB.

4.3 Lessons Learned

The implementation of an appropriate handover at the time of personnel shift in the implementing agencies

It was confirmed that the revised media policy, act, regulations and guidelines under this project had not been taken over at MoIC. This is due to frequent changes of personnel for the minister and secretary, etc. which impacted on the handover of the revised media policy, although the effect of the revision was utilized with the media involved in the project when discussing new media policy. In such a country, with such frequent turnover in key positions, the implementing agencies and project stakeholders are expected to secure an organizational structure to take over the effect, for instance, by appointing a responsible personnel or team not only politically but also from government officials, who have a lower scope for transfer.

Kingdom of Bhutan

FY2016 Ex-Post Evaluation of Japanese Grant Aid Project

"The Project for Restoration and Improvement of Vital Infrastructure for Cyclone Disaster"

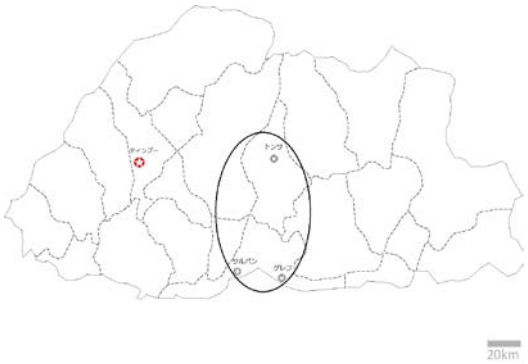
External Evaluator: Miyuki Sato, Japan Economic Research Institute Inc.

0. Summary

This project was implemented for local residents in order to improve the accessibility of a cyclone-affected area and to safeguard its accessibility from future cyclone attacks by replacing 5 bridges in the mid-interior region of Bhutan (Dolkhola Bridge, Jigmeling Bridge, Reotala (Mandechhu) Bridge, Kela Bridge and Jangbi Bridge) which had been destroyed by a cyclone, thereby contributing to the stable transport of people and goods and the improvement of the living situations of the local residents in the area. This project was consistent with the development plan and needs of Bhutan at the time of both planning and ex-post evaluation and also with the Japanese ODA policy at the time of planning. Since there was no problem with the project implementation plan or its approach, it can be confirmed that the relevance of this project is high. Also, the project was implemented mostly as planned and the project cost was within the plan. However, the project period exceeded that of the plan and thus the efficiency of the project is fair. The effectiveness and impact of the project are high because all of the 5 bridges have accomplished of "secure accessibility in case of disaster" and the stability and safety of the transportation flow at both the Dolkhola and Jigmeling bridges have been improved by the completion of concrete construction allowing the traffic volume of large vehicles, such as trucks and buses, to thusly increase. At Reotala Bridge, Kela Bridge and Jangbi Bridge, given that the bridges have become available for residents to pass over by car and the efficiency of transport and reduction of access time to the destination were realized, the effectiveness and impact are judged to be high. As for sustainability, there is no problem with the bridge's management performed by the Department of Roads, Ministry of Works and Human Settlement (hereinafter referred to as "DOR") in institutional, technical, and financial aspects; however, there needs to be consideration given to improving all institutional, technical, and financial aspects of operation and maintenance, including the current monitoring and maintenance status of bridges managed by Trongsa District; thus, the expected sustainability of project effect is moderate.

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

1. Project Description



Project Location(s) (Encircled part: targeted construction area of the bridges)

Reotala (Mangdechhu) Bridge[1] constructed in the mountain

1.1 Background

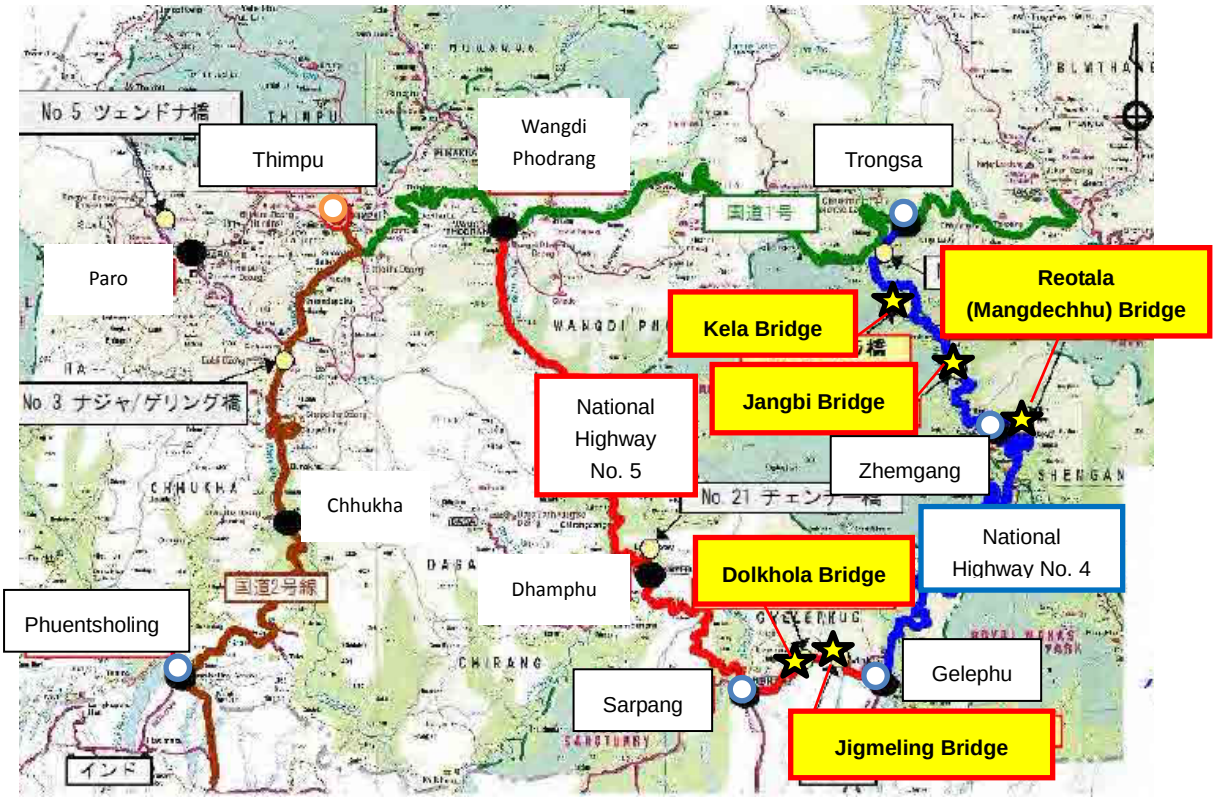
Roads and bridges are the primary means of transportation in Bhutan as most of its land is rugged and mountainous. Due to topographic constraints as mountainous area, there were only a few main roads, most of whose maintenance is not adequate. Thus it was necessary to build up efficient and safe road networks and bridges for economic and social development in Bhutan.. Cyclone Aila, which hit South Asia at the end of May 2009, brought the highest death toll (320 people) in the world during the first half of the year: more than 100,000 refugees and 100,000 destroyed houses in India, Bangladesh, and Bhutan. The cyclone which also hit Bhutan destroyed roads, bridges, schools, and healthcare facilities in many areas. The repair of those bridges and roads had not been carried out sufficiently even 2 years after the disaster, and residents in the cyclone-affected area were limited in their access to facilities necessary in daily life, such as hospitals, schools, markets etc.

1.2 Project Outline

The objective of this project was to improve and safeguard the accessibility from future cyclone attacks by restoring 5 bridges which were destroyed by a cyclone (Dolkhola Bridge, Jigmeling Bridge, Reotala Bridge, Kela Bridge and Jangbi Bridge) in the middle region of Bhutan, thereby contributing to the stable transport of people and goods and the improvement of the lives of the residents in the area.

[1] The name “Mandechhu Bridge” means “a bridge which crosses over the Mangdechhu River”, a river in which is also crossed by the Kela Bridge and the Jangbi Bridge. For this reason, people having involved themselves in the project, such as DOR, call it the “Reotala Bridge” rather than the “Mangdechhu Bridge”. Therefore, this report denominates the “Mangdechhu Bridge” as “Reotala Bridge” from this point forward.

E/N Grant Limit or G/A Grant Amount / Actual Grant Amount	1,019 million yen / 999 million yen
Exchange of Notes Date /Grant Agreement Date	August 2011 / August 2011
Executing Agency	Department of Roads, Ministry of Works and Human Settlement
Project Completion	June 2014
Main Contractor(s)	Dai Nippon Construction
Main Consultant(s)	INGEROSEC Corporation
Basic Design	November 2010 – July 2011
Related Projects	<Technical Cooperation> ・"Transportation-Capacity Development for Transport Sector"(2006 – 2007) ・"Capacity Development in Construction and Maintenance of Bridges" (2016 – 2019) <Grant Aid Project> ・The Project for Improvement of Equipment for Road Construction and Maintenance (Phase 2) (1995) ・The Project for Improvement of Machinery and Equipment for Road Construction (2003) ・"The Project for Reconstruction of Bridges" (2001 - 2003) ・"The Project for Reconstruction of Bridges (Phase II)" (2005 - 2007) ・"The Project for Reconstruction of Bridges (Phase III)" (2009 - 2013) <Other International Organization and Donor Agencies> ・World Bank: Rural Access Project (1999), Bhutan Second Rural Access Project (2007)



Source: Information provided by JICA (Partially edited map)

Figure 1. Location Map of the Project (☆ mark in the figure indicates the bridge location)

2. Outline of the Evaluation Study

2.1 External Evaluator

Miyuki Sato, Japan Economic Research Institute Inc.

2.2 Duration of Evaluation Study

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

Duration of the Study: September 2016 – October 2017

Duration of the Field Study: January 16 – February 2, 2017 and April 16 – 26, 2017

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

3.1 Relevance (Rating: ③[3])

3.1.1 Consistency with the Development Plan of Bhutan

At the time of planning, in the *Tenth Five-Year Plan 2008 – 2013*, which is the mid-term development plan of Bhutan for the stated years, states that a land-locked country with developing economy like Bhutan, the expansion of strategic infrastructure is a requisite for

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

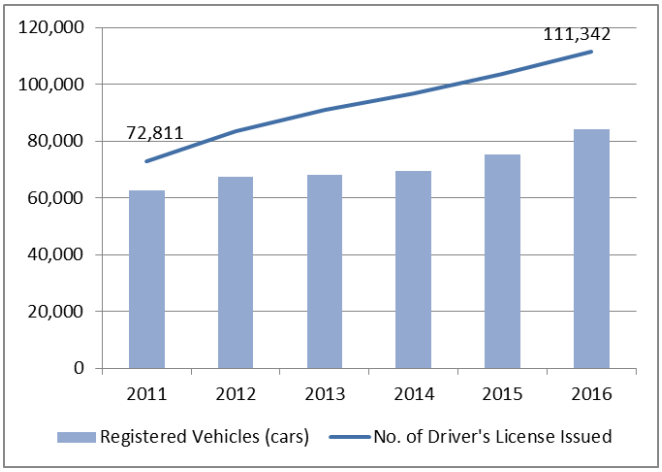
[3] ③: High, ②: Fair, ①: Low

broader economic and social transformation and national security and solidarity was to be enhanced through an expanded and improved road network. At the time of ex-post evaluation, the *Eleventh Five-Year Plan 2013 – 2018* mentioned the importance of upgrading road and bridge networks in order to improve the accessibility which brought results of promoting economic development and firmer security and replacement and new construction of the bridges were included in the plan. Improvement of bridges accompanied with expansion and improvement of roads were also an important policy for Bhutan, for which land routes were a major means of traffic and transportation.

Thus, both at the time of planning and ex-post evaluation, it can be confirmed that the development plan was aimed at the improvement of accessibility through infrastructure development, such as road expansion and improvement. Also, since both of the five-year development plans mentioned that improving accessibility of roads and bridges would facilitate economic development and strengthen national security, this project can be said to be consistent with Bhutan's policy direction.

3.1.2 Consistency with the Development Needs of Bhutan

At the time of planning, the accessibility of facilities which was necessary for the people's daily life in the target area, such as markets and hospitals, were limited due to the damage of roads and bridges by water disasters like cyclones, etc. Also, since Bhutan is land-locked, rugged, and mountainous, roads and bridges were implements of major transportation means; therefore, the need for improvement and construction of roads and bridges was high. At the time of ex-post evaluation, the needs for disaster management as well as road and bridge construction and improvement were continuously thought to be high. According to the Department of Hydro-Met Services (hereinafter referred to as "DHMS"), approximately 70% of the total annual rainfall coincides with the rainy season: from June to October. DOR pointed out that safe bridges devoid of any damage or blockage by swollen rivers and/or landslide disasters by heavy rain were even more important as a disaster management because landslides and floods by concentrated heavy rains frequently occur in Bhutan. Also, the numbers of driver's licenses issued and vehicles registered are increasing. According to the statistics from the Road Safety and Transport Authority, the numbers of issuances of driver's licenses and registration of vehicles in Bhutan between 2011 and 2016 had increased about 1.5 times over the period of 6 years. The needs for wider and multi-lane roads which could accommodate the increase in traffic were thought to be getting high. Therefore, as the construction of wider bridges was necessary for the broadening of the roads, it could be said that the needs for the development of such bridges were still high.



Source: Road Safety and Transport Authority

Figure 2. Number of Driver's License Issued and Vehicles Registered in Bhutan (2011 – 2016)

Since the needs for the improvement of roads and bridges, including those for disaster management and increasing traffic volume, were still high, this project can be said to have been consistent with the development needs for roads and bridges in Bhutan at the time of both planning and ex-post evaluation.

3.1.3 Consistency with Japan's ODA Policy

At the time of planning, *Japanese Official Development Assistance White Paper 2011* showed a policy through which Japan would provide supports for transport network development, such as roads and bridges, in developing countries, which could accelerate the country's poverty reduction and economic development. For Bhutan, *Japan's ODA: Rolling Plan for the Kingdom of Bhutan* in FY2011 mentioned the provision of supports for the development of roads and bridges in order to secure efficient and stable transportation and to stimulate economic revitalization. Also, this plan paid attention to disaster management in Bhutan, as a "South-East Asia Regional Assistance" and Japan was planning to support the restoration of bridges damaged by cyclones through grant aid under the projects of disaster relief and grassroots grant aid.

Therefore, at the time of planning, this project was consistent with Japan's ODA policy.

In the light of above, this project has been highly relevant to Bhutan's development policy and development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

The project outputs between the plan and actual are shown in Tables 1 and 2; all bridges

were constructed according to the plan.

Dolkhola Bridge and Jigmeling Bridge were constructed by adopting the “Prestressed Concrete Bridge” (hereinafter referred to as “PC Bridge”), whose intensities were increased through compressing concrete. Although they were not included at the time of planning, the project had an additional work feature to include protection for bridge piers in order to prevent future damage from flowstones in the river.

Table 1. Plan and Actual Output of the project for Dolkhola Bridge, and Jigmeling Bridge

	Plan (2011)	Actual (2014)
Bridge Structure	Prestressed Concrete Bridge (PC Bridge)	As planned
Length	70.0m	As planned
Width	7.0m (2 lanes)	As planned
Responsibilities of the Japanese Side	Construction of the bridges	As planned (Protection for bridge piers as an additional work feature)
Responsibilities of the Bhutanese Side	Removal of old bridges	As planned

Source: Information from JICA and the Executing Agency

(Before the construction: former Dolkhola Bridge)

(After the construction: Dolkhola Bridge)

(Before the construction: former Jigmeling Bridge)

(After the construction: Jigmeling Bridge)

(Photos provided by JICA)

Reotala Bridge, Kela Bridge and Jangbi Bridge were all constructed according to the plan shown in Table 2. These three old bridges were pedestrian suspension bridges but constructed as

motorable steel bridges through the project.

Table 2. Plan and Actual Output of Reotala Bridge, Kela Bridge and Jangbi Bridge

	Plan (2011)			Actual (2014)		
Bridge Name	Reotala Bridge	Kela Bridge	Jangbi Bridge	Reotala Bridge	Kela Bridge	Jangbi Bridge
Bridge Structure	Bailey suspension bridge	Bailey bridge[4]		As planned	As planned	
Length	103.7m	49.5328m		As planned	As planned	
Width	3.277m (1 lane)	3.277m (1 lane)		As planned	As planned	
Responsibilities of the Japanese Side	Substructure (Base part of the bridge: abutment, bridge pier, pile, etc.) and revetment works (for protection of abutment)			As planned		
Responsibilities of the Bhutanese Side	- Material procurement and construction of the superstructure (upper part from base: deck, etc.) - Removal of old bridges			- None of the three old bridges were removed yet - Other parts: as planned		

Source: Information provided by JICA and the Executing Agency

(Before the construction: Former Reotala Bridge)

*Circled part

(After the construction: Reotala Bridge)

(Before the construction: Former Kela Bridge)

(After the construction: Kela Bridge)

(Photos provided by JICA)

[4] Bailey Bridge is a motorable bridge whose parts were pre-assembled in a factory. It used to be for military use as a temporary passing bridge but in the viewpoint that it can be assembled by hand without special heavy machinery or tools, this type of bridge is sometimes constructed as a bridge for regular use, like through this project. “Bailey Suspension Bridge” is a wire-fixed bridge.

(Before the construction: Former Jangbi Bridge)

(After the construction: Jangbi Bridge)

(Photos provided by JICA)

On the other hand, the removal of old bridges, which was the responsibility of the Bhutanese side, had not yet been conducted and all three of the old bridges were confirmed to have been left standing even at the time of ex-post evaluation.

Among the three old bridges left intact, the former Jangbi Bridge was a suspension bridge with steel plates, and its condition was good enough and people sometimes passed through the bridge at the time of the site visit during the ex-post evaluation. For this reason, the former Jangbi Bridge is planned to be transferred to another place in the same gewog[5] and is to be removed from the present site when the new location is decided. The former Reotala Bridge is being discussed to be left as a back-up for the present Reotala Bridge and used for pedestrians in case of bridge blockages, damaged by rockfalls, and so forth, or difficulties when passing through with cars due to increased traffic of large vehicles. As for the removal of the former Kela Bridge, a consultant who was in charge of construction management for this project told that there was no specific opposition from the residents about the removal of the former Kela Bridge when the consultant explained the project to them before the construction of the new bridge. However, according to DOR, when DOR tried to remove the old bridge, the residents who had participated in the construction of the old bridge started raising an objection, thus, it has not yet been removed even now. The reason of their objection is rather sentimental; the residents wanted to keep the old bridge as it was because this was like a symbol of their effort. The possible danger of entering and passing over the old bridge by mistake is low because half of the bridge has fallen down from weathering, making it physically impossible to pass over, and its location is noticeably distant from the present farm road.

Although there are some bridges not yet removed at present, the possible threat to the safety of the residents seems low and there is thought to be no specific negative effect. As

[5] Geographic administrative unit in Bhutan: a gewog is a group of villages (chiwog) and a district is a collective unit of gewogs.

seen above, it is figured out that it does not seem to affect the efficiency.

The former Reotala Bridge (foreground) existing next to Reotala Bridge (background)

The still-existing former Kela Bridge

3.2.2 Project Inputs

3.2.2.1 Project Cost

The actual total project cost, which combines the Japanese side and the Bhutanese side, as shown in Table 3, was 1,131 million yen, which was within the plan. The total project cost ratio was 96% of planned value and both the Japanese and Bhutanese project costs were within the cost. If the three bridges had been removed as planned, the cost would have increased by about one million yen but the actual project cost would have still been lower than the planned cost.

Table 3. Total Project Cost

(Unit: million yen)

Item	Plan	Actual
Japanese side	1,019	999 *2
Bhutanese side	160 *1	132 *3
Total Project Cost (Japanese + Bhutanese)	1,179	1,131(96% of planned cost)

Source: Information provided by JICA and the Executing Agency

Note: Rounded down if the price was less than 1 million

*1 Price on the Ex-ante Evaluation sheet

*2 Including additional work (protection work) for the Dolkhola and Jigmeling bridges

*3 Calculated to the Japanese-yen equivalent from 80 million Ngultrum with an average exchange rate of 1.65 yen from 2011 – 2014 (IMF)

3.2.2.2 Project Period

The actual project period was 35 months, which was longer than the planned period of 25 months, and was 140% of the planned time. The cause of the gap was the delay of the commencement of the construction work of Reotala Bridge by the Bhutanese side.

For the reason of the delay of the commencement of the construction work, according to the explanation from DOR, the landslide disaster, caused by heavy rain, inflicted damages to some parts of the construction materials for the superstructure at their storage place,

which required re-procuring of the materials. To re-procure the materials, it was necessary to go through the government procurement process again, which took a long time to order the materials. Furthermore, DOR and Trongsa District had discussed for a long time which agency was supposed to pay the re-procurement cost[6]. As a result, the commencement of the construction was delayed by one year.

Table 4. Project Period

Plan	Actual	Comparison
25 months (August 2011 – August 2013)	35 months (August 2011 – June 2014)	140%

Note: Project completion is defined as the date of the opening of the bridges after the completion of the construction work by both the Japanese and Bhutanese sides. At the time of planning, construction work by the Bhutanese side would have been completed within 3 months of the completion of work by the Japanese side (planned in May 2013) after handing it over to the Bhutanese side.

The completion date of the construction work by the Japanese side was April 2013, a month earlier than the plan. According to DOR, the duration of the construction work by the Bhutanese side was virtually finished in 2 months, though the commencement of the work had been delayed. Therefore, it can be thought that the construction period was within 3 months as expected in the plan.

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

Effectiveness[7] (Rating: ③)

3.3.1 Quantitative Effects (Operation and Effect Indicators)

According to the operation indicator, the actual value of the bridge design loads and the number of lanes available cleared the target value (40t/24t, 2 lanes), as shown in Table 5. At the time of ex-post evaluation, the number of lanes and availability for a certain volume of vehicle traffic of each bridge were all confirmed as planned by the site visits. For Dolkhola Bridge and Jigmeling Bridge, both have a capacity of having vehicles up to 100t to pass over, but according to DOR, the actual maximum load capacity is recommended at 40t at present considering the capacity of other bridges nearby.

[6] Trongsa District agreed to bear the cost at last.
[7] Sub-rating for Effectiveness is to be evaluated along with Impact.

Table 5. Operation Indicator

	Baseline	Target	Actual	
	2010	2016	2014	2017
	Planned Year	3 Years After Completion	Completion Year	3 Years After Completion
Dolkhola Bridge / Jigmeling Bridge				
Load Capacity	18t	40t	100t*	100t*
Lanes	1 lane	2 lanes	2 lanes	2 lanes
Reotala Bridge / Kela Bridge/ Jangbi Bridge				
Vehicle Traffic	Unavailable / pedestrian bridge	Available (24t)	Available (24t)	Available (24t)

Source: Documents provided by JICA and the Executing Agency
*Equivalent ton (t) against Indian standard unit "IRC Class 70R"

The effect indicator shown in Table 6 accomplished the shortening of the distance of the target value (260km) both at the time of project completion and 3 years after the completion. Since it was a result of the rehabilitation of the roads and bridges on the entire National Highway No. 5, the construction of the Dodlkhola and Jigmeling bridges alone are not thought to have had a big effect on making the distance shorter.

Table 6. Effect Indicator: Distance of Dzong (administration office) in each District

Index	Baseline	Target	Actual	
	2010	2016	2014	2017
	Planned Year	3 Years After Completion	Completion Year	3 Years after Completion
Travel distance between Gelephu and Thimphu (passing through the Dolkhola and Jigmeling bridges)	370km	260km	257km	257km

Source: Information provided by the Executing Agency

As reference indicators, the ex-post evaluator conducted surveys of (1) changes in access time to each bridge and (2) traffic volume near the bridges.

(1) Change of access time to each bridge

The access time to the destination by using each bridge is shown in Table 7 and 8. From both the interviews and beneficiary survey[8] conducted in the project areas, there

[8] The survey was conducted by visiting companies and houses which are located near the bridges and interviews with drivers who pass over the targeted bridge(s) in February 2017. The number of valid respondents: 100 (59 male, 41 female); age of respondents (below 20: 3, 20 – 29: 20, 30 – 39: 38, 40 – 49: 25, 50 – 59: 7, 60 and over: 7); place of residence or work: (Trongsa District: 54, Sarpang District: 39, Zhemgang District: 6, Other: 1); bridges for use: (Dolkhola Bridge: 40, Jigmeling Bridge: 40, Reotala Bridge: 20, Kela Bridge: 20, Jangbi Bridge: 20 *including multiple answers); questions: Bridge for use, purpose of using the bridge (destination), access time to destination

is no big difference of access time that can be seen between Gelephu and Sarpang via the Dolkhola and Jigmeling bridges compared to before and after the construction of the new bridges. According to local residents, the old bridges were already motorable, and since there was not much traffic at that time, it did not take time to pass over the bridge.

For the Reotala, Kela and Jangbi bridges, as shown in the interviews and beneficiary survey results, there was a big improvement of access time to Trongsa Town because people could get to the destination by car. Before the bridges were constructed, people couldn't pass over the bridges by car resulting in some cases in which people tried to go around getting to the destination without having to pass over the bridge. After the construction of the new bridges, people could go to the destination by passing over the bridge by car, and as a result, the travel time was reduced.

Table 7. Reference Indicator (1) Change of Access Time:
Change of Average Access Time of Each Bridge

Average Travel Time between Gelephu and Sarpang (Using the Dolkhola and Jigmeling Bridges)

Name of Bridges	Before Construction of New Bridges	After Construction of New Bridges
The Dolkhola and Jigmeling bridges	36 min. (by car)	30 min. (by car)

(Beneficiary Survey Results)

Average Travel Time from each gewog to Trongsa Town (Reotala, Kela and Jangbi bridges)

Name of Bridges	Before Construction of New Bridge	After Construction of New Bridge
Reotala Bridge	11.5 hours (on foot)	3.85 hours (by car)
Kela Bridge	11.45 hours (on foot)	2.75 hours (by car)
Jangbi Bridge	11.25 hours (on foot)	2.9 hours (by car)

(Beneficiary Survey Results)

(before and after the construction), bridge blockage after the construction, economic effect from the construction, etc. Incidentally, no differences between men and women were seen in the beneficiary survey results.

Table 8. Reference Indicator (2) Change of Access Time: Access Time to Nearby Destinations via the Bridges (Example)

Occupation	Route (Bridges to be used)	Travel Time	
		Before Construction of New Bridge	After Construction of New Bridge
Grocery Store Staff	Store – Supplier (in Gelephu) (Dolkhola and Jigmeling bridges)	30 - 40 min. (by car)	No change
Officer of National Park	Office – Office in National Park (Reotala Bridge)	5 - 6 hours (on foot)	2 hours (by car)
Farmer	Home – Farm (Cattle Shed) *Took cows (Kela Bridge)	1 day (on foot)	Half day (on foot)
Construction Worker	Home – Construction site (in Trondsa Town) (Kela Bridge)	1 day (on foot)	3 hours (by car)
Doctor	Jangbi Village – TrongTrongPhay BHU-1 (Jangbi Bridge)	3 hours (on foot)	30 min. (by car)

Source: Interviews conducted in Bhutan

*Before the construction of the new bridge, the farmer had to go around to the destination because she could not take her cows by passing over the bridge; but after the construction, she could use the bridge to get to the destination faster.

(2) Change of Traffic Volume around the Bridge

According to interviews with local residents, the traffic volume after construction increased compared to before construction of the new bridges. In fact, per traffic volume surveys between Gelephu and Sarpang, whose checkpoint was Jigmeling Bridge, conducted in 2011 and 2016 by DOR, Sarpang Regional Office, the traffic volume in 2011—before the construction of new bridge—was 130 vehicles per day on average (total of up-traveling and down-traveling[9]), and in 2016—after the construction—the traffic volume increased 10 times that of 2011 to 1,371 vehicles per day on average (total of up-traveling and down-traveling). The background for the increasing traffic volume can be thought of as follows: the traffic of buses and taxis increased after the construction of both bridges as a result of the increasing of companies, schools, and stores being located near the bridge; and car transport became more convenient through the process of replacing of bridges on National Highway No.5.

Reotala, Kela and Jangbi bridges were originally pedestrian bridges which were impossible for vehicles to pass over but after the construction of the new bridges, vehicles became possible to pass over the bridges. According to DOR, Trongsa Regional Office, the average traffic volume over Reotala Bridge is 20 – 30 vehicles per day.

[9] An average volume per day from the total number of up-traveling and down-traveling in February and September divided by the observation days.

3.3.2 Qualitative Effects (Other Effects)

Improving Accessibility at time of Disaster

According to local residents and each DOR regional office, several bridges are washed away by rivers flooding by concentrated heavy rains in the monsoon season, from June to October, every year. Despite such an environment, it has been confirmed by the data recorded by DOR, Sarpang Regional Office, and beneficiary survey results at the time of ex-post evaluation that the bridges constructed through this project have never had a blockage except one time, which resulted from damage by rockfalls in October 2016[10]. The residents interviewed by the site survey told that they recognized each of these bridges as a "disaster-resistant bridge". Consequently, the objective of the project, which was to improve accessibility at the time of disaster, can be said to have been achieved.

BOX 1: "Disaster-Resistant Bridge"

According to local residents near the bridge and DOR, Sarpang Regional Office, the Sarpang District in which the Dolkhola and Jigmeling bridges are constructed have almost no river water during the dry season. However, in the rainy season, the water volume of the river rises to a high level immediately due to a heavy concentration of rain. It is said that there were many bridges that became impossible to pass over or were washed away.

According to DHMS, there was a concentration of heavy rain in late July 2016; many water levels of rivers rose higher than the warning level and many roads and bridges were washed away or became impossible to pass. In addition, when Sarpang Town flooded, many residents were evacuated from their homes. According to DOR, Sarpang Regional Office and local residents around the bridges, the Dolkhola and Jigmeling bridges also experienced increased river water levels of 2 to 3 meters higher than the normal water levels for that time, but neither of the bridges was blocked and there was no problem with the bridge condition to pass over after the heavy rain. The residents seem to recognize these bridges as "disaster-resistant bridge(s)" as the bridges have not had any damage or blockage although many of other bridges have suffered blockages.

A consultant who designed and managed the construction gave a comment that the design brought success because they designed the bridges higher than the estimated value of river water levels during flooding. It can be said that this is a good example in which "design defeated the disaster".

[10] The bridge was blocked to vehicle traffic for the time being due to the inclining of the bridge whose wire fastener (a part) had dropped off. However, according to DOR and construction workers at the bridge, the repair work was completed in a short term (about one month) and vehicles can currently pass over the bridge.

Jigmeling Bridge at a time of flooding of the river
(The foreground is a pier of the old bridge: Photo provided by a local resident)

3.4 Impacts

3.4.1 Intended Impacts

(1) Improvement of living situations of the residents

According to statistics from 2015 which were published by the National Statistics Bureau, the percentage of farmers per population in Sarpang District, in which Dolkhola Bridge and Jangbi Bridge are located, was about 30% in Sarpang District, which was on average with the national level, and was about 80% in Trongsa District, which greatly exceeded the national level; thus, the percentage of farmers as a total of both districts was high. Comparing the agriculture statistics of the two districts before (2011) and after (2015) construction of the new bridges, the percentage of cash income that farmers gained in 2015 increased from that in 2011, as shown in Table 9. Since these statistics cover entire areas in each district, a direct casual relation with this project cannot be proven. However, it is assumed that the replacement bridges made a certain contribution to the efficiency of the transportation of goods, including agricultural products, and to the improvement of the residents' living situations. Also, in the beneficiary survey, Table 10 shows that more than 90% of the respondents said that both the quality and quantity of daily commodities improved compared to those before the construction of the new bridges.

Table 9. Percentage of Farmers who had Cash Income

	2011	2015
Sarpang District	29%	39%
Trongsa District	33.7%	42%

Source: Agriculture Statistics 2011 and 2015
Note: Cash income means the income from business activity, including selling agricultural products.

Table 10. Changes of Quantity and Quality of Daily Commodities Before and After the Bridge Construction (total 5 bridges)

	Greatly improved	Improved a little	No change	Worsened
Quantity	88%	12%	0%	0%
Quality	70%	29%	1%	0%

Source: Beneficiary survey results

In addition to the results above, “3.3.1 (2) Change of Traffic Volume around the Bridge”, as mentioned before, and the upcoming section “(2) Activation of Large Vehicle Traffic” state that after the construction of the new bridges, the number of companies and schools around the bridges increased, thus the traffic of people and goods became active. As a result, it became easier for the residents to obtain daily commodities.

Also, the newly constructed bridges allowed ambulances to take residents to medical facilities[11] in case of emergency, such as events of sudden illness or serious injury, and so forth. (Please see BOX 2.)

BOX 2: Situation on Emergency Transfer Before and After the New Bridge Construction

JICA provided ambulances to several medical facilities in Bhutan in 2012 and 2016[12]. In this context, ambulances at Gelephu General Hospital in Sarpang District, Tongtongphey BHU-1 in Trongsa District, and Yebilaptsa Hospital in Zhemgang District use the bridges constructed through this project. Targeted medical facilities and bridges for use are shown in the table below.

Table: Targeted Medical Facilities for Ambulance Provision Which Use the Targeted Bridges

Name of Medical Facility	Year of Provision	Bridge(s) for Use	Purpose of Use	Frequency of Using Bridge(s)
Gelephu General Hospital (Sarpang District)	2016	Dolkhola Bridge Jigmeling Bridge	Patient transport: Gelephu - Thimphu	306 times (actual result in 2016)
Yebilaptsa Hospital (Zhemgang District)	2012	Reotala Bridge	Patient transport: village - hospital	3 times/ month in average
Tongtongphey BHU-1 (Trongsa District)	2016	Kela Bridge Jangbi Bridge	Patient transport: village – BHU	Kela Bridge: 3 times Jangbi Bridge: 5 times (actual result from July 2016 – January 2017)

Source: Interviews with and information from people relevant to the project

In Gelephu General Hospital, a patient who needs advanced medical treatment, for example, brain surgery, is delivered to the National Referral Hospital in Thimphu by ambulance, passing over the Dolkhola and Jigmeling bridges. Ambulance drivers explained that the distance from Gelephu General Hospital to the National Referral Hospital in Thimphu is about 250km and it took about 8 to 14 hours, depending on the patient’s condition. They also mentioned that

[11] There are medical facilities in Bhutan which are a “BHU” (Basic Health Unit) and a “hospital”. A BHU is located in each gewog (group of villages) and there are two types: a BHU-1 is where doctors are working and a BHU-2 is where doctors visit periodically. If a BHU cannot treat the patient, the patient is supposed to be taken to the hospital in the city/town. Also, if there is a patient in critical need for care that the city hospital cannot treat, the hospital sends the patient to a “General Hospital” located in major cities such as Gelephu, etc. If there is a need to undergo advanced medical treatment, such as brain surgery, the patient is sent to the “National Referral Hospital” in Thimphu.

[12] The Project for Replacement of Ambulances Phase 1 and Phase 2

between Gelephu and Sarpang, which is about 30km (35 – 40 minutes), it became safer and more stable to transfer patients.

The Reotala, Kela, and Jangbi bridges used to be pedestrian suspension bridges over which vehicles were not able to pass. An emergency medical technician (a nurse who is in charge of coordinating ambulances and giving emergency medical treatment inside of the ambulance) told that at that time, ambulance crews walked to a village to pick up a patient, carried the patient on their back and walked back to where the ambulance was waiting on the roadway. It took 4 – 5 hours from a village to the nearest roadway, and it took another 25 – 30 minutes traveling along the roadway to the hospital. If the inclusion of the time from the hospital to the village for pick up is considered, it took more than half a day to deliver one patient. At present, since roads and bridges have been developed, it has become possible to pass over these bridges by car; hence, it takes about 35 – 40 minutes on average to get to a hospital from a village.

Compared to the Dolkhola and Jigmeling bridges, the number of transports of patients over the Reotala, Kela, and Jangbi bridges is less, but these bridges have contributed greatly to significantly reducing the transfer time and also to the patients, their family, and hospital staff in reducing their physical and mental burden through the construction of such motorable bridges.

An ambulance passing over Jangbi Bridge while transporting a patient

In light of the above, the construction of the new bridges has resulted in activating the traffic of people and goods, thus improving the quality and quantity of commodities. Also, the transportation for people and goods has become safer and faster by the construction of the new bridges. Also, it became possible for the medical facilities to offer emergency transport in a safer and quicker manner. Therefore, the living environment of residents improved after the construction of the new bridges.

(2) Activation of Large Vehicle Traffic (Dolkhola Bridge and Jigmeling Bridge)

As mentioned in 3.3.1 (2), the traffic volume in 2016 increased compared to that in 2011 - before the bridge construction. Along with this result, the traffic volume of large vehicles (more

than 10t of vehicle weight, such as buses and trucks) has also increased: 46 large vehicles per day in 2011 increased to 224 large vehicles per day in 2016. In addition, Jigmeling Industrial Estate near Jigmeling Bridge, which is under construction, is planned to be in operation from July 2017 and according to a newspaper report[13], food processing industries, forest-based industries, and so forth will settle in an area of approximately 756 acres (306km^2). In order to transfer goods and staff to the estate, the number of large vehicles passing over the Dolkhola and Jigmeling bridges, such as trucks and buses, is expected to increase further.

(3) Running Condition and Safety of the Bridges (Dolkhola Bridge and Jigmeling Bridge)

In the beneficiary survey, all drivers who passed over Dolkhola and Jigmeling bridges replied that the running condition after the construction of new bridges was more comfortable than that before the construction. Usually, when a traffic accident occurs on Dolkhola Bridge or Jigmeling Bridge, the police are supposed to report the accident to DOR, Sarpang Regional Office. According to DOR, Sarpang Regional Office, the number of reports of accidents from the police, from the construction of the new bridge until as of April 2017, was only one: an accident in which a car hit the railings of Jigmeling Bridge in November 2016. One of the reasons for the decrease in the number of traffic accidents is the improvement of the bridge's running condition and safety created through the expansion of roads and replacements of bridges. Therefore, the running condition and safety of both bridges improved compared to that from before according to the acquired data and beneficiary survey results.

(4) Efficiency of Equipment and Materials Transport (Dolkhola Bridge and Jigmeling Bridge)

According to the interviews with staff at companies located near the Dolkhola and Jigmeling bridges, they had had to disassemble parts to meet with the vehicle weight limitation of the bridge, but after the construction of new bridges, whose load capacity became 40t, there was no need to disassemble the parts for delivery. According to DOR, as for Southern East-West Highway connecting the eastern and western regions of Southern Bhutan, the section connecting Gelephu and the eastern city of Panbang and the section connecting Sarpang to the western city of Lhamoizingkha—both of which have yet to be constructed—will be targets of the development area under the *Twelfth Five-Year Plan (2018 - 2023)*. The contribution of both bridges can be expected in the future in terms of transportation measures for materials during the construction period and transport efficiency, connecting the eastern part and the western part after the construction. Therefore, it can be said that both bridges are contributing to the improvement of efficient transport of equipment and materials.

[13] Article from Business Bhutan, June 23, 2016

3.4.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

Both DOR, Trongsa Regional Office, and the Agriculture Department of Trongsa District, which manage bridges, explained that although the Reotala, Kela, and Jangbi bridges—among the 5 targeted bridges—were constructed close to a national park, none of the bridges had any problem in terms of their locations which might affect the natural environment. Also, according to DOR, they had secured a place for disposal of waste during the construction in order to prevent the waste from flowing out to the river and waterways. DOR explained that they had removed all of the waste from the waste site promptly and properly after the construction. Thus, there was no negative effect on the environment both during the construction and at the time of operation.

Therefore, it can be said that no negative impact occurred on the natural environment.

(2) Land Acquisition and Resettlement

Since all of the 5 bridges were constructed for the purpose of replacing old ones and there were no houses in the location, there were no land acquisitions or resettlements.

(3) Other Impacts

<u>Poverty Reduction through Improvement of Accessibility</u>

As for poverty reduction through improvement of accessibility, since there has been an active flow of people and goods due to the construction of the new bridges and there was job creation; it can be thought that there has been a certain level of positive effect for the reduction of the poverty status among residents. To sum up the interviews of local residents and the beneficiary survey results, job creation was effected, as the number of companies near the bridges increased and along with that, the number of residents passing over the bridges to go to their workplaces increased, all of which made it possible for them to acquire a means of earning money besides income from agriculture. From the beneficiary survey, 88% of respondents improved their economic situations after the construction of the new bridges.

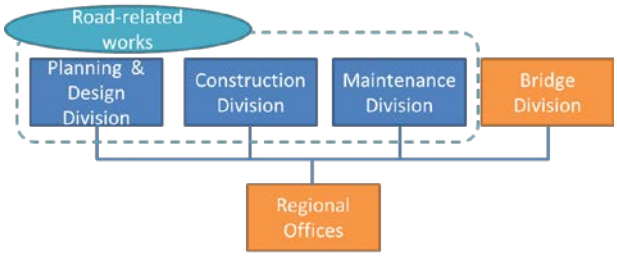
In light of the above, this project has largely achieved its objectives. Therefore effectiveness and impact of the project are high.

3.5 Sustainability (Rating: ②)

3.5.1 Institutional Aspects of Operation and Maintenance

An organization chart of DOR is shown in Figure 3. In Thimphu, the capital city, there are four divisions in DOR: Planning and Design Division, Construction Division and

Maintenance Division for road-related works and Bridge Division, which is to study, design, construct, and maintain the bridges as well as to provide regional officers technical instruction. There are also regional offices which are in charge of daily maintenance of roads and bridges nationwide under the instruction of these four divisions.



Source: Interview results with the Executing Agency

Figure 3. Organization Chart of DOR

The organizations in charge of these 5 targeted bridges in the project are classified by the type of road on which the bridge was constructed. The Dolkhola and Jigmeling bridges, which are on the national highway, and Reotala Bridge, which is on the GC road[14], are maintained by DOR. The Kela and Jangbi bridges, which are on farm roads, are maintained by Trongsa District.

Table 11. Organization-in-charge for Operation and Maintenance of Each Bridge

Target Bridge	Road	Organization-in-Charge	Detail
Dolkhola Bridge	NH	DOR Sarpang RO	- Cleaning of the bridge(s) and condition check done by the National Work Force (1 staff per bridge[15]) - Bridge inspection (cleaning condition and bridge condition check) done by site engineers (RO staff)
Jigmeling Bridge	NH	DOR Sarpang RO	
Reotala Bridge	GC Road	DOR Trongsa RO	
Kela Bridge	Farm Road	Trongsa District	- Cleaning of the bridge(s) done by local residents (multiple people) - Periodic inspection done by one gewog[16] engineer (a staff from Trongsa District)
Jangbi Bridge	Farm Road	Trongsa District	

NH = National Highway, RO = Regional Office
Source: Result from interviews

Dolkhola Bridge, Jigmeling Bridge, and Reotala Bridge are managed by regional offices of the DOR. The National Work Force (hereinafter referred to as "NWF") cleans each bridge

[14] GC road is an abbreviation of "Gewog Connectivity road" which connects to the administrative facility in gewog. In addition, in 2015, GC road has come under the management of DOR from District Administration.

[15] Normally, there is one NWF assigned for every 2km of road and if there is a bridge on the road, the bridge is included in the assigned area for daily maintenance. However, for the Dolkhola and Jigmeling bridges, which are on the national highway, there is one specific NWF for each bridge who is in charge of the bridge and access road connected to the bridge.

[16] "Gewog" is an administrative unit under the District. There are 5 gewogs in Trongsa District and one gewog which contains a group of villages (which are called "chiwogs").

and regional office staff (site engineers) check the condition of the bridges and roads, whose operation and maintenance (hereinafter referred to as “O&M”) system is conducted for all of the bridges and roads in Bhutan.

In Trongsa District, the office which manages the Kela and Jangbi bridges, local residents near the bridge usually clean the bridge and farm road. In cases of repairing, the gewog sends a request to the district. A gewog engineer from the district administration is supposed to design the repair plan after a site visit and a technician from the administration is also supposed to visit the bridge for conducting repairs according to the repair plan.

It seems that both DOR and the Trongsa District Office have their respective organizational structures for O&M. However, the picture of Trongsa District Office does not fit the reality. Gewog engineers, who are district administration staff, are in charge of all types of infrastructure (roads, bridges, and water utilities) in each gewog, which is a group of villages, but there is only one engineer per gewog and some say that the work load of each engineer is too heavy to maintain bridges. Also, only one backup staff for all gewog engineers (5 staff members in total) is provided, which does not seem to be enough support in cases in which there are several absences of staff.

Therefore, some problems have been observed in the institutional aspects of operation and maintenance.

3.5.2 Technical Aspects of Operation and Maintenance

Table 12 shows the presence or absence of a maintenance manual for each bridge and the contents of the work outlined.

Table 12. O&M Manual and Contents of Work

Bridge Name	Managed by	Manual	Contents of Work
Dolkhola Bridge	DOR Sarpang Regional Office (RO)	Yes (Manual for PC bridge)	O&M works according to the manual
Jigmeling Bridge			
Reotala Bridge	DOR Trongsa RO	None	Cleaning of the bridge and checking if there are any damages on the bridge
Kela Bridge	Trongsa District (Actual work is done by gewog)	None	Cleaning of the bridge, grass cutting on the farm road, making and cleaning of drainages
Jangbi Bridge			

Source: Interview results from the DOR Sarpang Regional Office and Trongsa Regional Office, and gewog leaders

For the Dolkhola and Jigmeling bridges, there are manuals for PC bridge which consultants had created during the project period and DOR, Sarpang Regional Office makes use of the manual during periodic checks in which site engineers at the Office instruct operations to the NWF along with providing the manual. DOR, Trongsa Regional Office, which manages Reotala Bridge, mentioned that there was no manual for maintenance like

that of the Dolkhola and Jigmeling bridges, but there was no problem to do the maintenance without a manual so far because the daily routine done by the NWF is simple. Gewog leaders who manage the Kela and Janbi bridges responded that the contents of the work were simple and there was no specific technical problem so far, which was also mentioned by DOR, Trongsa Regional Office. On the other hand, gewog engineers at the district administration office who are in charge of periodic inspection told that they had not checked the bridge periodically and that they were not sure how to check the condition of the bridge specifically. Many of the 5 gewog engineers are less-experienced, as they have only one to three years of experience in engineering. And, there was almost no opportunity for gewog engineers to take technical group training for brushing up their skills. Technicians who are in charge of repair works told that no one had an opportunity to receive technical training for maintaining and repairing bridges. As for gewog engineers who have little support for technical improvement, there are some problems in the point of difficulty in comprehending the accurate bridge condition in the future and a lack of opportunities for capacity enhancement for technical improvement.

For a better O&M operation, JICA conducted a technical assistance project, "Project for Capacity Development in Construction and Management of Bridges" (hereinafter referred to as "CAMBRIDGE Project") at the time of ex-post evaluation, and the consultants of the project have been creating an O&M manual for bridges with DOR[17]. The manual is planned to be completed in 2018 and DOR will distribute it to DOR regional offices and to each district by 2019. In the future, DOR and districts are expected to maintain bridges by utilizing the manual.

As mentioned above, technical aspects of operation and maintenance can be said to have some problems because there is a lack of opportunity for engineers to obtain technical expertise and to take part in trainings.

3.5.3 Financial Aspects of Operation and Maintenance

For Dolkhola Bridge, Jigmeling Bridge, and Reotala Bridge, DOR provides a certain amount of budget every year in order to secure a financial source for sustainable O&M. As shown in Table 13, DOR distributes 26,000 Ngultrum per bridge per year as a maintenance budget. Table 14 shows examples of expenditures and annual expenditures which are usually within the budget. If the cost exceeds the budget, the regional office can request DOR head office in Thimphu (capital) to provide additional budget. Also, the actual cost in 2016 shows

[17] Targets are 273 bridges which are under DOR's management (concrete bridges, bailey bridges and steel bridges) and it is expected that the manuals and participations in workshops will be shared with districts which manage bridges separately from DOR because districts manage the same types of bridges that DOR does. The project period will be October 2016 – September 2019.

that DOR internally secures a “Monsoon budget” for emergency support in case of disaster. It can be said that there is a sufficient source of funding from the source for sustainable O&M.

Table 13. Annual Budget of DOR in 2016 (Dolkhola Bridge, Jigmeling Bridge and Reotala Bridge)

(Unit: Ngultrum/ Nu.)

Cycle	Target	Cost for Maintenance
1 year	Bridge*1 and access road (per bridge)	26,000
Total of 3 bridges		78,000
(Equivalent Japanese yen = 127,000 yen)*2		

Source: Information provided by the Executing Agency

*1 Targeted bridge of this budget is a motorable bridge

*2 Exchange rate: 1 Nu. = ¥1.62 (IMF average rate in 2016)

Table 14. Examples of Expenditure of O&M Cost by DOR (Dolkhola Bridge, Jigmeling Bridge and Reotara Bridge: Actual)

Year	Fund Usage	Cost
2014	Street lights (Dolkhola Bridge and Jigmeling Bridge) 2 lights / each	Nu. 38,000 (Total of two bridges)
2014 - present	Electricity fee for street lights (Dolkhola Bridge and Jigmeling Bridges: every year after the settlement)	Nu. 12,000 / yr. (Total of two bridges)
2016	Repair of the bridge (Reotala Bridge)	Nu. 310,000*

Source: Information provided by the Executing Agency

*Normal budget + Monsoon budget that DOR secures as an annual budget

As for the Kela and Jangbi bridges, neither Trongsa District, which is responsible for managing, or the gewog, which is virtually doing O&M work, have a specific budget to cover O&M costs. This is because normal O&M operation is basically done by local residents without any payment. In cases which require repair at a cost, both the district and gewog are thinking of disbursing the necessary cost from a part of a development fund which is provided by the central government. However, the usage of the development fund, which is allocated to the district or gewog is decided through discussion at a gewog leaders meeting (for usage of the development fund for a gewog, the discussion is to be held at a leaders meeting of chiwogs, which are units of villages within a gewog), which cannot ensure that the source of the funding for O&M and repair of the bridge can be secured every year. Since it is thought that there will be a necessity for repair for dilapidation from aging and for the prevention of such dilapidation, it is desirable to keep a certain volume of budget for O&M cost every year from a long-term perspective. Therefore, a few problems have been observed in terms of financial sustainability.

3.5.4 Current Status of Operation and Maintenance

The condition of the Dolkhola and Jigmeling bridges are good. Items and the frequency of the O&M at the time of planning were all included in DOR’s daily and annual O&M operations and checkpoints at the time of ex-post evaluation. As shown in Table 15, the frequency of inspection was not according to the plan, that is to say, higher than as planned.

Also, as for daily O&M operations (shown on rows (1) – (3) and (5) – (6) in the table), one unit of the NWF is assigned to each bridge and conducts cleaning and inspection of the bridges and roads respectively.

Table 15. O&M work of the Dolkhola and Jigmeling Bridges

Item	Frequency (Plan)	Frequency (Actual)	In-charge
(1) Inspection/ cleaning of the drainage facilities	Annually	Daily	NWF
(2) Inspection/ cleaning of the expansion joints		Daily	NWF
(3) Inspection/ repair of the bridge surface		Daily	NWF
(4) Inspection/ cleaning of the bearings		Weekly	DOR Sarpang Regional Office (RO)
(5) Inspection/ repair of the access road pavement		Daily	NWF
(6) Inspection/ cleaning of the access road gutter		Daily	NWF
(7) Repair of the steel railing	Every 5 years	Weekly	DOR Sarpang RO
(8) Repair of the embankment		Annually	DOR Head office
(9) Re-painting of the road markings		Annually	DOR Sarpang RO

Source: Interview result from the Executing Agency

Reotala Bridge, Kela Bridge, and Jangbi Bridge are also in good condition. As for Reotala Bridge, the NWF cleans the bridge daily and site engineers from DOR, Trongsa Regional Office conduct weekly inspections. As for the Kela and Jangbi bridges, local residents near each bridge do the periodic cleaning at 3 times a year and a gewog engineer is supposed to carry out a periodic inspection twice a year (January and July) in order to check the condition of the bridges. For the Kela and Jangbi bridges, in order to deal with the change of bridge condition caused by dilapidation from aging, it may be necessary to think about increasing the frequency of O&M work and periodic inspection (monitoring). For the condition of each bridge, Trongsa District, which has the responsibility of O&M, mentioned that they have not actually done the bi-annual inspection. This is because gewog engineers did not recognize the necessity of the periodic inspection and they thought there was no problem with the bridges because they had never received any reports on problems from the gewog so far (in the normal process, a gewog is supposed to report to the district if there is any problem with the bridge). Although both bridges are in good condition at present, it may be necessary for the Kela and Jangbi bridges to have periodic inspections in order to minimize the repair especially if there is an occurrence of a problem.

As mentioned above, no major problems have been observed in the institutional, technical, financial aspects and current status of the operation and maintenance system in DOR. However, some minor problems have been observed in Trongsa District: organizational structure has been established but the structure, including backup, is weak, which brings inadequate

comprehension of bridge condition; there has been a lack of opportunity to acquire O&M skills; there has been no certain budget for O&M, and so forth. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented for local residents in order to improve the accessibility of a cyclone-affected area and to safeguard its accessibility from future cyclone attacks by replacing 5 bridges in the mid-interior region of Bhutan (Dolkhola Bridge, Jigmeling Bridge, Reotala (Mandechhu) Bridge, Kela Bridge and Jangbi Bridge) which had been destroyed by a cyclone, thereby contributing to the stable transport of people and goods and the improvement of the living situations of the local residents in the area. This project was consistent with the development plan and needs of Bhutan at the time of both planning and ex-post evaluation and also with the Japanese ODA policy at the time of planning. Since there was no problem with the project implementation plan or its approach, it can be confirmed that the relevance of this project is high. Also, the project was implemented mostly as planned and the project cost was within the plan. However, the project period exceeded that of the plan and thus the efficiency of the project is fair. The effectiveness and impact of the project are high because all of the 5 bridges have accomplished of “secure accessibility in case of disaster” and the stability and safety of the transportation flow at both the Dolkhola and Jigmeling bridges have been improved by the completion of concrete construction allowing the traffic volume of large vehicles, such as trucks and buses, to thusly increase. At Reotala Bridge, Kela Bridge and Jangbi Bridge, given that the bridges have become available for residents to pass over by car and the efficiency of transport and reduction of access time to the destination were realized, the effectiveness and impact are judged to be high. As for sustainability, there is no problem with the bridge’s management performed by DOR in institutional, technical, and financial aspects; however, there needs to be consideration given to improving all institutional, technical, and financial aspects of operation and maintenance, including the current monitoring and maintenance status of bridges managed by Trongsa District; thus, the expected sustainability of project effect is moderate.

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

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

(1) Establishment of an operation and maintenance system in Trongsa District

It is considered necessary for Trongsa District to design an operation and maintenance policy including future repairing and prevention of dilapidation due to aging by establishing

measures for routine work and periodic inspections regarding the O&M system for bridges in Trongsa District and by grasping the situation of the district administration on what gewog residents are doing for O&M and on how the bridge conditions are. At present, the organizational structure in the district is weak, as there is only one gewog engineer assigned in each gewog to be in charge of maintaining the entire infrastructure (roads, bridges, water facilities, etc.). Furthermore, the district does not understand what the residents are doing for O&M because the district has never done periodic monitoring. For institutional structure necessary for repairing and for financial support upon request from a gewog, it is necessary to establish a structure through which a gewog engineer and a district administration staff member visit a gewog regularly to see the condition of the bridge, and share how the residents in the gewog do the operation, as well as establish what the problems for the residents are. Also, when the bridge maintenance manual, which is under creation through the CAMBRIDGE Project, is distributed to Trongsa District, it would be desirable for DOR which is a co-producer of the manual to provide a trainer's training course and/or briefing session for district administration staff to have them explain to gewog residents about specific operations and checkpoints of O&M clearly.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

<u>Establishment of a common bridge O&M system and its implementation</u>

After the project completion, the O&M system has been split between DOR and Trongsa District according to which type of road the bridge is located on. As a result, there is a gap in both the organizational structure and financial condition of the O&M system between the bridges managed by DOR and those managed by the district. As for bridges managed by the district, staff members do not know the bridge condition in detail because they monitor neither the O&M operation, which residents do, nor the conditions of the bridges. Therefore, should a problem occur with the bridge in the future, the condition of the bridge may get worse due to delays (or negligence) in the repair work or due to insufficient repair done by the district. If the O&M operation of bridges is conducted by multiple institutions, it is preferable to set a focal point institution if at all possible, and establish a common O&M system through the initiative of the focal point institution. At the same time, it would be more effective that the focal point institution take the initiative on having trainings for persons in charge of the O&M operation and creating and distributing maintenance manuals.

End

Kingdom of Bhutan

FY 2016 Ex-Post Evaluation of Technical Cooperation Project

"Agricultural Research and Extension Support Project in Lhuentse and Mongar"

"Horticulture Research and Development Project"

External Evaluator: Keisuke Nishikawa, Japan Economic Research Institute Inc.

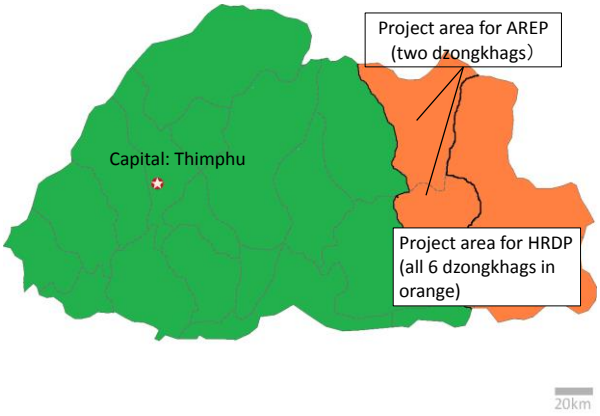
0. Summary

The Agricultural Research and Extension Support Project in Lhuentse and Mongar (hereinafter referred to as 'AREP') and the Horticulture Research and Development Project (hereinafter referred to as 'HRDP') were the collective projects by which horticulture as a source of revenue was promoted through improvements in the mechanism of agricultural research, dissemination, and marketing in the six dzongkhags (administrative and judicial districts) [1] in the eastern region of Bhutan where agricultural development was lagging and poverty rates were high. These projects supported agricultural promotion, poverty reduction, and correction of regional disparities, which had been consistently positioned as priority areas in Bhutan, and were in line with the development plans and development needs of the country. They were also consistent with Japan's ODA policy at the time of planning which had a focus on supporting rural income improvement and rural life improvement through agricultural development; and, the relevance of this project is high. The Project Purpose was judged to have been largely achieved as it was observed that cultivation by many farmers was promoted, and marketing activities became more vibrant through implementing these projects. The achievement of the Overall Goal (target year of HRDP: 2020) is also expected as various activities have continued. Therefore, the effectiveness and the impact of these projects are high. The efficiency is fair as the project cost of AREP exceeded the plan though the project periods of both projects were within the plans. With regard to the sustainability of the effects generated by both projects, no major problems were observed in the policy background and the organizational, technical and financial aspects. Therefore, the sustainability of the projects' effects is high.

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

[1] AREP targeted Lhuentse and Mongar Dzongkhags and HRDP was implemented in a total of six dzongkhags: Pemagatsel, Samdrup Jongkhar, Tashigang and Tashi Yangtse Dzongkhags in addition to these two dzongkhags.

1. Project Description



Project Location

Agricultural field of the farmer who participated in the training program of this project

1.1 Background

In Bhutan, 70% of the population lived in rural areas and most of them were making a living from agriculture, but a systematic cashing in on agricultural crops had rarely been practiced. In addition, no sufficient support mechanism for commercialization of horticultural crops was established, which was apparent in the eastern part of Bhutan. Under these circumstances, JICA dispatched an independent expert (2000-2004) to the Renewable Natural Resources Research Center – East of the Ministry of Agriculture (The name has changed twice, and it is the Agricultural Research and Development Center – Wengkhar at the time of ex-post evaluation.) and laid out the base of the research center. What followed was the AREP, implemented from 2004 to 2009, which had an objective to improve a mechanism of agricultural extension by interconnecting experimental research and the development of agricultural production technologies with extension activities in Mongar and Lhuentse Dzongkhags in the eastern region. In order to achieve this objective, improving the technologies used by farmers through efforts to develop agricultural technology options, strengthen extension structures, and to interconnect experimental researches and extension activities was set as the Outputs while increasing and adopting technical options to improve agricultural productivity in the eastern region after project completion were set as the Overall Goal.

However, at the completion of the AREP, while having the mind to commercialize their crops started to be seen, it did not reach the point where the commercialization of horticultural crops expanded to the entire eastern region. Therefore, the preceding efforts in the two eastern dzongkhags were expanded to four other dzongkhags as HRDP. In the HRDP, identifying agricultural technologies and crops that would lead to production and marketing, strengthening the implementing structure for horticulture training, establishing a structure for providing

seedlings, and formulating and vitalizing groups undertaking marketing activities were the Outputs, and as for the project as a whole, it became the Project Purpose that farmers were to implement adequate technologies to commercialize horticulture. Ultimately, the Overall Goal was set so that horticulture was to become popular as a source of income in the eastern region. It became a project with an aspect of increasing income through marketing, in contrast to the AREP.

1.2 Project Outline

Agricultural Research and Extension Support Project in Lhuentse and Mongar	Overall Goal		Potential technical options for increasing agricultural productivity are identified and adopted in the eastern region.
	Project Purpose		Technical delivery (agricultural extension) mechanism between research and extension is improved.
	Outputs	Output 1	Suitable technical options are developed for dissemination by the Renewable Natural Resources Research Center – East.
		Output 2	Extension system is strengthened in 2 dzongkhags[2] for better technical service delivery.
		Output 3	Farmers' technical capacity is improved through pilot testing of farmer, research and extension linkage in 4 model gewogs.
	Total Cost (Japanese side)		476 million yen
	Period of Cooperation		June, 2004 - June, 2009
	Implementing Agency		Renewable Natural Resources Research Center East, Ministry of Agriculture
	Supporting Agency / Organization in Japan		None
Horticulture Research and Development Project	Overall Goal		Horticulture becomes more popular as a source of income in the target area (six eastern dzongkhags).
	Project Purpose		The trained and extended farmers practice appropriate technologies for commercialization of horticulture.
	Outputs	Output 1	Horticulture farming practices and crops in the target area are identified according to production and market potential.
		Output 2	Technical training system on horticulture is strengthened in Renewable Natural Resources Research and Development Center (RNRRDC), Wengkhar.
		Output 3	The structure for providing seeds and seedlings is established in

[2] Bhutan is comprised of 20 provinces (dzongkhags) and each dzongkhag consists of administrative units called 'gewog'. Lhuentse Dzongkhag and Mongar Dzongkhag, where the AREP was implemented, have eight gewogs and seventeen gewogs respectively.

			RNRRDC, Wengkhar, nursery farmers, seed growers and National Seed Center (NSC) Tashi Yangtse farm.
		Output 4	Group for marketing is mobilized and/or formed in collaboration with the Regional Agriculture Marketing & Cooperatives Office (RAMCO).
	Total Cost (Japanese side)		359 million yen
	Period of Cooperation		March, 2010 – March, 2015
	Implementing Agency		Renewable Natural Resources Research and Development Center Wengkhar, Department of Agriculture, Ministry of Agriculture and Forests
	Supporting Agency / Organization in Japan		Agricultural Production Bureau, Ministry of Agriculture, Forestry and Fisheries
Related Projects			[Technical Cooperation] - Dispatch of Independent Expert (2000-2004) - Strengthening Farm Mechanization Project (2008-2011) - Strengthening Farm Mechanization Project Phase 2 (2014-2017) - Integrated Horticulture Promotion Project in the West Central Region (2016-2021 (scheduled)) [Grant Aid] - The Project for the Rehabilitation of Taklai Irrigation System in Sarpang District (2013) - The Project for Improvement of Machinery and Equipment for Construction of Rural Agricultural Road (2005) - The Project for Improvement of Machinery and Equipment for Construction of Rural Agricultural Road (Phase 2) (2010) - The Project for Improvement of Machinery and Equipment for Construction of Rural Agricultural Road (Phase 3) (2016) - Food Security Project for Underprivileged Farmers (2KR) (a total of 24 times from FY 1984 to FY2012) [International Fund for Agricultural Development] - Market Access and Growth Intensification Project (MAGIP) (2011-2015) - Comprehensive Market-Focused Agriculture and Rural Livelihood Enhancement Project (CARLEP) (2015-2022 (scheduled))

1.3 Outline of the Terminal Evaluation

As the efforts in the AREP were followed by the HRDP, this section refers to the project in terms of achieving the Project Purpose and the Overall Goal, as well as the recommendations at the time of Terminal Evaluation of the HRDP.

1.3.1 Achievement Status of Project Purpose at the Terminal Evaluation

It was confirmed that technologies in fruit cultivation, vegetable seed production, and seedling production, which farmers had never tried before, had started to be applied through the training and extension approach introduced in this project. While several rounds of training and extension activities to foster new farmers had yet to be implemented till the end of the project, the Project Purpose was mostly achieved, judging from the past achievements in a comprehensive way.

1.3.2 Achievement Status of Overall Goal at the Terminal Evaluation

It was observed that the cash crops had diversified and the volume of vegetable intake at the household level had increased due to the effects of project implementation, indicating positive impacts toward the achievement of the Overall Goal. At the time of Terminal Evaluation, indicators of the Overall Goal were revised upward based on the previous achievements, and it was assumed that those indicators could be used for evaluation in the ex-post evaluation.

1.3.3 Recommendations from the Terminal Evaluation

As for the items to be implemented by project completion, promotion of training and extension approach, securing of a budget for post-project activities, and handing-over of farmland management from the experts were recommended. In addition, the following recommendations were made as items to be implemented after project completion.

Table 1: Recommendations toward Post-Project Period

Item	Recommendation
Implementation of follow-up activities after project completion	Wengkhar Center is expected to carry out follow-up activities as planned after project completion in cooperation with related organizations, such as Dzongkhag Agricultural Office and extension officers.
Strengthening of cooperation between farmers and markets	Joint shipping to schools by farmer groups has started with the support from the Regional Agriculture Marketing & Cooperatives Office (hereinafter referred to as RAMCO)[3] in the eastern region,

[3] The eastern regional office of the Department of Agricultural Marketing Cooperatives under the Ministry of Agriculture and Forestry of Bhutan (one of the departments of the Ministry of Agriculture and Forestry, being in charge of marketing of agricultural crops)

	and it is hoped that the support from related organizations, including dzongkhag agricultural offices, will continue from now on. The Wengkhar Center, dzongkhag agricultural offices, and RAMCO need to collaborate to secure sales destinations, such as National Seed Center, so that the seed farmers fostered through this project can sell their seeds smoothly.
Research and extermination of pests, such as fruit flies	As the damages by fruit flies, etc. have been increasing, Wengkhar Center needs to continue to monitor fruit flies, etc. and raise awareness among farmers. The Ministry of Agriculture and Forests also needs to examine practical pest control methods in accordance with the country's organic agriculture policy[4].
Extension to farmers operating under inferior production conditions	In this project, training has been provided by selecting the farmers with a high desire for increasing production and with relatively easier access to markets, through which the desired Outputs have been produced. Once the extension of horticulture has progressed in the future, extension activities for farmers operating under inferior production conditions need to be considered.

Source: Based on the HRDP Terminal Evaluation Report

2. Outline of the Evaluation Study

2.1 External Evaluator

Keisuke Nishikawa, Japan Economic Research Institute Inc.

2.2 Duration of Evaluation Study

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

Duration of the Study: September, 2016 – October, 2017

Duration of the Field Study: January 16 – February 7, 2017 and April 21 – May 4, 2017

3. Results of the Evaluation (Overall Rating: A[5])

3.1 Relevance (Rating:③[6])

3.1.1 Consistency with the Development Plan of Bhutan

In Bhutan, 'Bhutan 2020' was formulated in 1999 as a development plan in which horticulture was stressed as a means of achieving an increase in farmers' incomes, a creation of export revenues, and an improvement of nutrition status of the rural population. A five-year plan was prepared based on this long-term development plan.

In 'The Ninth Five Year Plan' (2002-2007), the development plan at the time of planning of the AREP, key challenges in the agriculture sector were improvements in rural income,

[4] At the time of ex-post evaluation, it was heard that while there was a policy direction to promote organic farming, there were not a few challenges to be solved for Bhutanese agricultural produce to be approved internationally as organic produce.

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

[6] ③: High, ②: Fair, ①: Low

achievement of national food security, conservation and management of agricultural resources, and creation of employment opportunities. In the plan, agricultural modernization, including horticulture to achieve improvements in agricultural productivity and market access, and rural road development were planned to be carried out. In concrete terms, materials and equipment would be supplied and agricultural mechanization and the development of both the domestic and international market would be promoted in order to achieve the policy of renewable natural resources (hereinafter referred to as 'RNR', that is, agricultural, livestock and forestry resources). At the time of completion of the AREP, the Royal Government of Bhutan (hereinafter referred to as 'RGoB') positioned poverty reduction as an important agenda in the national plan. In 'The Tenth Five Year Plan' (2008-2013), reduction of the population of the poor to less than 15% (less than 20% in rural areas) by 2013 was set as the target. In one of five key areas, 'Synergizing Integrated Rural-Urban Development for Poverty Alleviation', improvements in agricultural productivity and commercialization of agriculture through the promotion of horticulture and cash crop support were prioritized.

The national development plan at the time of planning of the HRDP, a successor of the AREP, was the same as the one at the time of completion of the AREP, in which the above areas were emphasized.

At the time of completion of the HRDP, 'The Eleventh Five Year Plan' (2013-2018) promoted a strategy to commercialize the agricultural sector so that it would lead to an increase in farmers' incomes, an improvement of rural livelihoods, import reduction and export promotion, and creation of employment opportunities for youths.

Therefore, in all three five-year plans over the period spanning both projects, it was confirmed that agriculture was consistently positioned as an important sector in which an increase in income through an improvement in productivity, commercialization, employment creation, and so forth was emphasized as a direction. Also, the RNR policy, with its focus on agriculture, was treated as an important sector having an independent chapter in each of the five-year plans.

Based on the above, both projects were consistent with the development plans of Bhutan both at the time of planning and completion of each project.

3.1.2 Consistency with the Development Needs of Bhutan

3.1.2.1 Challenges of Agricultural Development

At the time of planning of the AREP, the following two challenges were mainly pointed out in terms of agricultural development and extension in Bhutan.

- Technical extension to farmers was not well implemented due to low technical skills of extension agents allocated at extension centers of each gewog under the administration

of dzongkhags, fragile extension structures, a lack of cooperation between research and extension services, and moreover, poor access due to a precipitous landscape.

- It was an issue that technologies to improve the productivity of agricultural produce, and new varieties and crops suitable to each location be developed, improved, and introduced, and the extension mechanism be subsequently strengthened.

While these challenges were somewhat improved after the implementation of the AREP, there remained the issue of systematic cashing in on crops rarely being practiced, as cultivated fields and varieties of crops were limited due to the precipitous landscape and infrastructure, such as markets and roads, was not developed at the time of AREP completion / HRDP planning.

After that, in 2010s, as the access to markets improved with rural roads becoming developed mainly by the Agriculture Engineering Division of the Department of Agriculture under the Ministry of Agriculture and Forests, some farmers gradually expanded their interest in the sales of cash crops. The HRDP was a project that supported sales and marketing in that context, and according to the Implementing Agency, various researches, the technology extension structure for farmers, and the marketing of crops improved to some extent through these projects. On the other hand, even at the time of HRDP completion, efforts were needed to disseminate the technologies and crops to more farmers in order to improve their productivity and increase farmers' incomes through distributing more agricultural produce. Additionally, there remained more challenges in the eastern region in terms of a further enhancement of irrigation for horticultural crops, development of all-weather farm roads for better market access, measures against damages to agricultural produce by wild birds and animals, pest control, and increasing the area of abandoned farmland due to a decrease in the agricultural labor force.

In sum, while the issues pointed out at the time of planning of the AREP and HRDP made a certain degree of improvement through project implementation, not all farmers were able to enjoy the benefits, and it was still necessary to implement the measures of both projects in the entire eastern region. Also, efforts to improve agricultural productivity and marketing, such as through the development of rural and agricultural infrastructure and through pest control and so forth, still remained as item of an important agenda.

3.1.2.2 Poverty Rate

According to the documents provided by JICA, agricultural development in the eastern region was lagging behind compared to that in the West in Bhutan; at the time of AREP planning, 97% of the poor in Bhutan were residing in rural areas, out of which nearly half lived in the eastern region (18.7% in the western region, 29.5% in the central region, and 48.8% in the eastern region), showing regional disparities.

After that, in 2014, Bhutan issued a multi-dimensional poverty rate calculated using a total of 13 indicators related to education, health and living standards (the data were for 2012), and the poverty rates of each dzongkhag in the eastern region were as follows.

Table 2: Poverty Rate of Each Dzongkhag in the Eastern Region (2012)

	Dzongkhag	Multi-dimensional Poverty Rate	Population Ratio
Eastern Region	Lhuentse	10.4%	2.5%
	Mongar	20.9%	6.6%
	Pemagatsel	11.6%	3.8%
	Samdrup Jongkhar	16.4%	5.2%
	Tashigang	16.5%	2.8%
	Tashi Yangtse	14.0%	7.5%
Country of Bhutan		12.7%	100%

Source: 'Bhutan Multi-Dimensional Poverty Index 2012'

Though there were only the poverty rates from 2012, four of the six dzongkhags exceeded the national average (meaning that they were worse than the national average), indicating that poverty reduction is still a significant challenge in the eastern region.

3.1.2.3 Importance of the Agricultural Sector

In the labor market of Bhutan, the ratio of those in the agricultural and forestry sector (2015) was high at 58% (male: 27.5%, female: 30.5%) of the entire labor force (according to the 2016 Statistical Yearbook).

Agriculture makes up about 10% of the GDP, as shown in Table 3, but the rate has been gradually increasing. Coupled with the large size of the labor force, positioning of agriculture as the key industry is considered to have remained the same at the time of planning and completion of the HRDP.

Table 3: Proportion of Agriculture (Production of Agricultural Produce) in GDP and the Growth Rate of Agriculture from each Previous Year

	2011	2012	2013	2014	2015
Proportion of Agriculture in GDP	9.0%	8.9%	8.9%	10.1%	10.1%
Growth Rate from the Previous Year	2.9%	2.4%	3.4%	4.0%	5.7%

Source: 2016 Statistical Yearbook

From the analysis of the issues in agricultural development, poverty rate and the importance of the agricultural sector above, both projects, which supported agricultural research, extension, and marketing in the eastern region of Bhutan, were consistent with the development needs at the times of both planning and completion of each project.

3.1.3 Consistency with Japan's ODA Policy

At the time of AREP planning, one of the four priority areas of Japan's ODA to Bhutan was agricultural and rural development, in which 'agricultural infrastructure development (including the promotion of agricultural mechanization), agricultural technology development and extension' were to be promoted (Source: Country Data Book 2004 [Ministry of Foreign Affairs]). In addition, JICA's 'Country Assistance Plan for Bhutan in FY2004' had 'agricultural and rural development (agricultural technology improvement and agricultural infrastructure development)' as one of four priority areas for assistance which planned to support increases in rural income and improvements in rural livelihood through agricultural development. Concretely, the development and extension of production technologies for agricultural produce, including high value-added crops in the eastern region of the country, was emphasized as a priority agenda along with the development of agricultural production infrastructure to rectify regional disparities and reduce poverty.

At the time of HRDP planning, five years later, one of Japan's priority areas for assistance to Bhutan was also agricultural and rural development, areas in which Japan was to cooperate in agricultural modernization and promotion, and so forth (Source: Country Data Book 2009 [Ministry of Foreign Affairs]). JICA's Country Assistance Plan (formulated in 2009) also positioned agricultural and rural development as one of Japan's priority areas for assistance to Bhutan. In the agricultural technology development and extension program, assistance was to be provided for improving and disseminating agricultural technologies to increase agricultural income through improving productivity of cash crops.

Therefore, both projects can be said to have been consistent with Japan's ODA policy at the time of planning of each project.

At the times of planning and completion of both projects, agriculture was consistently regarded as an important sector, and income improvement through productivity improvement, commercialization and employment creation and so forth was set as the direction. Both projects were sufficiently in line with this direction. Also, agricultural promotion through technology extension, marketing promotion and so forth continued to be an essential area from the viewpoint of their importance to the industry as well as poverty reduction in the eastern region. Both projects were highly consistent with the development needs both at the time of planning and completion. Moreover, it was confirmed that both projects were in line with Japan's ODA policy to support agricultural and rural development in Bhutan.

In light of the above, these projects were highly relevant to Bhutan's development plans and development needs, as well as Japan's ODA policy. Therefore, their relevance is high.

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

3.2.1 Effectiveness

3.2.1.1 Project Outputs

The AREP and HRDP as a whole were projects to disseminate horticulture business as a source of income through the improvements of mechanisms of agricultural research, extension and marketing in the eastern region of Bhutan, where agricultural development was lagging and the poverty rate was high. Both projects had three to four Outputs, and the achievement levels at the time of project completion were largely as shown in Table 4.

Table 4: Overall Achievement Level of the Output Indicators of each Project at the time of Project Completion

Project	Output, Indicator (at the time of planning)	Actual (at the time of project completion)
AREP	Output 1: Suitable technical options are developed for dissemination. Indicator 1: At least 2 varieties in rice, 3 varieties in vegetables, and 3 varieties in fruits are recommended by the end of the project. Indicator 2: At least 5 different technical manuals on production management are produced by the end of the project. Indicator 3: 10-15 different forms of extension materials are produced by the end of the project.	Output 1: Achieved Indicator 1: During the project period, 2 varieties of rice, 8 varieties of vegetables (cauliflower, mustard leaf, carrot, etc.), and 5 varieties of fruits (persimmons, mandarin, etc.) were recommended and distributed to farmers. Indicator 2: The 'Rice Cultivation Guidebook' for rice cultivation was prepared in 2008 and distributed to 206 gewogs all over the country. For horticultural crops, a total of 8 manuals, such as ones on citrus farming, vegetable cultivation, dissemination method and so forth were completed. Indicator 3: 35 extension materials, including 16 leaflets and 2 calendars, were produced and being used in each dzongkhags by the time of project completion.
	Output 2: Extension system is strengthened in 2 Dzongkhags for better technical service delivery. Indicator 1: Every Extension Agent of the project area receives training at least once a year. Indicator 2: The self-assessment of planning management among Extension Agents improves during the project period. Indicator 3: The Extension Agent's competency rating on planning management improves during the project period.	Output 2: Partially achieved Indicator 1: A total of 24 extension agents (8 from Lhuentse and 16 from Mongar) participated in skill development training. As for the participation rate, the indicator to have all extension agents receive training once a year was not achieved. Indicator 2: The 'Self-assessment Sheet' and the 'Self-assessment Data', recommended at the time of Mid-term Review (2007), could not be confirmed in the Terminal Evaluation. 11 out of 24 extension agents participated in training in Japan and took training on planning management method. Indicator 3: The data related to competency rating, recommended at the time of Mid-term Review, could not be confirmed due to insufficient development of said data.
	Output 3: Farmers' technical capacity is	Output 3: Partially achieved

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

	improved through pilot testing of farmer, research and extension linkage in 4 model gewogs. Indicator 1: 40% of randomly selected 200 farming households from 4 model gewogs participate in training programs implemented in the project. Indicator 2: 50% of randomly selected 200 farming households from 4 model gewogs are aware of recommended technologies. Indicator 3: 45% of randomly selected 200 farming households from 4 model gewogs participate in project field activities excluding training (i.e. demonstration, field days, competition and so on).	Indicator 1: The percentage of farmers in the four model gewogs that participated in the farmer training program of the project was 16%, 32%, 45% and 47%, showing that three out of four gewogs achieved 80% or higher of the indicator values. Indicator 2: Out of the technologies proposed similar to those in the baseline survey (e.g., agrochemicals, seedling nurturing, pruning, and so forth), the percentage of farmers that recognize them as the ones recommended through the activities of extension agents were between 79% (pruning) and 98% (agrochemicals, grading). Indicator 3: The on-site activities with high rates of participation of farmers from model gewogs were field demonstration (demonstration in the field where crops were actually cultivated) (44%), which was mostly in line with the target. However, the rates for the field day and the group support activities were both 29%, that of the competition was 16%, and that of the study tour was 6%, none of which reached their targets.
HRDP	Output 1: Horticulture farming practices and crops in the target area are identified according to production and market potential. Indicator 1: Horticulture development guidelines / manuals are developed.	Output 1: Achieved Indicator 1: 12 kinds of manuals and extension materials for gewog extension agents and farmers were developed. In addition, based on the experiences, etc. of the AREP, cultivation and analysis-evaluation of the varieties of the crops introduced from inside and outside the country were conducted, and the applicable crops and areas at the farmers' level were identified (e.g., three phyletic fruits and 38 phyletic vegetables were introduced).
	Output 2: Technical training system on horticulture is strengthened in Renewable Natural Resources Research and Development Center (RNRRDC), Wengkhar. Indicator 1: 90 % of trained farmers apply key training contents in the field (about 100 farmers trained per year). Indicator 2: 90 % of trained extension officers apply key training contents (about 15-20 staff trained per year). Indicator 3: Training organized by the project found to be relevant and effective by ≥80 % of the participants.	Output 2: Achieved Indicator 1: In the Impact Survey* conducted by the project team, it was at 99% (158 out of 159 farmers), exceeding the target value. ** Toward the completion of the HRDP, a survey was conducted in the six dzongkhags in the target area from May-June 2014, using a questionnaire form and interviews of 35 extension agents, 16 counterparts at Wengkhar Center, 43 researchers, etc. who received training at Wengkhar Center, and 424 trained farmers (parameter-508).* Indicator 2: It was at 96.8% in the Impact Survey (30 out of 31 valid responses), exceeding the target value. Indicator 3: Regarding the evaluation of training programs, 99.4% of farmers and all (100%) of the extension agents and researchers evaluated the training as 'Very good' or 'Good' in the Impact Study, which exceeded the target value.
	Output 3: The structure for providing seeds	Output 3: Achieved

	and seedlings is established in RNRRDC, Wengkhar, nursery farmers, seed growers and National Seed Center (NSC) Yangtse farm. Indicator 1: Seed and seedling production and distribution mechanism in RNRRDC Wengkhar, nursery farmers and seed growers are developed (target production of about 4,500 fruit seedlings and 200 kg vegetable seeds per year). Indicator 2: 100 % of trained farmers are provided with basic materials to apply skills acquired from the training program. Indicator 3: Seed farm in National Seed Center Yangtse revived and begins seeds & seedling production.	Indicator 1: An annual average of 7,877 fruit tree seedlings and 307.2kg of vegetable seeds (83.5kg by Wengkhar Center and 223.7kg by seed farmers) were produced, both of which exceeded the target value. Seedlings were distributed mainly to trained farmers by Wengkhar Center and to nearby extended farmers by seedling farmers. Indicator 2: Original seeds, anti-bird nets, packing machines and labels, etc. were provided to all trained seed farmers. Seedlings, pruning shears and so on were provided to all trained seedling farmers. Indicator 3: The project team supported the development of Tashi Yangtse Seed Center and the training of its staff, where 362kg of vegetable seeds and 10,000 seedlings of passion fruit trees were produced.
	Output 4: Group for marketing is mobilized and/or formed in collaboration with the Regional Agriculture Marketing & Cooperatives Office (RAMCO), Mongar. Indicator 1: 50% of groups in which trained farmers belong to start horticulture marketing activities.	Output 4: Achieved Indicator 1: According to the Impact Survey, trained farmer groups had started activities for marketing and shipping of agricultural crops jointly. The rate of joint shipping reached 96%. As there were hardly any joint shipping activities prior to this project, the target can be said to have been achieved.

Source: Terminal Evaluation Report of the HRDP, Information provided by the Implementing Agency and the judgment results of the Evaluator

The achievements of the Outputs of each project, sorted and summarized from the above table, were mainly as follows.

[AREP]

While Output 1 was achieved as an appropriate agricultural technology with an objective of extension was developed at RNRRC-East, Output 2 was only partially achieved as the indicator was at a level which required all extension agents to take training courses every year, meaning that an absence of only one extension agent would result in non-achievement of the indicator. However, according to the document provided by JICA, training courses for extension agents were implemented every year until project completion, and a total of 174 extension agents from the six dzongkhags in the eastern region participated. In addition, seeds and technical support on mushrooms and rice cultivation were provided to a total of 88 highly motivated extension agents in the two target dzongkhags. Therefore, the extension structure for better technical services was considered to have been strengthened to some extent. Regarding Output 3, only the information from three months before project completion was captured, which shows that some indicators were achieved while there were other indicators with achievement rates

that were not necessarily high. Output 3 as a whole was partially achieved.

[HRDP]

Output 1 can be said to have been achieved as the manuals and extension materials had been developed and utilized. Output 2 was also judged to have been achieved as each indicator had been achieved by the time of the Terminal Evaluation. Outputs 3 and 4 are also considered to have been achieved as all indicators had exceeded their targets at the time of Terminal Evaluation.

3.2.1.2 Achievement of Project Purpose

In both projects, the Project Purpose was expected to be achieved through the achievement of the Outputs. The indicators set to measure the expected level of achievement and the actual level of achievement at the time of project completion are shown in Table 5.

Table 5: Achievement Level of the Indicators for the Project Purpose

Project	Indicator	Actual
AREP Technical delivery mechanism between research and extension is improved.	Indicator 1: The number of farmers adopting the technologies or varieties developed and/or disseminated increases by 30% in 4 model gewogs and adjacent gewogs.	Indicator 1: The achievement was limited. The number of farmers adopting improved varieties of rice increased by 3% compared to 2004. Farmers who adopted improved varieties of vegetables increased by 18% for chilies, 1% for potatoes, 27% for radishes and decreased by 15% for cabbages. As a whole, farmers who adopted improved varieties increased by 7.8% on average. As for fruits, they increased by 25% for citrus, 92% for persimmons, 16% for pears, 25% for peaches and decreased by 17% for plums.
	Indicator 2: 80% of research-extension joint activities agreed at Working Group Meetings are effectively implemented.	Indicator 2: Largely achieved As the definition of 'effectively' was not clear, evaluation was done based on the number of activities. 81 activities were implemented among the 147 activities that had been approved at the working-group meeting (the average implementation rate over the four-year period was 55%). However, the implementation ratio which was 26% in FY2005 increased to 75% in 2006, 69% in 2007 and 77% in 2008. The factor for the implementation ratio not reaching 80% was the budget constraint.
	Indicator 3: Farmer, extension and research linkage strengthening as a model concept	Indicator 3: Achieved The implementation method of the 'Research Outreach Program (ROP) [8],

[8] A method in which research outcomes are disseminated by systematically conducting several training programs and hands-on training for farmers for a certain period of time in collaboration with the agricultural offices and extension

	is developed and well documented during the project period.	including the activities, such as on-farm demonstration, hands-on training, crop competitions and so forth, as well as the technologies introduced were developed and improved through the project. As a result, two kinds of documents, an extension manual utilized by extension agents in their ROP and an implementation guide expected to be used nationwide, were developed. It was confirmed that those manuals were being utilized by the extension agents of each gewog.
HRDP The trained and extended farmers practice appropriate technologies for commercialization of horticulture	Indicator 1: Horticulture is practiced in 5,000 acres of arable dry field in the target area.	Indicator 1: Not achieved. The size of horticultural land was 2,166 acres, not reaching the target of 5,000 acres. The figure of 5,000 acres was calculated under the following method: (1) An average unit of arable land (in this case. Dry fields) per farming household is to be 2.24 acres, of which 30% is assumed to be directed to agricultural use: 0.66 acres (2) (200 trained farmers per year + 1,278 extended farmers per year = 1,478 farmers per year) x 5 years = 7,390 in total (3) 0.66 acres/person x 7,390 farmers = 4,877 acres. Therefore, approximately 5,000 acres is set as the target.
	Indicator 2: 75 % of the trained farmers develop demonstration farms and conduct farmer to farmer extension.	Indicator 2: Achieved 100% of the farmers trained established demonstration farms, and 86% (144/167 farmers) shared and disseminated their knowledge to 6.4 farmers on average. Therefore, it can be regarded that the indicator was achieved. While 69% of the farmers trained were males, female farmers, accounting for more than half of the farming labor force, also benefited indirectly according to the Implementing Agency, as farming activities are normally carried out by all members of the family.
	Indicator 3: 50 % of trained and extended farmers start commercial horticulture.	Indicator 3: Achieved An average of 63.9% of farmers trained and extended farmers started commercial horticulture, which exceeded the target value.

Source: Information provided by JICA and the Implementing Agency

The achievements of the Project Purpose of each project, sorted and summarized from the table above, were as follows.

agents of each dzongkhag

[AREP]

As the Terminal Evaluation was conducted at a time when this project was mostly completed, the achievement levels of indicators at the time of project completion were judged by using the information mainly from the Terminal Evaluation.

Regarding Indicator 1, while the adoption rates of improved varieties of fruits were high, the introduction rates of improved varieties of rice and vegetables were stagnant, showing low growth. Therefore, the achievement was limited.

While the meaning of 'effectively' in Indicator 2 was not clear, the target value was nearly achieved, as the rate of implementation was 77% at the time of completion (the 2008 data was used as the project was completed in June 2009).

Indicator 3 can be said to have been achieved as the method of the Research Outreach Program (ROP), in which research outcomes were disseminated by conducting training programs and hands-on training for farmers in collaboration with the agricultural offices and extension agents of each dzongkhag, was firmly established and the outcome was documented.

Based on the above, the Project Purpose, which aimed to disseminate agricultural practices through collaboration of research and extension activities, can be judged to have been achieved.

This project had a goal aiming to improve the skills of the people concerned through improvements in agricultural technologies, the development of an extension structure, and collaboration between farmers, research, and extension so that agricultural extension would be promoted as a result. Regarding the achievement level of the Outputs, the data on self-assessment and the competency rating related to Output 2 were not sufficiently developed, and the achievement level of participation rates in on-site activities, pertinent to Output 3, was not sufficient, either. While the target values of other indicators as a whole were largely achieved, the overall achievement of the Outputs can be judged to have been partially achieved. With regard to Project Purpose, while Indicator 1 was only partially achieved, Indicators 2 and 3, which were particularly essential factors for this project as it aimed to implement research and extension activities and to establish a model concept, indicated more than a certain level of achievement. Therefore, the Project Purpose as a whole can be judged to have largely been achieved.

[HRDP]

As the Implementing Agency had not captured information from the time of the Terminal Evaluation, implemented four months before project completion till the end of the project, the achievement level of indicators at the time of project completion was judged by using information from the Terminal Evaluation conducted by the JICA survey team in addition to the project completion report prepared by the project experts.

As shown in Table 5, while Indicators 2 and 3 had exceeded their target values at the time of Terminal Evaluation, Indicator 1 was at less than half of its target. The farmers targeted for acreage calculation included the farmers trained and supported in this project and the farmers instructed by agricultural extension agents trained in this project. However, the data on farm land size for horticulture purposes of the extended farmers instructed by trained farmers and extension agents were not necessarily captured in a sufficient manner, and the dry fields developed or converted for horticultural use were not as large as expected. It was heard from the experts and the Implementing Agency that the target value set had been ambitious. In fact, the assumption of having 30% of the cultivated land used for horticulture purposes was not grounded solidly, resulting in the target value being significantly higher than its real number.

Therefore, from the viewpoint of the achievement of Project Purpose, it was largely achieved as it was confirmed that the efforts to develop demonstration farms by trained farmers and to disseminate to neighboring farmers were seen and many farmers had started commercial activities, but the sizes of fields for horticultural use were significantly lower than the target. It is considered that the Project Purpose as a whole was partially achieved.

In the HRDP, based on the experiences and outcomes fostered in the AREP, it was aimed to clarify the methods of developing horticulture and marketing of crops, to improve the implementation structure of cultivation technology training and the distribution mechanism of seedlings, and to strengthen marketing activities in collaboration with other groups, and all the Outputs were achieved. The Project Purpose was achieved except for the cultivated areas having fallen below the target values.

As a result of a series of activities over the periods of the AREP and the HRDP, appropriate cultivation technologies suitable to climatic conditions of each location were developed and introduced. Cultivation by many farmers was promoted through systematic training and extension activities, and marketing activities started to be implemented during these projects. As a consequence, more varieties of vegetables and fruits started to be cultivated compared to the initial stage of the project’s commencement, and they have reached the stage of sales and marketing. Therefore, within the Project Purpose, while the

indicator on the areas for horticultural use set in HRDP was not achieved, other indicators for the AREP and HRDP were largely achieved, and it is considered that the non-achievement of the area size for horticultural use in the HRDP is partial in terms of the overall achievement level of both projects. Therefore, the Project Purpose of both projects as a whole was largely achieved.

3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

The Overall Goal expected in the AREP was that technical options for improving agricultural productivity would increase and be adopted in the eastern region after project completion, and such goal expected in the HRDP was that the horticulture would become a general source of income for farmers. The achievement levels of the indicators set for the Overall Goal in both projects were captured in the ex-post evaluation study, whose summary is shown in Table 6.

Table 6: Achievement Level of Overall Goal

Project	Indicator	Actual
AREP Potential technical options for increasing agricultural productivity are identified and adopted in the eastern region.	Indicator 1: Lessons learnt from the model concept are used to improve RNR (agricultural) research and extension strategy at the national level.	Indicator 1: Achieved Lessons learned for Wengkhar Center and the Department of Agriculture extracted from the 'Research Outreach Program (ROP)' were that it was effective that the traditional method of 'training + distribution of seeds and seedlings' be shifted to the identification of crops based on research, implementation of systematic training, hands-on training, etc., and on the development of skills of researchers, extension agents, and farmers through those activities. After the completion of this project, the activities evolved continuously in the HRDP in all six dzongkhags in the eastern region, and according to the Department of Agriculture of the Ministry of Agriculture and Forests and according to Wengkhar Center, they became the model for research and extension activities in other RNR Research Centers in the country (changed to Research and Development Center later).
	Indicator 2: The yield of horticultural crops in the eastern region increases by 15%.	Indicator 2: Achieved The agricultural statistics of the six dzongkhags in the eastern region (Table 7) captured at the time of ex-post evaluation show that the production volume of major horticulture crops increased in the range of 39% - 358% from 2009 to 2015, substantially higher than the target value of 15%.
	Indicator 3: The yield of rice in the eastern region increases by 10%.	Indicator 3: Achieved After the completion of this project in 2009, paddy production decreased in two of the eastern dzongkhags, but increased by 13% from 2009 to

		2015 in the six eastern dzongkhags as a whole.
HRDP Horticulture becomes more popular as a source of income in the target area.	Indicator 1: The trained and extended farmers in the project target areas increase their annual income from sale of horticulture produce from Nu. 8,400 to Nu. 20,000 by 2020.	Indicator: To be achieved As the annual income of farmers (2016) has not been captured, the concrete amount of income was unknown. However, the Implementing Agency understands that the income has been increasing further as activities in farmers' production and sales have become more active through the implementation of the 'Post-HRDP Project' [9]. In the beneficiary survey, 70% of the trained farmers had an increase in their income, with an average increase of 59%.
	Indicator 2: 800 farmers are trained by RDC Wengkhar by 2020.	Indicator 2: Expected to be achieved During the first year of the 'Post-HRDP Project' led by the Implementing Agency, 102 farmers engaged in a systematic training program at Wengkhar Center, making a total of 767 such farmers as of May, 2016.

Source: Information provided by JICA and the Implementing Agency (Judgment by the Evaluator is added as appropriate.)

[AREP]

In the Research Outreach Program (ROP), an extension of various technologies leading to productivity improvement, such as spraying of agrochemicals, pruning, grading, seedling nurturing and so forth, was planned and implemented, and since the project was completed, it was being applied and expanding as a model of research, development and extension activities mainly in dzongkhags in the eastern region besides Lhuentse and Mongar dzongkhags which were the target locations of the project. It showed that the extension activities were expanding geographically.

With regard to the change in the volume of horticultural crops and rice, in the eastern region, changes in the production volume of agricultural crops representative of the target locations of both projects were calculated using the agricultural statistics issued by the Ministry of Agriculture and Forests. The results are shown in Table 7.

[9] After the completion of the HRDP, the same activities are to be continued until 2020 with solely the budget of the Implementing Agency. It is called the 'Post-HRDP Project'.

Table 7: Changes in Production Volume of Major Agricultural Crops in the Eastern Region

	2004→2009	2009→2015	2004→2015
Paddy (two dzongkhags targeted)	170%	88%	150%
Paddy (six dzongkhags in the eastern region)	144%	113%	163%
Mandarin	134%	139%	186%
Pear	216%	432%	935%
Broccoli	214%	458%	979%
Cauliflower	205%	365%	749%
Green leaves	136%	152%	207%

Source: Agricultural Statistics, each year (Department of Agriculture, Ministry of Agriculture and Forests)
Note: The data for 'paddy (two dzongkhags targeted)' are for Lhuentse and Mongar dzongkhags.

Over the period of 2004 (when the AREP commenced) to 2009 (when the AREP was completed), the production volume of rice in the two target dzongkhags rose to 170%. However, as rice cultivation was not included in the HRDP and a focus was placed on the cultivation support of horticultural crops, the volume of rice from 2009 to 2015 decreased by 12%, which was still a 50% increase compared to 2004. In the six eastern dzongkhags as a whole, the production volume of rice kept rising after the completion of the AREP, with a 13% increase from 2009 to 2015. While it was difficult to examine whether the outcomes of production support in the two dzongkhags in the AREP directly spread to the entire eastern region, the production volume maintained a positive trend.

As for horticultural crops, the production volume of representative vegetables and fruits of the six eastern dzongkhags were captured. Citrus volume increased by 34% from commencement till completion of the AREP, and increased further after that. As a consequence, the production volume in 2015 was 186% of that in 2004, showing a significant increase. Other major horticultural crops, whose cultivation was supported through the AREP and HRDP, recorded considerable increases in the region as a whole, as shown in Table 7. Moreover, it is estimated that more fruits can be harvested as the time will come when the fruit trees (such as persimmons) planted during the HRDP will start bearing fruits. Therefore, the Overall Goal can be judged to have been achieved.

[HRDP]

The indicators of HRDP's Overall Goal were the following until before Terminal Evaluation.

- Indicator 1: The trained and extended farmers in the project increase their incomes by 80% by 2020 (baseline of Nu8,400).
- Indicator 2: 500 farmers are trained by RNRRDC, Wengkhar and the trained farmers extend their skills to others.

However, the annual income of farmers in the target area of this project was 15,790 ngultrum at the time of Terminal Evaluation, revealing that it had already been exceeding the target value of Nu 15,120[10]. Because of this, at the time of Terminal Evaluation, the indicator was revised upward for the ex-post evaluation to be Nu 20,000 by 2020. As for Indicator 2, a total of 508 farmers had already received training, with 80% of them sharing and extending their knowledge to an average of 6.4 farmers at the time of the Terminal Evaluation, also revealing that this indicator had been achieved. This indicator was revised upwards to foster 800 farmers by 2020.

In the ex-post evaluation, a beneficiary survey[11] was conducted on some of the farmers trained through the HRDP and the status of increased income was captured. As shown in Figure 1 and 2, 69% of the farmers replied that their production volume had increased after the training, and 70% of the farmers replied that their income had increased. The rate of increased income from the time they were receiving training to the point of ex-post evaluation was 59% on average. It is expected that the income of farmers will continue to rise in consideration of the following factors.

(1) The farmers trained through the HRDP started feeling a benefit of training in terms of income several years after commencement of the project.
(2) The number of farmers trained during the one-year and three-month period from 2014 to 2015 in the final stage of the project was as many as 184 (it was 665 for the entire project period spanning 2010 and 2015), and extension activities were being implemented after that period.
(3) Particularly, more than several years are required for fruit trees to bear fruit and farmers' incomes to increase.
(4) As stated later, 763 acres of land became newly used for horticulture purposes in FY2015/16 in the entire eastern region.

The income of farmers trained and extended in this project increased 88% between 2010 and 2015 (from Nu 8,400 to Nu 15,790) and furthermore, in the beneficiary survey conducted from January – February 2017, the rate of increased income among the farmers that experienced a rise in income was 59%. Therefore, it is estimated as realistic and achievable that their incomes will rise 27%, from Nu 15,790 to Nu 20,000 between 2015

[10] Nu. 8,400 (baseline value) x 180% (1.8) = Nu. 15,120. Ngultrum (Nu) is a Bhutanese currency unit and is equivalent of Indian Rupee. Nu 1= 1.72 yen (as of the end of May, 2017)

[11] In the six dzongkhags covered in the HRDP, 25 trained farmers from each dzongkhag (a total of 150 farmers [25 farmers/dzongkhag x 6 dzongkhags. As the male-female ratio was 69:31, the interview survey was conducted with 100 males and 50 females]). 25 farmers were randomly selected in each dzongkhag from the list of trained farmers. However, when those to be respondent lived very far away, the interviews were limited to an area accessible within 26 days by beneficiary survey assistants. The main questions were changes in production volumes, changes in cultivated varieties, whether joint shipment was done, status of farmer-to-farmer extension, changes in connectivity with markets, whether their market had expanded, changes in income, challenges for production expansion, impacts on the natural environment, and so forth.

and the target year of 2020.

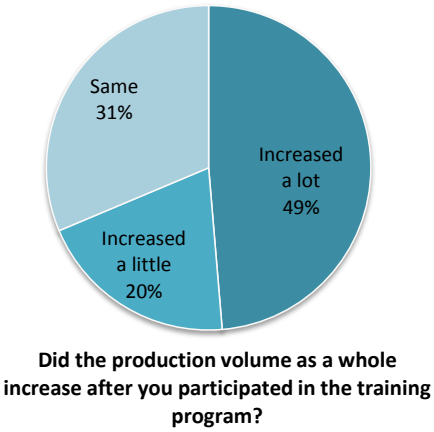


Figure 1: Increase in Crop Production Volume

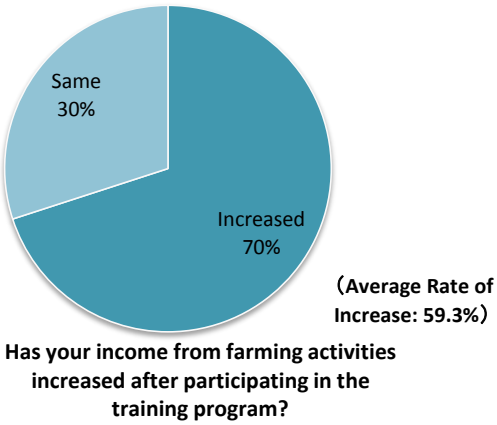


Figure 2: Increase in Farming Income after Training

In the beneficiary survey, the following topics for questions were given and the result shown in the figures below were obtained: Diversification of varieties of horticultural crops after training; Improvement of access through farm road development; Sales of agricultural crops in the market; Cooperation with agricultural extension agents; Extension of knowledge and skills among farmers; Collaboration in marketing activities; and Whether the shipment of vegetables and fruits had increased.

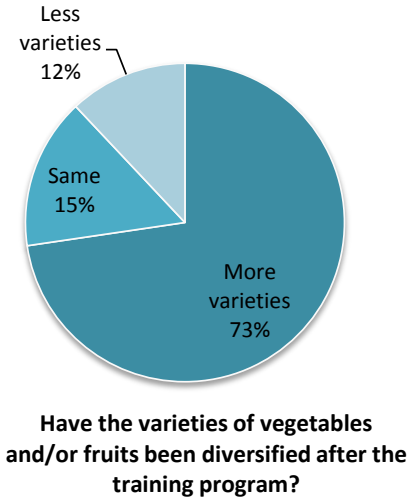


Figure 3: Diversification of Horticultural Varieties

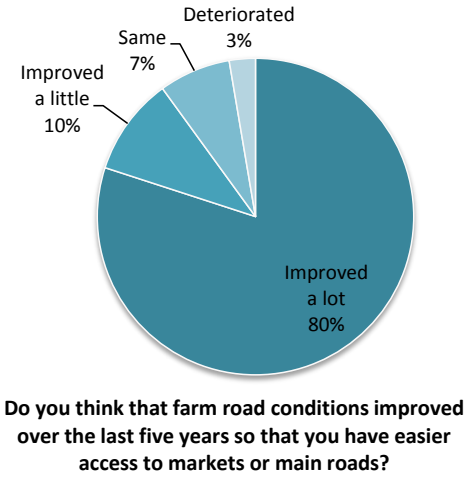


Figure 4: Improvement of Access through Farm Road Development

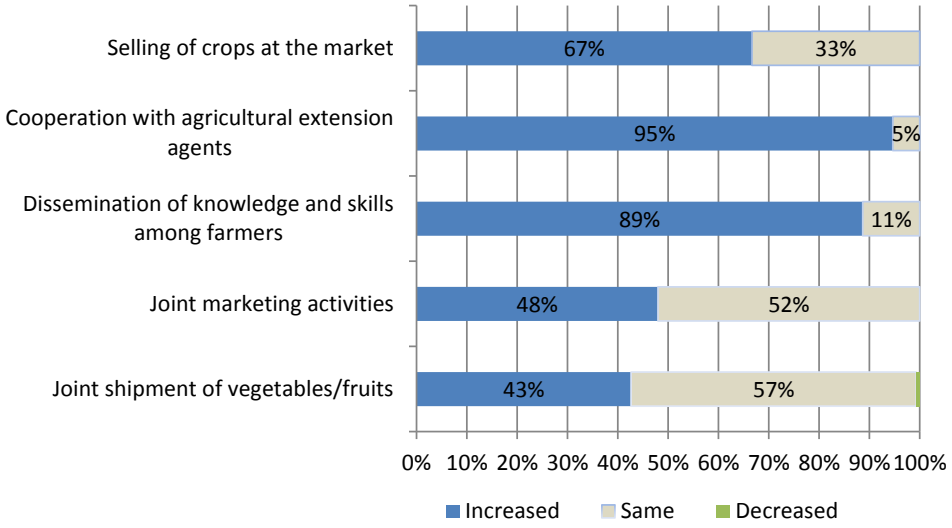


Figure 5: Increase/Decrease in Activities by HRDP

From these results, it was confirmed that many farmers were noticing the effects of the diversification of varieties of horticulture crops and the improvements in access to markets and main roads after project implementation. Also, it was observed that cooperative relationships between agricultural extension agents and farmers had been strengthened and that there were many farmers with increases in sales of crops in the markets. These changes can be said to have been positive impacts through the efforts made in the AREP and HRDP.

Among these changes, the access improvement through farm road development was due to rapid development of farm roads based on the Tenth Five Year Plan (2008-2013), as shown in Table 8. While much of the farm road development was not part of the HRDP[12], this external factor is considered to have contributed to the improvement in access for bringing crops to the markets.

[12] As described in '1.2 Project Outline' related projects, farm road development was implemented under grant aid projects: 'The Project for Improvement of Machinery and Equipment for Construction of Rural Agricultural Road' (2005); 'The Project for Improvement of Machinery and Equipment for Construction of Rural Agricultural Road (Phase 2)' (2010); and 'The Project for Improvement of Machinery and Equipment for Construction of Rural Agricultural Road (Phase 3)' (2016). Road construction equipment procured through these projects have been utilized for farm road development in Bhutan.

Table 8: Length of Farm Road Developed in each Dzongkhags of the Eastern Region

(Unit: km)

Dzongkhag	Before 2008	2008-2013	2013-2014	2014-2015
Lhuentse	4.6	354.8	16.3	22.7
Mongar	2.3	467.3	70.0	42.0
Pemagatsel	No data	256.8	97.4	27.2
Samdrup Jongkhar	No data	193.7	15.7	21.3
Tashigang	No data	647.24	13.0	21.6
Tashi Yangtse	13.0	159.2	10.2	3.9

Source: Data provided by the Implementing Agency

According to the agricultural offices, extension agents and farmers in the six eastern dzongkhags visited during the site survey of ex-post evaluation, what was often heard as positive impacts were that (1) varieties and production volume of vegetables and fruits cultivated through this project increased; (2) agricultural crops could be easily transported, as the farm road was developed through the projects of RGoB; (3) sales of vegetables to nearby schools as major customers enabled stable income and further contributed to the enhancement of the children's nutrition statuses, and so forth.

With regard to the objective of having a cumulative number of 800 trainees set as Indicator 2, the Implementing Agency implemented the 'Post-HRDP Project' after the completion of the HRDP, as stated above, in which activities such as the exhibition of new varieties, distribution of seeds and seedlings, orchard development, diversification and concentration of cultivation, etc. have continued for farmer groups and villages. The number of trainees undergoing systematic training had reached 767 by May 2016, and the objective of 800 farmers is likely to be achieved in 2017 through steadily implementing the project. Furthermore, during the first year of the 'Post-HRDP Project', training programs on vegetable production management and transplanting technologies were implemented for 532 farmers during the field day, farm demonstration and so forth, in addition to the above mentioned systematic training programs.

Based on the above, the AREP has achieved its Overall Goal, and the Overall Goal of the HRDP was largely achieved at the time of ex-post evaluation and is highly likely to be fully achieved by 2020. It is considered that both projects produced a substantially positive impact for the research and extension activities of horticulture in the eastern region. Further evolution of the project effects has been generated through the implementation of the RGoB-funded project after the HRDP and through the utilization of the Outputs in the project of a different donor, showing permeation into the entire region.

3.2.2.2 Status of Project Effects after Project Completion

In the ex-post evaluation, the statuses of the Project Purpose and each Output, whose achievements at the time of project completion were checked in '3.2.1 Effectiveness', were captured and analyzed at the time of ex-post evaluation. The key results are shown in Table 9[13].

Table 9: Achievement of Output and Project Purpose of the HRDP (at the time of Ex-Post Evaluation)

Output	Achievement of Indicator
Horticulture farming practices and crops in the target area are identified according to production and market potential.	Indicator 1 : It was confirmed in the interview survey at the time of the field study that extension agents and trained farmers continued to use the manuals and texts and have been utilizing them in extending to nearby farmers. In addition, three kinds of extension manuals (avocado nursery production and management, staggered vegetable cropping calendar, processing and product development of fruits, vegetables, and maize) were in the pipeline in 2017 for publication by the Implementing Agency.
Technical training system on horticulture is strengthened in Renewable Natural Resources Research and Development Center (RNRRDC), Wengkhar.	Indicator 1: Farmers trained in the HRDP continued to practice what they learned (cultivation of vegetables and fruits), and 26 lead farmers were selected and training was being provided by Wengkhar Center. Indicator 2 and 3: No assessment has been conducted after project completion, but training for extension agents had been implemented every year. It was confirmed in the site survey of the ex-post evaluation (in all six dzongkhags) that the extension agents in each location were visiting their farmers several times a year.
The structure for providing seeds and seedlings is established in RNRRDC, Wengkhar, nursery farmers, seed growers and National Seed Center (NSC) Yangtse farm.	Indicator 1: A total of 19,828 fruit seedlings and 300kg of vegetable seeds were produced in FY2015/16. Indicator 2: The trained farmers were provided with original seeds, bird nets, seedlings and so on, and were carrying out the activities of the Post-HRDP Project (confirmed through visiting three farmers). Indicator 3: The seed farm is planned to expand as a center which will play the role of a research hub on citrus and pest control
Group for marketing is mobilized and/or formed in collaboration with the Regional Agriculture Marketing & Cooperatives Office (RAMCO), Mongar.	Indicator 1: The percentage of groups undertaking marketing activities after project completion has not been surveyed. However, a project called the 'Comprehensive Market-Focused Agriculture and Rural Livelihood Enhancement Project' (hereinafter referred to as 'CARLEP') (2015 – 2022 [scheduled]), supported by the International Fund for Agricultural Development (hereinafter referred to as 'IFAD'), has been implemented, through which efforts were to be made on marketing improvement in cooperation with RAMCO. Also, in the beneficiary survey, 48% of the farmers replied that opportunities to collaborate in marketing activities with neighboring farmers increased (Figure 5).
Project Purpose	**Achievement of Indicator**
The trained and extended farmers practice appropriate technologies for commercialization of horticulture.	Indicator 1: 75 acres of land for horticultural use increased in FY2015/16, as part of Wengkhar Center project. Also, 763 acres of land newly came into use for horticultural purposes in the entire eastern region during the same period. (While no concrete land size is indicated, further expansion is expected as the 'Post-HRDP Project' is going to be continued until at least 2020.) Indicator 2 and 3: The figures were not known as no surveys had been conducted after project completion. According to the Implementing Agency, trained farmers were actively extending to nearby farmers mainly through the 'Post-HRDP Project'. In addition, according to the interviews with agricultural offices of each dzongkhag, the number of farmer organizations had been increasing in recent years despite a lack of data, some of which had started processing their agricultural produce.

Source: Information provided by the Implementing Agency and the results of the Beneficiary Survey

[13] As the status of the AREP at its completion is included in the HRDP, the statuses of HRDP's Project Purpose and Outputs were captured and analyzed here.

After the completion of the HRDP, the contents and method of training introduced in the HRDP has evolved through the efforts of the Implementing Agency itself as the 'Post-HRDP Project' has been implemented with the RGoB budget. While there are some indicators without data, efforts have been continued so that the vegetables and fruits researched and cultivated at Wengkhar Center are extended to farmers through instruction and training, then marketed through CARLEP. Further development was observed as the efforts to increase the incomes of farmers through the extension of horticulture promoted in the AREP and the HRDP.

3.2.2.3 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

At the time of HRDP planning, an effect of preventing soil runoff on steep slopes was expected through fruit cultivation.

Photo 1: A slope where soil runoff has been prevented by planting fruit trees (on the right-hand side of the photo, in Mongar Dzongkhag)

It was checked in the ex-post evaluation, which showed that according to the Implementing Agency, there was a case in which soil runoff was prevented even during times of heavy rain at locations with steep slopes where landslides had frequently occurred under similar weather conditions after planting fruit trees through this project; though, no formal survey had been conducted.

Also, according to the Implementing Agency, there were no negative impacts on the natural environment caused by the implementation of either project, and it was confirmed in the beneficiary survey that there were no negative impacts. Therefore, it can be judged that there were no problems.

(2) Resettlement and Land Acquisition

According to the Implementing Agency, neither resettlement nor land acquisition occurred due to this project. Due to the nature of the project and based on confirmation by the Implementing Agency, no resettlement and land acquisition cases are considered to have occurred.

(3) Other Indirect Effects

In the HRDP, it was set at the time of planning that the skill development of women in the eastern region would be promoted upon project implementation.

In fact, the number of farmers who received training at Wengkhar Center from the commencement of the HRDP until May 2016 was 767, of which 237 (31%) were women. In addition, 164 (31%) of 534 farmers that benefited from direct cultivation support to villages were women, and the Implementing Agency instructed female farmer groups on the processing technologies for agricultural produce. As already stated, the proportion of the population operating in the agricultural and forestry industries in Bhutan is 58.0% and the male and female rates (in 2015) was 47.4% males and 52.6% females. Thus, as there are more women, the percentage of female participants in training is comparatively low. However, according to the Implementing Agency, as it is difficult for women to leave their homes for several days to attend training programs at Wengkhar Center, the proportion of men as trainees tends to become higher. Even if men participate in a training course, the benefits can be felt for the entire family. Therefore, women are not disadvantaged in particular and the effects spread to all farmers. In the farms actually visited in the ex-post evaluation, no situation was observed in which women were not enjoying the merit of the project just because of being women. Nevertheless, it cannot be said that activities focusing on the ‘development of women’s skills’ were actively implemented through the HRDP.

As a result of a series of activities occurring from time of the AREP to that of the HRDP, appropriate cultivation technologies suitable for climatic conditions of each location were developed and introduced, and cultivation by many farmers was promoted through systematic training and extension activities. Moreover, marketing of agricultural crops was also implemented through the project, leading to a broad achievement of the project effects. As a result, more varieties of vegetables and fruits were cultivated compared to the time when the project initially started, and a stage has been reached in which the produce has been sold and distributed. Therefore, the Project Purpose of each of the projects as a whole can be said to have been largely achieved. Regarding the Impacts, it is highly likely that all the Overall Goals will be achieved by the target year of 2020, and the indicators of HRDP’s Outputs and Project Purpose had been largely achieved at the time of ex-post evaluation or are highly likely to be achieved by 2020. Therefore, it can be considered that both projects have generated significant positive impacts on the research and extension of horticulture in the eastern region.

Based on the above, the effectiveness and impact of both projects are high, given that the Project Purpose and the Overall Goal of each being achieved or likely to be achieved.

3.3 Efficiency (Rating:②)

3.3.1 Inputs

The planned and actual inputs of this project are shown in Table 10.

Table 10: Planned and Actual Input of Each Project

Project	Inputs	Plan	Actual (at the time of completion)
AREP	(1) Experts	3 Long-term Approx. 3 Short-term / year	3 Long-term 4 Short-term
	(2) Trainees received	4 – 5 officers / year (training in Japan, third-country training)	A total of 39 officers (training in Japan) A total of 6 officers (third-country training)
	(3) Equipment	Mini-bus, Agricultural equipment, Surveying equipment)	A total of 277 items, such as 3 vehicles, agricultural equipment, research equipment, etc.
	(4) Local Cost Borne	Unknown	Approximately 45 million yen (construction of the training hall and farm roads, development of a track for tractors, development of 2 gewog offices, etc.)
	Japanese Side: Total Project Cost	A total of 350 million yen	A total of 476 million yen
	Inputs from Bhutan	- 23 counterparts (17 from RNRRC-East, 3 each from Lhuentse and Mongar Dzongkhags) - Provision of experts' office and facilities necessary for project activities - Basic project costs, such as utilities charges and domestic communication	- A total of 51 counterparts (32 from RNRRC-East, a total of 19 Dzongdags (Governors), Agricultural officers and Extension agents) - Facilities and equipment (Provision of the office for experts, land, and facilities) - Local cost: 31.46 million ngultrum (approximately 630 thousand US dollars). (Mostly allocated for personnel and transport expenses.)
HRDP	**Inputs**	**Plan**	**Actual (at the time of completion)**
	(1) Experts	3 Long-term 3 Short-term	3 Long-term A total of 10 Short-term

	(2) Trainees received	On horticulture development, agricultural extension model, formation of local specialty, etc.	A total of 53 officers (14 for training in Japan, 39 for third-country training)
	(3) Equipment	Transportation vehicles, etc.	Vehicles, Excavators, Tractors, Agricultural materials, Electric fences, etc.
	(4) Local Cost Borne	Unknown	35 million yen (payment to seasonal workers, training costs, extension materials, equipment, etc.)
	Japanese Side: Total Project Cost	A total of 450 million yen	A total of 359 million yen
	Inputs from Bhutan	- Assignment of counterparts: Project Director, Project Manager, Counterparts, Administrative Assistant, Secretary for Japanese Experts, Driver, etc.) - Provision of land, the building, and other materials and equipment needed - Project operation cost (for employment of 10 workers, etc.) - Training costs, such as those for seeds, seedlings and per diems	- Assignment of counterparts: 37 in total - Facilities and equipment (provision of the project office and research farm at Wengkhar Center) - Local cost: 64.4 million ngultrums (project operation cost mainly the salaries and transportation costs of counterparts, including seeds, seedlings and per diem)

Source: Information provided by JICA

3.3.1.1 Elements of Inputs

[AREP]

The number of experts, their expertise, and the items of equipment provided seemed to have been adequate in light of the project contents and implementation conditions. The number of counterparts was the total headcount of the officers involved in the project and a major factor for the substantial increase from the planned number was the transfer of officers to and from other organizations and due to some of their overseas studies during the project period. According to the Implementing Agency, the number of researchers and dzongkhag agricultural officers was sufficient. As there were no troubles in subsequent activities, it is assumed that there were no problems.

Photo 2: Training hall at Wengkhar Center developed in AREP

After the commencement of this project, farm roads and extension offices were additionally developed as it was considered necessary to develop such farm roads connecting to markets for transporting the agricultural crops whose production volume increased through research and extension activities and to have such an office where farmers could be based and undertake effective expansion of extension activities in the two gewogs in Lhuentse Dzongkhag, selected as model gewogs, given that there were no such extension offices there. These were the major changes from the plan which greatly affected an increase in project costs, as will be stated later. According to the Implementing Agency, market access for farmers improved due to farm road development, and the extension offices functioned effectively as a place to steadily provide training to farmers and to display the crops produced.

[HRDP]

In the HRDP, short-term experts were dispatched as needed. According to the long-term experts at that time, the amount of inputs by short-term experts actually became less than the initial expectation. The counterparts were researchers from research centers, mainly from Wengkhar Center, in addition to the secretary of the Ministry of Agriculture. The number of counterparts was the total headcount of the officers involved in this project and the major factor for the increase was, similarly to the AREP, the transfer of officers during the project period.

It was confirmed that the local cost included the project operation cost and the training

cost, including seeds, seedlings, and per diems.

3.3.1.2 Project Cost

A major factor for the increase in the project cost (Japanese side) for the AREP was, as stated above, the additional needs to construct both the facilities required for training and extension and the part of the farm roads within the project scope of the AREP after the project started. Eventually, the actual cost was 476 million yen, 136% of the planned amount.

On the other hand, the actual project cost for the HRDP (Japanese side) was 359 million yen, 80% of the plan, mainly due to the decrease in the amount of input from short-term experts.

Therefore, while the project cost was within the plan of the HRDP, it exceeded the plan in the AREP.

The project cost of the AREP and HRDP together was 836 million yen, which exceeded the sums of the planned costs of both projects (800 million yen) by 5%.

3.3.1.3 Project Period

The planned and actual periods of both projects are shown in Table 11.

Table 11: Planned and Actual Project Period of Both Projects

	Plan	Actual
AREP	June, 2004 – June, 2009 (61 months)	June, 2004 – June, 2009 (61 months)
HRDP	February, 2010 – February, 2015 (61 months)	March, 2010 – March, 2015 (61 months)

Source: Information provided by JICA

The project period was 61 months respectively for both projects, judged to have been the same as the planned period.

Based on the above, while the project period was within the plan, only the project cost of the AREP exceeded the plan. Therefore, the efficiency is fair.

3.4 Sustainability (Rating:③)

3.4.1 Related Policy and Institutional Aspects for the Sustainability of Project Effects

In both projects, it was aimed to link research and extension activities to improve agricultural productivity and to let the farmers who benefit take advantage of adequate technologies toward commercialization of horticulture in the eastern region of Bhutan. It can be said that the activities toward this objective achieved significant results as a whole. The

policy and institution to sustain the effects were as follows at the time of ex-post evaluation.

- Agriculture is regarded important in 'Bhutan 2020' and the 'Eleventh Five Year Plan (2013-2018), the policies in effect at the time of ex-post evaluation, in the same way as at the time of project completion.
- In a speech made by the King on the National Day in December 2016, the importance of commercial agriculture and agricultural finance as a support for it was emphasized, showing a continued importance in policy aspects.
- RNR-related policies at the time of ex-post evaluation were the 'RNR Marketing Policy[14]' (2016) and the 'E-RNR Master Plan' (formulated in 2016, with 2023 as the target year), in which a systematic promotion of distribution and sales of agricultural crops and a promotion of the introduction of IT into the RNR sector were listed as the directions.

In this way, it was confirmed that there has not been a change in policy directions even at the time of ex-post evaluation, and agriculture has been positioned as an essential industry.

It was seen at the Wengkhar Center that the 'Post-HRDP Project' was being implemented – not only in terms of policy aspects but also as a concrete movement – to produce seedlings in the farm of Wengkhar Center and to continue farmer training and extension even after project completion. According to Wengkhar Center and Department of Agriculture of the Ministry of Agriculture and Forests, this project is expected to be budgeted through 2020, which can be highly valued as an effort to institutionalize the research and extension method introduced in the AREP and HRDP.

3.4.2 Organizational Aspects for the Sustainability of Project Effects

The Implementing Agency in charge of sustaining the effects of both projects is the Agricultural Research and Development Center – Wengkhar, positioned as part of the Agriculture Research and Extension Division of the Department of Agriculture under the Ministry of Agriculture and Forests, which remained unchanged during the times of the AREP and HRDP. Wengkhar Center is an organization with divisions of administration and research & development, having 66 staff members under its program director. The Research and Development Division has five sections such as the horticulture division, agriculture system division, and so forth. While personnel transfer of staff members has been done on a regular basis, the program director and several deputy chief researchers have remained in Wengkhar Center during and after the project period.

Wengkhar Center is an organization to undertake research and development of agricultural cultivation and often collaborates with agricultural offices and extension agents of each dzongkhag in the eastern region in charge of agricultural promotion, mainly in extension activities to farmers. For example, it was seen that activities were carried out in collaboration

[14] It had not been finalized and was still in a draft form at the time of ex-post evaluation.

with RAMCO for distribution and sales. In addition, it was confirmed at the time of field survey that the structure to provide seeds and seedlings necessary for extension had been established.

In the HRDP, demonstration farmers to be in charge of further extension in each village area were appointed among the trained farmers. These farmers were receiving the visits because of their success as farmers in the region when Wengkhar Center deployed extension programs during the 'Post-HRDP Project' and were distributing seedlings and so on to nearby farmers. Additionally, IFAD has been implementing CARLEP to support distribution, etc. of agricultural crops, the program for which the extension method introduced through the AREP and HRDP has been adopted and implemented.

Therefore, the position and organizational structure of Wengkhar Center has not changed much, and the structure to implement technical training has been established with the experiences and number of staff; and the 'Post-HRDP Project' and CARLEP have been implemented steadily. Also, the method of appointing demonstration farmers to extend their knowledge to nearby farmers in each location has been received as an effective one by the Implementing Agency, agricultural offices of each dzongkhag, extension agents, and trained farmers, leading to sustainable efforts as seen through its adoption in CARLEP.

Based on the above, there are no problems in terms of the structure to sustain the effects of the AREP and HRDP by Wengkhar Center.

3.4.3 Technical Aspects for the Sustainability of Project Effects

Skills of the staff members increased substantially through the AREP and HRDP, and a similar program was being deployed independently through the 'Post-HRDP Project' and CARLEP at the time of ex-post evaluation. According to Wengkhar Center, it builds up the experiences of new staff members by having them participate in the training programs for extension agents and farmers and through on-the-job-training, and there were no technical issues found in the skills of the staff of Wengkhar Center. It was observed that the Center was pursuing further technical improvements through the implementation of their own projects after the completion of the HRDP and the provision of training to extension agents of each gewog on a regular basis.

Photo 3: Training conducted in the 'Post-HRDP Project'

The manuals developed in the HRDP were being utilized in training programs at Wengkhar Center, being distributed to

dzongkhags in and out of the eastern region by the Implementing Agency, and being used by extension agents in the agricultural technology transfer and farmer training.

The major equipment procured through both projects was effectively being utilized. Procurement of spare parts was also undertaken by the officer in charge and there was no problem with it.

Therefore, no concerns were observed in terms of the technologies needed to sustain the effects generated in both projects.

3.4.4 Financial Aspects for the Sustainability of Project Effects

In order to sustain the effects generated in both projects, it is necessary to secure the budget to deepen the link between research and extension of cultivation and to promote commercialization. Situations of the budget of Wengkhar Center since FY2010/11 are shown in Table 12.

Table 12: Budget of Wengkhar Center

(Unit: million ngultrums)

Financial Year	Ordinary budget	Special budget for 'Post-HRDP Project'	Total
2016/17	56.78	11.79	68.56
2015/16	47.21	8.53	55.74
		Budget for HRDP	
2014/15	24.22	16.03	40.26
2013/14	36.75	12.37	49.12
2012/13	23.91	11.78	35.69
2011/12	22.64	12.66	35.30
2010/11	21.20	11.56	32.77

Source: Information provided by the Implementing Agency

As stated above, the 'Post-HRDP Project' has been implemented for a scheduled period of five years, from the time of HRDP completion to FY2020/21, in order to expand the effects of the HRDP, and Nu 8.53 million of the special project budget was allocated in the first financial year (FY2015/16) and Nu 11.79 million in the following year. According to Wengkhar Center, there have been no obstacles in their activities. Also, IFAD-funded CARLEP will be providing support to expand and support various activities of Wengkhar Center at the scale of 31.5 million dollars during a period from 2015 to 2022, through which promotion of market-oriented agricultural production, establishment of value chains, improvements in marketing, and so on will be implemented.

Regarding the financing method in case a deficit balance within the financial year is

expected, the Center commented that a budget from other donors or the government, with similar project objectives, will be utilized, or an advance payment of budget or an advance for construction work to be received will be allocated.

Based on the above, it was confirmed that Wengkhar Center has the budget available to conduct certain activities in the 'Post-HRDP Project' and that CARLEP was being implemented. As the activity expenses have been budgeted to further expand the activities of the AREP and HRDP, it can be said that financial sustainability has been ensured.

The significance of agriculture continued to be indicated up to the time of ex-post evaluation, and a project succeeding the HRDP has been planned and implemented, all of which shows that the sustainability in terms of policy and institutional aspects is high. No problems were found in organizational aspects, and the skills of the staff members improved through the AREP and HRDP, which have reached a level that will allow staff to expand by themselves. In financial aspects, no particular issue was observed as the budget has been secured every year.

In light of the above, no major problems have been observed in the policy background and the organizational, technical, financial aspects. Therefore, sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The AREP and the HRDP were the collective projects by which horticulture as a source of revenue was promoted through improvements in the mechanism of agricultural research, dissemination, and marketing in the six dzongkhags in the eastern region of Bhutan where agricultural development was lagging and poverty rates were high. These projects supported agricultural promotion, poverty reduction, and correction of regional disparities, which had been consistently positioned as priority areas in Bhutan, and were in line with the development plans and development needs of the country. They were also consistent with Japan's ODA policy at the time of planning which had a focus on supporting rural income improvement and rural life improvement through agricultural development; and, the relevance of this project is high. The Project Purpose was judged to have been largely achieved as it was observed that cultivation by many farmers was promoted, and marketing activities became more vibrant through implementing these projects. The achievement of the Overall Goal (target year of HRDP: 2020) is also expected as various activities have continued. Therefore, the effectiveness and the impact of these projects are high. The efficiency is fair as the project cost of AREP exceeded the plan though the project periods of both projects were within the plans. With regard to the sustainability of the effects generated by both projects, no major problems were observed in the policy background and the organizational, technical and financial aspects. Therefore, the

sustainability of the projects' 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

The continuation through the 'Post-HRDP Project' of the research and extension mechanisms established through the AREP and HRDP has led to further advancement of agricultural promotion and an income improvement of farmers in the eastern region. It is important for Wengkhar Center to further promote an increase of agricultural production and its diversification, processing of agricultural crops and the development of sales channels inside and outside the country through utilizing the effects of both projects in cooperation with dzongkhag agricultural offices, extension agents of each gewog, RAMCO, and so forth, and to continue its efforts in connecting to agricultural promotion and to employment creation in the eastern region.

4.2.2 Recommendations to JICA

The research and extension mechanism established through the AREP and HRDP should not be an outcome restricted only to the eastern region but can be considered for expansion to other regions. In fact, in the technical cooperation project, 'Integrated Horticulture Promotion Project in the West Central Region', commenced in 2016 based on this idea, identification and development of suitable crops at suitable locations and a practical outreach program, etc. have been implemented by utilizing the experiences from the AREP and HRDP. In said project, it is desirable, through considering a different structure and background of the Implementing Agency, to implement the project in a way that farmers, that is, the final beneficiary, will be able to feel the effects of the diversification of varieties, improvements in the quality of agricultural produce, and the increase in production and income through project implementation, in the same way as that in the AREP and HRDP.

4.3 Lessons Learned

<u>Importance of establishing a structure within an organization to promote activities</u>

The promotion and support for horticulture in the eastern region of Bhutan was provided for 14 years through the dispatch of an individual expert, the AREP, and the HRDP. As a project in the agriculture sector dealing with nature, many processes and much time were required to promote 'research → cultivation (production) → extension (expansion) → distribution (commercialization)' regionally. However, it was possible to steadily proceed with various activities as the people concerned recognized the merits at each stage. In addition, the counterparts, who played central roles, were engaged in both projects at Wengkhar Center for

many years and were to lead the ‘Post-HRDP Project’ and CARLEP after completion. Both projects made a contribution in establishing a model of research and extension activities at Wengkhar Center.

In this way, activities and the structure for promotion were positioned as beneficial within the organization, which became the foundation of Wengkhar Center as the experts had instructed and cooperated steadily and as the outcome could be felt by the people concerned. As a result of having the people concerned sharing the common view, the effects of concepts and methodologies were accumulated within the organization. When JICA plans a similar project inside or outside Bhutan, or when the RGoB expands a similar project in the country, it is desired to formulate such plans by sufficiently considering (1) steady implementation through recognizing the merit of each activity and (2) the existence of key counterparts who understand all processes therein. (It is desirable they be assigned to the position as long as possible, or that their successors be promptly secured even at the time of personnel transfer and be handed the tasks smoothly). With this process, concepts and methodologies will be accumulated within the organization, leading to the continuity of activities and the achievement of the overall goal.

End

Changes in Relationship and Mental Health of Farmers in the Rural Community in the Eastern Region of Bhutan through the Implementation of the AREP and the HRDP

The two projects evaluated in this study were implemented in the eastern region of Bhutan for 10 years in total, and that total becomes as many as 14 years when the dispatch of an independent expert prior to these projects is added. In this project, because the method of transferring cultivation technologies learned in training programs from trained farmers to other farmers was being adopted, it was anticipated that through a series of these projects in the six dzongkhags in the eastern region of Bhutan, there could be some impacts besides those of increased volume and income from agricultural production among farmers. Therefore, an analysis, especially of changes in community relationship and the mental health of farmers, was conducted.

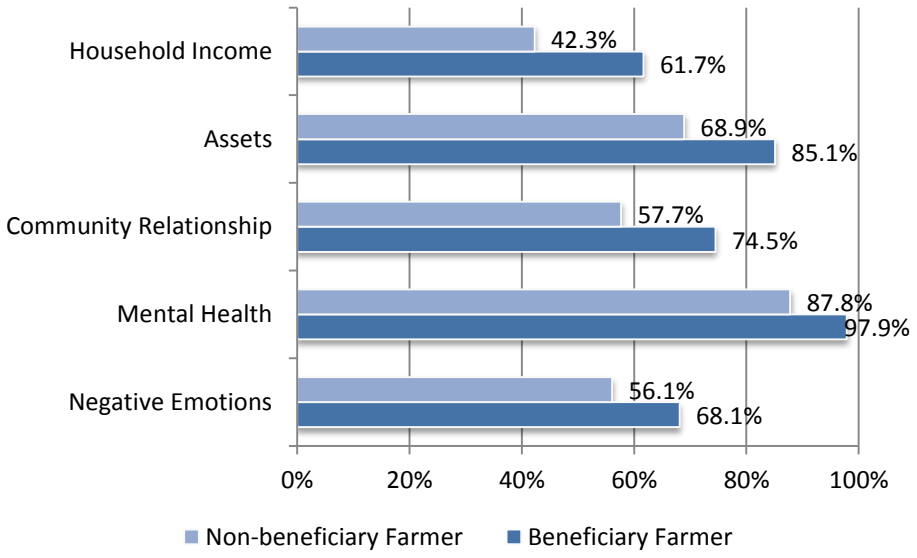
With regard to the social impact of this project on the rural society in the eastern region of Bhutan, an impact survey[15], which JICA conducted with the Centre for Bhutan Studies in 2016, has summarized the results of interviews[16] with beneficiaries of the HRDP (47 households) and non-beneficiaries (196 households).

The major differences between beneficiary farmers and non-beneficiary farmers among the 33 indicators of GNH[17] were mainly found in 'household income', 'assets', 'community relationship', 'mental health' and negative emotions, and it was revealed that the beneficiary farmers had higher sufficiency as shown in Figure 1.

[15] 'Fruits of Happiness: Impacts of Horticulture on Gross National Happiness in Mongar, Bhutan'

[16] However, the target area of the survey was limited to Mongar Dzongkhag.

[17] Gross National Happiness. A concept advocated by the 4th King of Bhutan in the 1970s which placed importance on the spiritual richness of each national while making consideration for the traditional society and culture, the environment, as well as economic and materialistic richness. There are nine domains with which to measure GNH: psychological wellbeing; health; education; time use; cultural diversity and resilience; good governance; community vitality; ecological diversity and resilience; and living standards, and 33 indicators are set under these domains.



Source: Created from "Fruits of Happiness: Impacts of Horticulture on Gross National Happiness in Mongar, Bhutan"

Figure 1: Levels of Sufficiency among the Beneficiary Farmers of and Non-Beneficiary Farmers[18] of the HRDP

Particularly, the levels of sufficiency in the community relationship (the beneficiary farmers' trust in neighbors and sense of belonging to the community) were 74.5% among the beneficiary farmers and 57.7% among the non-beneficiary farmers, revealing that beneficiary farmers had an approximately 17 points higher level of sufficiency. In the HRDP, extension activities were incorporated—through which beneficiary farmers were to provide instructions on cultivation technologies and seedlings and furthermore—to lead the establishment of a farmers' organization and an expansion of joint marketing activities, both of which were considered to have been the factors for the higher sufficiency ratio among the beneficiary farmers. Also, questions on the degrees of improvement among the GNH's nine categories were asked to beneficiary farmers and it was indicated that a high percentage of beneficiary farmers (95%) felt that their mental condition had improved as well.

However, regarding these two indicators, no concrete cases or information about the higher values for the beneficiary farmers were sufficiently presented in the report. Therefore, this ex-post evaluation conducted interviews[19] with farmers in a total of four model gewogs in Mongar Dzongkhag and Lhuentse Dzongkhag where both the AREP and the HRDP were implemented. In the interviews, the following topics were checked:

[18] The significance level of 5 indicators shown in Figure 1 is all at 5%.

[19] Farmers from 4 model gewogs in the AREP who were active in expanding agricultural production and in extension activities among farmers and who were also recommended by agricultural extension agents as the ones who could attend the meetings at the time of the evaluator's visit. Five farmers each from respective gewogs participated in the meetings.

(1) What kinds of factors contributed to the improvement of community relationships and mental health conditions?

(2) How did the farmers feel about agricultural activities before, during, and after the series of projects?

Among these questions, (1) was to reveal the factors that contributed to the improvement in the social aspects and (2) was to confirm in further detail how such feelings changed over time as both projects, the AREP and HRDP, were implemented.

As for (1), the major reason for the improvement in community relationship was the increase in the number of opportunities for collaborative farming activities among farmers through extension activities and in the number of cases of joint agricultural activities and shipping as the agricultural production activities became more vibrant. During and after the project, the relationship among farmers became closer through a number of collaborative agricultural activities, which led to their higher level of sufficiency, coupled with the generated effects. Also, through the increase and stabilization of opportunities for cash income, it was observed that farmers became more mentally stable compared to their stability in the pre-project period. With the onset of the economic aspect, that is, increased cash income, other positive aspects were clearly observed, such as a reduction of anxieties over economic aspects and education opportunities for children in the future, and an acquisition of confidence in agricultural activities and so forth.

As for (2), the mechanism for how farmers were motivated to work with heightened activity was grasped by using the "Self-Determination Theory", a theory founded in the social psychology field. In the Self-Determination Theory, it is said that fulfilling three types of basic needs—Autonomy, Competence, and Relatedness[20]—facilitate spontaneous motivation. As observed through the group interviews with farmers (as shown in the table on the last page), they were passive as they could not be certain of their futures at the beginning of the AREP given that there were no options other than those in agriculture, but they became gradually more confident from their agricultural activities provided through the target projects and their active behavior (Autonomy) could be observed. The outcome became evident in the form of increased agricultural production in terms of varieties and volume (Competence) and it was confirmed that farmers had built up cooperative relationships with each other in farming activities and other events in the rural area (Relatedness).

Through this analysis, it was confirmed that the targeted projects had produced positive impacts regarding improvements in community relationship and mental health, which were the indicators of GNH. According to the survey conducted by the Centre for Bhutan Studies, it became clear that relatedness and mental stability of the beneficiary farmers were at a level

[20] JICA, 2016, "Genba no Koe kara Himotoku Kokusai Kyoryoku no Shinrigaku (Psychology of International Cooperation Clarified from the Voices of the Field)"

higher than that of non-beneficiary farmers. A beneficiary survey in the ex-post evaluation also showed that knowledge and skills were disseminated among farmers. Furthermore, it was confirmed that farmer organizations were established and joint shipping and marketing activities by the farmer organizations became more vigorous, all of which indicates that “Autonomy” and “Competence” among farmers had been established, thus leading to enhanced “Relatedness”. In this project, activities related to each of these three elements have been undertaken and it can be said that the relatedness and sufficiency of beneficiary farmers were raised in stages. In addition, the result obtained in the survey above was supported by the detailed interview survey with farmers in that their deeper confidence in agriculture as an industry was not limited to economic benefits.

Therefore, it can be said that relatedness among farmers became stronger and their psychological wellbeing improved through the AREP and the HRDP. Especially, many positive opinions about the future of agriculture were obtained, which shows that the activities and approaches of the targeted projects were accepted in a way which the rural society of the eastern region of Bhutan could feel the economic and social benefits. This approach is considered to be applicable to other areas in Bhutan with slight adjustments according to the characteristics of each region.

(Reference) Change in Farmers' Motivation based on the Self-Determination Theory

	Before AREP (- 2004)	At the time of the completion of AREP and the commencement of HRDP (Around 2010)	After HRDP (At the time of ex-post evaluation (2017))
Autonomy[21]	・Agriculture was difficult and considered an unrewarding activity. There were various limitations, such as no materials or cultivation technologies as well as poor market access, etc. ・It was not a job for our children to take up due to social and economic reasons.	・With training and mechanization, I started feeling more empowered in agricultural activities (thanks to RNRRDC, Wengkhar). ・Agriculture started to become an industry with economic gains as well as a way of subsistence.	・With adequate infrastructure, training and support, agriculture can be a profitable industry and it is important for the country's development. ・It can reduce the number of issues present, such as rising unemployment and food security challenges. ・I want to expand my farmland for cultivation as there is surely a market to sell my crops.
Competence[22]	・There were few varieties for cultivation and no destinations to sell agricultural crops. There was also a problem of food shortage. ・It was difficult to feel the achievement of my agriculture activity.	・Varieties for self-consumption increased and the menus of meals improved. ・Vegetables and fruits became available for sale in the market. ・Cultivation skills improved and I became able to share my knowledge with neighboring farmers.	・By implementing or applying cultivation methods and by using farming machines, whose operation skills were learned through the training programs, the production volume has increased. ・Farmers became able to sell enough vegetables and fruits and save money so that they could invest in light agriculture machinery. ・With the continuous support from Wengkhar Center, the production volume has increased further.
Relatedness[23]	・Extension agents only distributed seeds, etc. ・No joint activities were taken as each farmer was facing his/her own difficulties.	・Farmers could consult someone in the community about cultivation and so forth. ・Researchers of RNRRDC, Wengkhar visited the farmland and gave on-site advice to farmers. ・Farmers formulated a joint sales group and supported each other's farm work.	・The extension model became popular and has been used for various agricultural extension activities. ・Farmers can contribute more and the community events or religious events in the village have become more vibrant. ・Trained farmers share the results with other farmers.

Note: Opinions frequently heard in focus group interviews with farmers were extracted and described.
Source: results from focus group interviews

[21] A sense of self-selection for his/her action to behave proactively. The interviews with farmers were on questions such as "I feel that farming is fun"; "I want to be better at farming"; and "I found value in agriculture".

[22] A sense of desire to achieve something. The interviews with farmers were on questions such as "I became able to produce more farming products"; "I could see the achievement of my activities"; and "I feel that my knowledge and skills have improved".

[23] A sense of desire to connect to others and build a mutual trust. The interviews with farmers were on questions such as "I became trusted by neighboring farmers"; "Neighboring farmers and I became more friendly"; and "I became of service to the community".