Islamic Republic of Pakistan

FY2017 Ex-Post Evaluation of Japanese Grant Aid Project

"The Project for Rehabilitation of Medium Wave Radio Broadcasting Network in the Islamic Republic of Pakistan"

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0. Summary

This project was implemented to enable the expansion of radio broadcasting service to the Khyber-Pakhtunkhwa Province (hereinafter "KP") and the Federally Administered Tribal Areas (hereinafter "FATA") in the Afghan border regions by rehabilitating a deteriorated medium wave radio transmitter and equipment at a studio and master control room, thereby contributing to stabilization of the border regions.

The project was relevant to Pakistan's development plans and needs, both at the time of planning as well as at the time of the ex-post evaluation, and Japan's ODA policy at the time of planning; therefore, its relevance is high. There were no major changes in the project outputs, and the project cost was lower than planned. During the implementation of the project, Japanese engineers were forced to evacuate the project site because anti-government demonstrations occurred. The project period exceeded the planned timeframe by one month because construction was interrupted for three months along with the evacuation. The efficiency of the project is judged to be high, considering that the contract's force majeure clause was applied. After the completion of the project, the target value for the number of listeners in the coverage area was achieved through the expansion of the listening range of radio broadcasts (coverage area of the radio broadcasting services) to throughout KP and FATA, except Chitral District, a mountainous area. Daily broadcasting time exceeds the goal of 14 hours. This enables a variety of broadcast programs to be provided, including programs on social problems, government policies, terrorism issues, safety measures, and regional information. Therefore, this project has high effectiveness and a high level of impact. Because operation and maintenance has been implemented properly, there are no problems in the organizational or technical aspects. In contrast, no budget is secured for hiring new staff or replacing equipment. Therefore, there are some problems with the financial aspect, and the sustainability of this project is fair.

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

1. Project Description

Project Location

Faqirabad Transmitting Station

1.1 Background

The border issues with Afghanistan are extremely serious for Pakistan. Since the terrorist attacks in the United States on September 11, 2001, the stabilization of the border has been increasingly important as a matter of influence on the development of Pakistan.

However, in KP around the border and FATA on the border, as a consequence of the fight against terrorism by the Pakistani military and natural disasters, a socially and economically unstable situation continues, and the domestic displacement of people has occurred. A few areas in FATA are also reportedly activity bases for the armed groups. Socio-economic indicators have underperformed against the national average. In addition, poverty, distrust of the government, and access to biased information, from sources such as anti-government organizations, are allegedly foundations for the infiltration of the armed groups.

In the *Post Crisis Needs Assessmen*t, jointly announced by the Government of Pakistan, the World Bank, the Asian Development Bank, and the United Nations (UN) in October 2010, the improvement of information access through the radio was indicated as one of the development strategies for KP and FATA. According to UN statistics (2007), the source of information that people use the most in KP and FATA is the radio. Thus, radio broadcasting has been playing an important role as information media, which provides information related to humanitarian assistance to domestically displaced people and refugees from Afghanistan, as well as information for day-to-day living such as education, health care, weather reports and disaster prevention, security, and so forth.

At the time of planning, Pakistan's radio network was regarded to have the capacity to provide services to 98% of the population and 78% of national land areas through medium wave transmitting stations at the Pakistan Broadcasting Corporation (hereinafter "PBC"). However, the

coverage area had been decreasing every year because of the aging of transmitters.

Under such circumstances, the Government of Pakistan requested grant aid from the Government of Japan with regard to renewing equipment at the Faqirabad transmitting station, which covers the entire areas of KP and FATA, and equipment at PBC Headquarters in Islamabad.

1.2 Project Outline

The objective of this project is to improve access to radio broadcasting service in KP and FATA by providing and replacing the radio broadcasting equipment in Islamabad and Faqirabad in Punjab Province, thereby contributing to the stabilization of the Afghan border regions.[1]

Grant Limit / Actual Grant Amount	1,385 million yen / 1,351 million yen
Exchange of Notes Date /Grant Agreement Date	December 2012/ December 2012
Executing Agency	Pakistan Broadcasting Corporation
Project Completion Date	December 2014
Main Contractors	Mitsubishi Corporation/NEC Corporation (manufacturing and installation of a transmitter)
Main Consultant	Yachiyo Engineering Co., Ltd.
Preparatory Survey	October 2011 to May 2012
Related Projects	<USAID> - Digitization of audio archives of PBC (2012–2015) - Replacement of a 10-KW medium-wave transmitter in D. I. Khan with a 100-KW medium-wave transmitter and relocation of the broadcasting house to a new site (2010–2013) - Replacement of a 100-KW medium-wave transmitter in Peshawar with a 400-KW medium-wave transmitter (2010–2013)

2. Outline of the Evaluation Study

2.1 External Evaluator

Yuko Kishino, IC Net Limited

2.2 Duration of Evaluation Study

This ex-post evaluation study is a desk evaluation and was conducted with the following schedule. The field study was conducted by local field research assistants.

Duration of the Study: August 2017–March 2019

Duration of the Field Study: November 2017–March 2018

[1] The stabilization of the border area depends on many factors and it is difficult to assess the impact of this project. Consequently, the external evaluator defined the impact of the project as “being able to provide a variety of nationwide broadcast programs” in this evaluation. Refer to the section on “Impact.”

2.3 Constraints during the Evaluation Study

For security reasons in Pakistan, the field study, including site survey, was conducted by local field research assistants under the supervision of IC Net Limited and an external evaluator. FATA, a beneficiary area of the project, is a hazardous area where Pakistani people, except locals, do not intrude. Consequently, FATA was excluded from the survey area.

In the evaluation survey, the local field research assistants collected information based on a questionnaire created by the external evaluator and conducted project site surveys. Furthermore, IC Net Limited interviewed a person in charge of the project from the executing agency by inviting the person to a third country. Because this evaluation is a desk evaluation based on information obtained under such constraints, it is not necessarily able to reflect all the detailed information.

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

3.1 Relevance (Rating: ③[3])

3.1.1 Consistency with the Development Plan of Pakistan

At the time of planning, the Government of Pakistan cited in *Vision 2030* (2005–2030), a long-term national development plan, that the role of public broadcasting was to broadcast widely on the topics of education, information, awareness activities, and culture, and to connect them to the good of the people of Pakistan. In the *10-year Long-term Development Plan* (2001–2011), the government set a target of radio coverage for 100% of the population. A draft of the *Broadcast Sector Development Plan* (2011–2017) stated that the role of the PBC was to provide information needed for people's lives, inform the people of government policy, help maintain and improve people's lives, and provide entertainment to enrich daily life and ethnic cultures.

At the time of ex-post evaluation, *Vision 2025* (2014–2025) replaced *Vision 2030* as the guideline for the Government of Pakistan. It puts emphasis on seven fields such as socio-economic development, sustainable comprehensive growth, infrastructure development, and so forth. Especially, to promote economic development and stabilization in developing regions in the country is emphasized. The *Broadcast Sector Development Plan* (2011–2017) cites that the core contents of broadcast should be education, health care, agriculture, women's empowerment, child labor, and others, all of which promote the safety and stability of the people. It also states that the PBC will rehabilitate medium wave services in Hyderabad, Multan, and elsewhere to increase the number of radio listeners, especially in developing regions in the country.

Thus, from the time of planning to the time of ex-post evaluation, Pakistan's long-term development plan regards the stabilization of developing border areas as indispensable for economic development. The broadcasting development plan clearly mentions the rehabilitation of

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

[3] ③High; ②Fair; ①Low

medium wave services in developing regions. As this project aims to improve access to radio broadcasting services in KP and FATA, both of which are developing regions on the Afghan border, this project is highly consistent with the national development policy.

3.1.2 Consistency with the Development Needs of Pakistan

At the time of planning, KP and FATA had higher poverty rates than urban areas, and were behind in the prevalence of medical care and education. Therefore, in order to assist administrative services and contribute to the achievement of the national development plan, it was necessary to improve access to information through radio broadcasting services. Although the Faqirabad transmitting station was an important one for covering the entire area of both KP and FATA, its medium wave transmitter degraded over a period of time, and the broadcasting coverage rate in 2010 was less than 50% of the intended coverage. The PBC shortened its daily broadcasting time from the original 22 hours to five hours in order to prevent equipment malfunction. According to the project consultant, daily broadcasting time was one or two hours at the time of planning because broadcasting through the vacuum tube type transmitter stopped when the vacuum tube overheated. Once it broke down, the broadcasting service had stopped for two or three days. Broadcast equipment at the PBC headquarters in Islamabad, which was a center for producing programs for national broadcasting, was also outdated, and production of major spare parts was discontinued. Thus, it has become difficult to acquire replacement parts for maintenance work. Under these conditions, there was a high need for updating equipment.

According to the PBC, the number of radio listeners at the time of ex-post evaluation reached 18.7 million[4] and there is a consistently high need for radio broadcasting services. A Pakistan economic survey shows that the literacy rates in KP and FATA are 53% and 33% respectively, which are lower than that of the national level of 58%.[5] Thus, the radio remains an important source of information. In addition to the Faqirabad transmitting station, it is necessary to rehabilitate the medium wave transmitters in Balochistan, Punjab, and Gilgit-Baltistan, all of which are decrepit.

From the above, it is fair to say that there is a high need for improvement of access to information through radio broadcasting service, and that this project is highly consistent with development needs, both at the time of planning and at the time of ex-post evaluation.

3.1.3 Consistency with Japan's ODA Policy

Japan's *Country Assistance Policy for Pakistan* in 2012 put emphasis on three fields, aiming to build a stable and sustainable society through economic development. In the field of "stable and balanced development in border areas," it states that Japan will implement assistance contributing to anti-terrorism and stabilization of the Afghan border regions in order to improve security. Under the policy, the *Rolling Plan for Pakistan* stated that it was necessary to stabilize society through

[4] As of 2017
[5] As of 2017

life improvement assistance in KP and FATA from a long-term perspective. This project was implemented to provide information needed for daily life and on government policies through radio broadcasting to KP and FATA around the Afghan border. Therefore, it is fair to say that this project was highly consistent with Japan's aid policy at the time of planning.

As described above, this project has been highly relevant to Pakistan's development plan and needs, as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Efficiency (Rating: ③)

3.2.1 Project Outputs

This project consists of updating a medium wave transmitter at the Faqirabad transmitting station and procuring studio equipment for producing programs at the PBC headquarters in Islamabad. The medium wave transmitting system is a system that consists of several pieces of equipment with functions to send an audio signal from a studio to existing antennas after signal processing and amplification. There was no change in the outputs by the Japanese side, and there was no problem in procurement, delivery, or installation (see Table 1). The outputs by the Pakistani side were removing unnecessary equipment, replacing the power supply equipment, and repairing the building. Aside from a few minor changes, they were implemented almost exactly as planned. One of the changes is as follows. The Integrated Services Digital Network (hereinafter "ISDN"), which transmits an audio signal from the National Broadcasting House in Islamabad to the Faqirabad transmitting station, was replaced with the satellite connection of the executing agency. At the time of planning, a fiber-optic network already existed, but the ISDN was selected because it was considered more reliable as a system and more competitively priced.[6] However, it turned out at the installation stage that the ISDN was not compatible with a terminal box for the telephone line. It was an appropriate selection for grant aid in terms of reliability and low price; however, the problem could have been avoided if compatibility had been clarified at the time of planning. This change did not affect the effect of this project.

[6] It was alternated with the satellite up-linking system that the PBC possessed. At the time of the ex-post evaluation, the ISDN is used for Internet connection.

Table 1: Planned and Actual Project Outputs by the Japanese Side

	Plan （2011）			Actual （2015）
1	Faqirabad Transmitting Station		1 set	as planned
	1－1	500kW Medium wave transmitter (250kW+250kW)	1 pair	
	1－2	500kW dummy load	1 set	
	1－3	Program inputting equipment rack (PIE)	1 set	
	1－4	Control console	1 set	
	1－5	11kV/400V reciving transformer	2 sets	
	1－6	Insulating transformer （400V/400V）	2 sets	
	1－7	Automatic voltage adjuster and distribution panel	2 sets	
	1－8	Air conditioner (for control room)	2 sets	
	1－9	Forced cooling system	1 set	
	1－10	Program transmitting system （ISDN codec）	1 set	
2	PBC Islamabad studio equipment		1 set	as planned
	2－1	On air studio systems	2 pairs	
	2－2	Production studio system	2 sets	
	2－3	Editing studio system	1 set	
	2－4	Master control room system	1 set	
	2－5	Existing studio equipment	15 sets	
	2－6	Clock unit	1 set	
3	Measuring devices and maintenance tools		1 set	as planned
	3－1	Measuring devices	1 set	
	3－2	Tool kit	1 set	
4		Replacement parts	1 set	as planned

Source: Preparatory survey report, and materials provided by the Japan International Cooperation Agency (JICA)

500 kW medium wave transmitter
at Faqirabad transmitting station

Master control room at the headquarters, Islamabad

3.2.2 Project Inputs

3.2.2.1 Project Cost

The total actual cost of the project amounted to 1,407 million yen (JPY) (1,351 million yen on

the Japanese side and 56 million yen[7] on the Pakistani side), 96% of the planned budget of 1,459 million yen (1,378 million yen and 74 million yen,[8] respectively) at the time of planning and it remained within the plan. Although there was an additional cost of 7.27 million yen associated with restarting after the interruption due to anti-government demonstrations, it was covered with the remaining budget. The reason for the actual project cost borne by the Pakistani side being less than the planned one was that the banking arrangement fee indicated by the Government of Pakistan at the time of planning was higher than it should have been.[9]

3.2.2.2 Project Period

The actual period of the project was 22 months, which was 105% of the planned period of 21 months. The reason for the actual project period being longer than the planned one was that anti-government demonstrations occurred in August 2014 and the project had to be suspended. After the occurrence of demonstrations, the Government of Pakistan instructed Japanese engineers to leave the project site, and construction was interrupted for 14 days. Because the situation was unlikely to improve, the Japanese engineers returned home with the PBC's approval. Afterwards, they restarted installing studio equipment and providing technical assistance in November 2014, and completed project work in December 2014. In this evaluation, as shown in Table 2, three months, which the force majeure clause had been applied to,[10] were deducted from the planned 22 months. Therefore, the actual period of the project was considered to be 19 months, 90% of the planned period.

Table 2: Project Period

Project Period (including design/procurement and installation/bidding, which included both the first days of the initial month and the last days of the final month of the period)	Planned (month)	Actual (month)	% against the planned period
March 2013– (Contract date)[11]	21	22	105%
Project Period excluding the period of the force majeure clause		19	90%

In light of the above, both the project cost and the project period were within the plan. Therefore, the efficiency of the project is high.

[7] Exchange rate of the actual value: US $1.00 = JPY 97.6, Pakistan Rupee (PKR) 1.00 = JPY 0.960 (annual average value in 2013), US $1.00 = JPY 105.94, PKR 1.00 = JPY 1.048 (annual average value in 2014) [Source: International Financial Statistics (IMF)]

[8] Exchange rate of the planned value: US $1.00 = JPY 79.67, PKR 1.00 = JPY 0.909 (average value from May to October 2011).

[9] The background was not identified in the survey.

[10] From August 12 to November 22, when construction was not possible.

[11] Because the starting points of the project period presented in the ex-ante evaluation table were unclear, the process table in the Preparatory Survey Report was adopted. In the latter table, the dates of exchange of notes and grant agreement were not included, and the starting points of the project were the detailed design (the contract date of the consultant). Therefore, in this ex-post evaluation, the starting points of the detailed design are regarded as both the planned and actual ones of the project period.

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

3.3.1 Effectiveness

3.3.1.1 Quantitative Effects

This project was implemented to improve access to radio broadcasting services in KP and FATA by replacing the medium wave transmitter. For the evaluation of effectiveness, i.e., whether access to radio broadcasting services improved, the extent to which the following three indicators presented in the ex-ante evaluation table (2012) had been achieved was measured: (1) population of coverage areas in the country as a whole, (2) size of the coverage areas, and (3) radio broadcasting hours.

Table 3: Operation and Effective Indicators

Indicators	Unit	Baseline	Target	Actual			Achievement
		2011	2017	2015	2016	2017	
			3 Years After Completion	1 Year After Completion	2 Years After Completion	3 Years After Completion	
National coverage population (the number of listeners)	10 thousand	3,600	6,300	6,400	6,410	6,420	102%
Coverage area in KP and FATA	%	50	100	85	85	85	85%
Radio broadcasting hours	hours/day	5	14	14	14	16	114%

Source: Reference value/target value provided by the ex-ante evaluation table. Actual value provided by the PBC.
Remark: Indicators are all from the Faqirabad transmitting station.

At the time of ex-post evaluation, there was no problem with operations for the project, including management of the power supply and voltage environment as well as air conditioning. The number of listeners increased from 36 million people at the time of planning to 64.2 million people and exceeded the target value of 63 million people (102% of the planned number). The coverage area of the 500 kW transmitting power is within a radius of 300 km from the Faqirabad transmitting station. It includes the entire area of both KP and FATA, where people had difficulty listening to the medium wave services at the time of planning. During the ex-post evaluation survey, with the PBC's cooperation, the status of transmission frequency 585 kHz radio wave was surveyed using equipment for measuring field strength at 24 points in KP in total, that is, seven points at Manshera, nine points at Swat, and eight points at Malakand. As a result, the survey revealed that it indicated more than 60 dBμ (V/m)[13] in all points, which is defined as an articulate sound level without any noise. Meanwhile, it was confirmed that the medium wave signal had not reached Chitral District, a 3,000 meter-class mountainous and canyon-filled area in KP. Thus, the achievement level of the target coverage remains at 85%.

[12]Sub-rating for Effectiveness is to be put with consideration of Impact.
[13] dBμ (d/B/micro) is a unit of power voltage. V/m (volt per meter) is used as a means of specifying the intensity of the one volt per meter electromagnetic field. Both are rounded off to the closest whole number.

Survey of wave reception signal

Equipment for measuring field strength

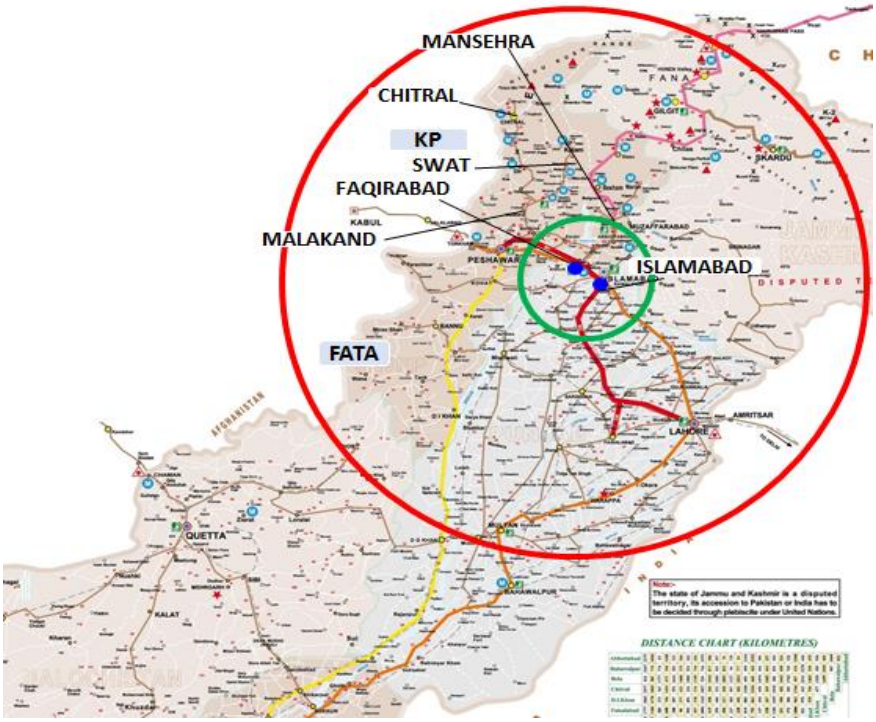

Figure 1: Map of the Coverage by the Project

Source: Information provided by the PBC (Map modified by the evaluation team)

As mentioned above, radio broadcasting hours had been reduced to five hours per day at the time of planning in order to prevent equipment failure. After the replacement of the transmitter in 2015, the target of 14 hours was achieved. In 2017, it was extended to 16 hours, responding listeners' requests. According to the PBC, the transition from analog to digital studio equipment and program production equipment in the master control room in the Islamabad headquarters has enabled program production time to be shortened by recording and editing digital signals using a non-linear editing system.[14] In addition, it has made the sound better without noise or strain and improved the

[14] To edit sound in a randomly accessible environment by recording it through digitization onto a hard disc. It is possible to reduce the working time in editing. URL address https://www.weblio.jp/content/%E3%83%8E%E3%83%B3%E3%83%AA%E3%83%8B%E3%82%A2%E7%B7%A8%E9%9B%86 (Accessed on May 30, 2018)

quality of broadcasting and programming drastically, making it possible to deliver a comfortable broadcasting services to radio listeners.

In light of the above, this project has expanded the coverage area, and not only enhanced the quality of sound, but also the program production time has also been shortened. Thus, it is fair to say that the effectiveness of the project is high.

3.3.2 Impacts

3.3.2.1 Intended Impacts

The impact of the project described in the ex-ante evaluation table is "to contribute to the stabilization of the Afghan border regions." However, stabilization of the border area depends on not only this project but also many other factors; therefore, it is difficult to assess the impact of this project through this evaluation study. Consequently, "to be able to provide a variety of nationwide broadcast programs." was assessed as an impact of the project in this evaluation based on the purpose of PBC radio broadcasting[15] and materials at the time of planning provided by JICA.

(1) Providing a variety of nationwide broadcast programs

Pakistan is a multiethnic country where four dominant ethnic groups and many ethnic minorities live. It has five dominant languages[16] in addition to Urdu, a national language, and English, the official language, as well as ethnic languages. Under these circumstances, radio broadcasting in multiple languages is an important means of disseminating information. After the renewal of the Faqirabad transmitting station, PBC was planning to provide radio programs in multiple languages on topics such as education, regional information, music and entertainment, culture, and health from 07:00 to 22:00 with a one-hour interruption for maintenance during broadcasting. In fact, expected radio broadcasting has been almost realized as planned from 05:45 to 24:00, in a schedule with an approximately two-hour interruption for maintenance. Table 4 shows the planned and actual broadcasting hours by program type.

[15] "The PBC broadcasts programs for the purposes of providing information necessary for daily life and information on government policies, contributing to maintaining and improving daily life, and offering entertainment and culture to enrich daily life." Source: Preparatory survey report (2012)[16] Pashto, Hindko, Punjabi/Phothwari, Shina, and Balti

[16] Pashto, Hindko, Punjabi/Phothwari, Shina, and Balti

Table 4: Broadcasting Hours at the Faqirabad Transmitting Station

Contents	Broadcasting hours	
	Plan	Actual
	2011	2017
Educational broadcasts	6	5
Special news	1	0
News	2	3
Traditional music and entertainment	3	3
Religion	1	2
Regional information*	1	3
Total	14	16

Source: PBC

Remark: *Programs for regional information in FATA

Table 5 shows the program at the Faqirabad transmitting station in 2017–2018. Regional programs are set daily between 18:10 and 19:00 in the five dominant languages other than the official national language. A program unique to the border region is also broadcast. The content of the program is considered so that it can lead to regional safety. In addition to regional traditional culture, program topics include maternal and child health, women's empowerment, terrorism issues and safety measures, and activities to improve the welfare of the border community residents. From the above, the target of "to be able to provide a variety of nationwide broadcast programs" is judged to have been achieved.

Table 5: Broadcasting Programs at the Faqirabad Transmitting Station

Time	Program	Outline	Language
05:45-07:00	Hayya Alfalalah	Religious programme	Arabic/Urdu
07:10-08:00	Subh-e- Pakistan	Radio reports on special days, cultural reports from different radio stations Pakistani music	Urdu
08:10-09:00	Hum Pakistan	Youth programme	Urdu
09:05-10:00	Zero Point	City service programme (to address the civic issues like health, sanitation, education, transportation)	Urdu
10:05-11:00	Rabta	Discussion / interviews of renowned experts belonging to different fields (related to health, education, sanitation, fundamental rights etc.) Live calls from listeners, and experts' replies to the listeners' queries	Urdu
11:05-12:00	Sukhi Ghar	Discussion on issues related to woman rights, education and health.	Urdu
12:10-14:00	Break (for maintenance of transmitter)		
14:05-15:00	Zarkhaiz Pakistan	Agriculture programme Discussion by agriculture experts and their live answers to listeners' questions Agriculture news and documentaries. Latest farming techniques and new technology.	Urdu
15:10-15:30	Back to back music	Entertainment programme	Urdu
15:30-16:00	Ao Bacho/Housaly Buland Apnay/ Mahol Zindagi Hay/Assas /Afkar/Yeah Hath Salamat Hain Jabtak	Special programme depending on the day of the week: children's programme; programme with special guests; programme on environmental issues; literary programme; programmes for workers	Urdu
16:05-16:30	Selected songs	Entertainment programme	Urdu
16:30-17:00	Hum Najwan	Youth programme: discussions and interviews on youth-related issues	Urdu
17:05-18:00	Rang-e-Marfat	Religious Program	Urdu
18:10-19.00	RASGHA BALTISTAN/RANGUNA/PALWASHY/HAZARA RANG/GALA BATTA/	Programmes in local languages depending on the day of the week covering topics including the following: waste management; women's empowerment; health facilities; educational facilities; culture; women in business; women in sports; Pashto music industry; military operation against terrorists; safety measures, hygiene and health of children; refugees; weather reports; and traffic reports	Pashto/Hindko/Punjabi/ Phothhoari/Shina/Balti
19:05-20:00	Jaiza	Current affairs programme Important national and international issues (interviews with prominent defense experts, former diplomats and journalists)	Urdu
20:00-21:00	Khabarnama	Special news bulletin (national and international news)	Urdu
21:10-22:00	Sports Plus	Sports programme Sports news, interviews of sportsmen/sports women and other people belonging to sports industry	Urdu
22:10-23:00	Aap ki Farmaaish	Entertainment programme	Urdu
23:05-24:00	Jaagta Pakistan	Program for Armed Forced	Urdu
24:00	END OF TRANSMISSION		

Source: PBC
Remarks: Breaking news every hour

(2) Feedback from radio listeners

In cooperation with the PBC, interviews were conducted with a total of 11 male residents in Manshera, Swat, and Malakand districts in KP regarding frequency of listening to the radio, a frequently-listened program, quality of sound, and variety of programming before and after the project. The listeners stated that the voices of the broadcasters became clear without noise and

distortion, and the program types increased. There were also opinions on the content: requests were made for an increase in programs on education and medical issues, discussions with experts, and programs for youth. A sizable number of the interviewees used the radio programs to gather information on the border region.

The impacts of radio broadcasting vary depending on programs and individuals. Many listeners attested that radio broadcasting made a positive impact on their life as follows. Those who listen to the religious program have tried to improve their conduct and feel compelled to fulfill their moral and social obligations in a better way. Another segment of listeners feel their lives have been invigorated by listening to the sports program. Those who listen to light music have felt more relaxed. The cultural program has educated listeners about their centuries-old culture and imbued in them a spirit to preserve it. Those who listen to the current affairs program feel more informed and enlightened on the latest national and international issues.


Interview survey scenes

In light of the above, this project has achieved its effects as planned, and it is fair to say that the effectiveness and impact of the project are high.

3.4 Sustainability (Rating: ②)

3.4.1 Institutional/Organizational Aspects of Operation and Maintenance

The PBC is a state-run company affiliated with the Ministry of Information and Broadcasting. The propose of the PBC is to provide reliable broadcasting at home and abroad as a governmental media organization in accordance with the Pakistan broadcasting law (1973, revised in 2002). For domestic broadcasting, the PBC provides services in 19 languages from 32 broadcasting stations, including the National Broadcasting House in Islamabad and 31 regional stations, 23 AM stations, 57 FM stations, and one short-wave station. The PBC also offers international broadcasting under the name “Radio Pakistan” in 10 languages.

As shown in Figure 2, the PBC is an organization with a total of 2,717 personnel, consisting of

the News, Program, Engineering, Finance, and Administration departments at the time of ex-post evaluation (2017). Operation and maintenance of the project is conducted by 59 engineers at the National Broadcasting House and 20 engineers at the Faqirabad transmitting station under the Engineering Department. According to the PBC, although the actual number of engineers at the Faqirabad transmitting station is below the planned number of 33, it is possible to manage and operate the station smoothly with this number by making two shifts in the morning/afternoon and night. However, the number of personnel for emergency measures has not been secured. This is because the number of employees who leave the PBC at the mandatory retirement age has increased recently and the PBC is not able to hire new engineers. Over the next three years, three more engineers will retire. After their retirement, the PBC plans to deploy engineers from other transmitting stations. In the light of this, although the PBC has a few minor problems with the number of personnel, there was no major problem with regard to the institutional aspects of operation and maintenance.

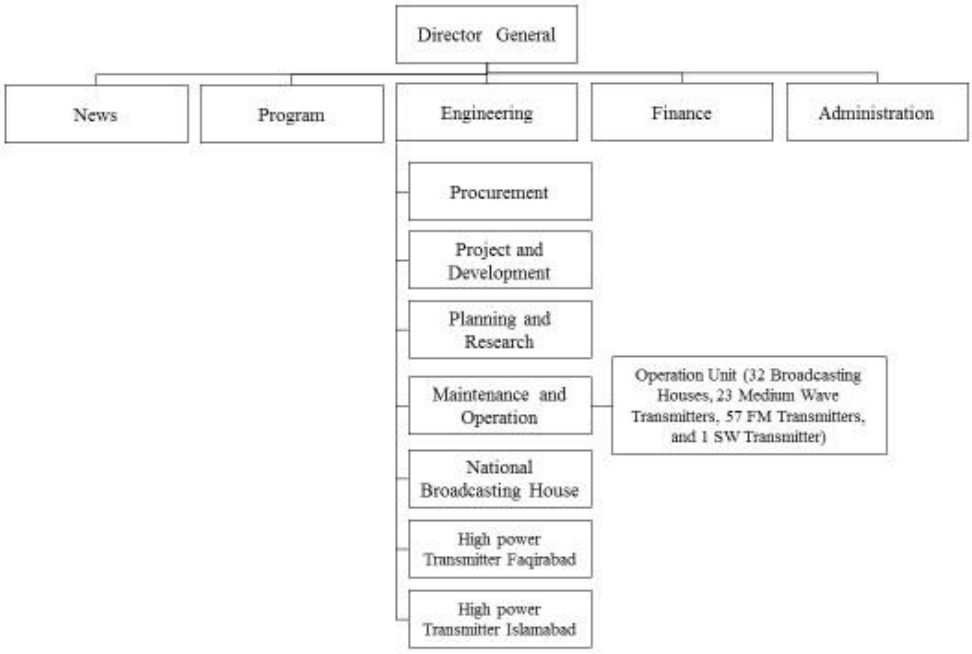

Figure 2: Organization Chart of PBC

Source: PBC

3.4.2 Technical Aspects of Operation and Maintenance

At the time of planning, it was assumed that there would be no problem with the technical aspects because the PBC personnel had already acquired operation and maintenance skills for analog broadcasting equipment. However, because they were not accustomed to operating and maintaining the latest equipment, it was observed that on-the-job training (hereinafter "OJT") was needed on basic knowledge, operation of the measuring instrument for fault finding, quality control, and replacement of repair parts. This was almost done as planned by the Japanese engineers at the time

of the installation of the equipment.[17] Fifteen personnel, mainly from the Faqirabad transmitting station, attended OJT on the transmitting system, and sixteen personnel, mainly from the National Broadcasting House, attended OJT on the studio equipment. Although not all the personnel remain at the time of ex-post evaluation, daily and periodical maintenance has been implemented reliably based on manuals.

According to the PBC, there is no technical problem with normal maintenance and management. However, there is a shortage of the techniques needed for repair and identification of sudden failure of facilities and equipment. While a special technique is required especially for troubleshooting the transmitter, only a one-day OJT session was done. Therefore, their technique is not yet up to a level that facilitates repair by themselves. The PBC needs training on troubleshooting skills by the manufacturer for engineers at the Faqirabad transmitting station and the National Broadcasting House in order to respond early in the event of a failure.

The equipment in the master control room is basically maintenance-free, and an accidental malfunction was to be addressed through replacement of parts. Accordingly, minimum spare parts necessary for a period of spare part procurement were procured in the project, and the after-sales service system was arranged. However, according to the PBC, not all critical spare parts for troubleshooting have been provided. In addition, it is impossible to procure them in Pakistan. Moreover, Pakistan has no engineers who can address these issues, and the PBC has no choice but to import spare parts from Japan. It is necessary to improve this situation so that the PBC can receive after-sales service promptly. Currently, it takes a long time to obtain spare parts after an application because import settlement procedures are time-consuming.

Based on the above, it is fair to say that a technical problem remains in troubleshooting, although there is no problem in normal maintenance and management.

3.4.3 Financial Aspect of Operation and Maintenance

Table 6 shows the PBC's financial status for the last five years. The PBC's main revenue is a subsidy from the government, and other revenues are advertisement income and operating revenue. The revenue in FY 2015/2016 was 3.95 billion Pakistan Rupees (hereinafter "PKR"), which is 1.5 times the revenue in FY 2011/2012. This was mainly because the subsidy increased in FY 2012/2013 by 42%, and because advertisement income had increased in FY 2013/2014 by 72%, both in comparison to the previous fiscal year. Meanwhile, expenditures also increased to about PKR 4.5 billion in FY 2015/2016, which was 1.5 times those in FY 2011/2012. The reasons for the increase in expenditures are that security guard measurement charges were imposed by the government on all broadcasting stations and retirement pay and pension increased from 2014/2015.

[17] The OJT period related to the transmitter system was 23 days and the one related to studio equipment was 17 days.

Table 6: PBC's Revenue and Expenditure

(Unit: Pakistan Rupee)

		2011/2012	2012/2013	2013/2014	2014/2015	2015/2016
Revenues	Advertisment incomes	196,064,615	192,613,180	332,028,521	325,560,239	315,059,890
	Operating revenenue	35,157,489	11,507,003	33,622,693	14,837,479	33,834,909
	Subsidy	2,401,000,000	3,401,350,000	3,493,877,000	3,343,877,000	3,597,640,000
	Sub-total	2,632,222,104	3,605,470,183	3,859,528,214	3,684,274,718	3,946,534,799
Expenditures	Salaries, wages and benefits	1,505,307,816	1,777,115,870	1,838,062,034	1,989,697,939	2,104,306,463
	Pension and gratuity	835,559,997	1,204,842,875	963,254,873	7,056,715,149	1,268,416,684
	Power and fuel charges	171,874,192	171,239,530	185,935,353	221,102,827	219,677,315
	Programmes' expenses	104,917,251	124,292,964	127,597,107	181,350,474	252,321,056
	Repairs and maintenance	15,139,413	20,818,034	25,578,434	35,875,462	35,682,587
	Security guards charges	0	133,369,886	141,367,474	156,933,852	186,306,673
	Others	369,668,711	253,860,562	263,284,305	428,214,023	438,049,954
	Sub-total	3,002,467,380	3,685,539,721	3,545,079,580	10,069,889,726	4,504,760,732
Balance		-370,245,276	-80,069,538	314,448,634	-6,385,615,008	-558,225,933

Source: PBC

While the expenditure outweighs the revenue, the PBC can neither recruit personnel nor secure reserve funds for equipment updates in the long run. In 2018, the PBC received a government-financed bailout in the amount of PKR 500 million and is requesting a continued bailout in FY 2018/2019 as well. The subsidy has increased to about PKR 3.8 billion in FY 2017/2018 and is expected to increase more in FY 2018/2019. In addition, as the PBC has been trying to increase operating revenues and reduce expenditures through a variety of measures, its financial health is likely to improve.

The actual operation and maintenance costs of the project were PKR 35.68 million in FY 2015/2016 and PKR 23.5 million in FY 2016/2017, respectively, which are less than the projection at the time of planning. Under severe financial conditions, the PBC has been working to curtail electricity and fuel fees and suspend contract renewals of temporary personnel, and has tried to secure the budget for the minimum required operation and maintenance by diverting the budget from other items in case of equipment failure.

From the above, there are some problems with the financial aspect of operation and maintenance at the time of ex-post evaluation; however, it is judged that it would not have a considerable effect on the sustainability of the project.

3.4.4 Status of Operation and Maintenance

With the exception of a few, most facilities and equipment are operated and managed without a problem. A non-linear editing system in the master control room is not used. At the time of planning, the system was expected to share audio data files by establishing a network within the broadcasting station, connecting with a device called a digital audio archive, which records and saves data files in a large-capacity storage memory. However, it is not possible to share data files in the network at the time of ex-post evaluation because compatibility of software between the archive device and the

editing system has not been confirmed. The PBC has no technical capacity to address the issue above; therefore, an Indian engineer has been requested for support, but this has not been realized because he cannot enter the country owing to Pakistan's security problems.

In light of the above, some problems have been observed in the financial aspect. Therefore, the sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project was implemented to enable the expansion of radio broadcasting service to KP and FATA in the Afghan border regions by rehabilitating a deteriorated medium wave radio transmitter and equipment at studios and a master control room, thereby contributing to the stabilization of the border regions.

The project was relevant to Pakistan's development plans and needs, both at the time of planning as well as at the time of the ex-post evaluation, and Japan's ODA policy at the time of planning; therefore, its relevance is high. There were no major changes in the project output, and the project cost was lower planned. During the implementation of the project, Japanese engineers were forced to evacuate the project site because anti-government demonstrations occurred. The project period exceeded the planned timeframe by one month because construction was interrupted for three months along with the evacuation. The efficiency of the project is judged to be high, considering that the contract's force majeure clause was applied.

After completion of the project, the target value for the number of listeners in the coverage area was achieved through the expansion of the listening range of radio broadcasts (coverage area of the radio broadcasting services) to throughout KP and FATA, except Chitral District, a mountainous area. Daily broadcasting time exceeds the goal of 14 hours. This enables a variety of broadcast programs to be provided, including programs on social problems, government policies, terrorism issues, safety measures, and regional information. Therefore, this project has high effectiveness and a high level of impact.

Because operation and maintenance has been implemented properly, there are no problems in the organizational and technical aspects. In contrast, no budget is secured for hiring new staff or replacing equipment. Therefore, there are some problems in the financial aspect, and the sustainability of this project is fair.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

Daily maintenance and exchange of consumable parts, which are used constantly, are conducted properly. An overall renewal of the medium wave transmitter body is recommended 10 years after commencement of the operation, considering the depreciation period and technical innovation.

Under the severe financial condition at the time of the ex-post evaluation, the level of subsidy for FY 2017/2018 is increased and it is expected to stay at least at that level, along with the continuation of management efforts to increase operating revenues and cut costs. In parallel with this, from now until the time of updating equipment seven years later, it is necessary to make long-term maintenance and management plans, as well as to reserve funds for renewing overall equipment.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

Effective use of a capacity building program (soft component) scheme in procurement of equipment that needs special techniques

By providing a system assembled with equipment items by one Japanese manufacturer, this project has aimed to secure the reliability of public broadcasting through guaranteed performance of the system as a whole. The project needed to provide technical training on operation and maintenance because the system and other equipment are not manufactured in Pakistan and the method of medium wave transmitting is different from the one used previously. The technical training on operation and maintenance by Japanese engineers dispatched at the time of installation, testing, and adjustment was conducted as planned. However, the period of the technical training was too short for engineers at the executing agency to attain a technical level to repair the system by themselves. As just described, when high-level maintenance techniques are required and no adequate engineers exist in the recipient country, it is desirable to use a soft component scheme with grant aid and assist executing agencies until their engineers attain such techniques and become able to perform proper maintenance by themselves.