

Federal Republic of Nigeria

FY2015 Ex-Post Evaluation of Japanese Grant Aid Project

“The Project for Improvement of Medium Wave Radio Broadcasting Network Phase (I) & (II)”

External Evaluator: Mr. Koichiro Ishimori, Value Frontier Co., Ltd.

0. Summary

The objective of the project was to expand and improve the coverage of medium wave radio broadcast by upgrading medium wave radio transmitters at Kaduna and Enugu Stations, and thereby to contribute to improving access to education for residents in the regions, particularly nomads and sea nomads, whose literacy rates were low and who changed their place of living. The project was fully in line with the development policies and needs of Nigeria as well as Japan’s ODA policies, and therefore its relevance is high. Both the project cost and the project period were lower than planned. However, its efficiency is fair because the project was completed without completing the construction of the fence at the periphery of Enugu Station. All the actual figures of the operation and effects indicators to measure the quantitative effects of the project (i.e., the daily operational hours of the medium wave radio transmitters, the areas covered by the radio broadcasts, and the population covered by the radio broadcasts) were either same as planned or even greater. The qualitative effect (i.e., improvement in the sound quality of radio broadcasts) seems to have been realized. Besides, an impact was also observed with regard to access to education through medium wave radio broadcasts. Therefore, the effectiveness and impact of the project are high. No major problems are observed in the institutional, technical, and financial aspects pertinent to the operation and maintenance of the procured equipment as well as in the continuity of the project effects. Therefore, the sustainability of the project effects is high.

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

1. Project Description



Project Location



Main entrance of Kaduna Station

1.1 Background

Nigeria is situated in the center of West Africa and surrounded by Benin to the west, Niger to the north, and Cameroon to the east and the south. It has approximately 0.92 million square kilometers of land, which is almost equivalent to 2.5 times the land area of Japan, and approximately 182 million people, which is almost equivalent to 1.5 times the population of Japan. It is one of the greatest oil-producing countries in the world, and its economy depends heavily on the oil industries. After the oil boom in the 1970s, however, its economy was so severely affected that almost 70% of the national population lived below a dollar a day. To revive the economy, the government of Nigeria began numerous work in a wide variety of sectors. In the education sector, which is the foundation for the economy, a huge gap existed between the urban and rural areas necessitating measures to improve access to education in rural areas. For this reason, the government was taking strategic measures to provide distance learning via radio that was embedded in the lives of rural people as an educational tool.

1.2 Project Outline

The objective of the project was to expand and improve the coverage of medium wave radio broadcast by upgrading medium wave radio transmitters at Kaduna and Enugu Stations and thereby to contribute to improving access to education for residents in the regions, particularly nomads and sea nomads, whose literacy rates were low and who changed their place of living.

EN Grant Limit /Actual Grant Amount	(I) 642 million yen, (II) 526 million yen (I) 641 million yen, (II) 523 million yen
Exchange of Notes Date / Grant Agreement Date	(I) August, 2007, (II) June, 2008
Implementing Agency	Federal Radio Corporation of Nigeria (FRCN)
Project Completion Date	(I) February, 2009, (II) February, 2010
Main Contractors	(I)(II) NEC Corporation and Denki Kogyo Company, Limited
Main Consultants	(I)(II) Yachiyo Engineering Co., Ltd.
Basic Design	March, 2007
Detailed Design	-
Related Projects	-

2. Outline of the Evaluation Study

2.1 External Evaluator

Mr. Koichiro Ishimori, Value Frontier Co., Ltd.

2.2 Duration of the Evaluation Study

The ex-post evaluation was conducted according to the following schedule.

Duration of the Study: July, 2015- April, 2017

Duration of the Field (Third Country) Study: March 20, 2016- March 26, 2016, and July 16, 2016 – July 21, 2016

2.3 Constraints during the Evaluation Study

The external evaluator had to conduct the evaluation study remotely from Japan and Senegal considering the security conditions in Nigeria. The local consultant who assisted the external evaluator, therefore, obtained information on the project by making visits to FRCN and the project sites on behalf of the external evaluator. Besides, the external evaluator had to evaluate the project based on substantially limited information, because even the local consultant was unable to visit regions inhabited by the nomads and sea nomads who were the intended beneficiaries of the project because of security reasons.

3. Results of the Evaluation (Rating: A¹)

3.1 Relevance (Rating: ③²)

3.1.1 Relevance to the Development Plan of Nigeria

National Economic Empowerment and Development Strategy (NEEDS) of 2004, the national development plan of the government of Nigeria at the time of the project planning in 2007, prioritized growth of six sectors: agriculture and rural development, roads, education, health, water supply, and electricity. Although “broadcasts” were not included among the sectors marked for development, they did play a certain role in implementing the measures taken by the government, such as disseminating information on these sectors to the people. Particularly in education, measures taken to provide “access to education” had top priority because they would contribute to alleviating poverty and improving living conditions³ and “distance learning” was considered one of the tools to achieve this.⁴ For the purpose of providing distance learning as well as daily information, the project was attempting to upgrade the radio transmitters at Kaduna and Enugu Stations which covered areas inhabited by many of “6.5 million nomads and 2.8 million sea nomads with a substantially low literacy rates of 0.2 to 2% and who changed their place of living⁵”. Therefore, the project was judged to be in line with the development plan of Nigeria.

Nigeria Vision 20: 2020 of 2009, the national development plan of the government of Nigeria at the time of the ex-post evaluation in 2015, prioritizes “optimization of its human and natural resource potentials to achieve economic growth” and “translation of economic growth into equitable social development.” In particular, the government gives top priority for “education” to optimize human resource potential⁶ and stresses the importance of

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

² ③: High, ②: Fair, ①: Low

³ International Monetary Fund (IMF), P35 of *National Economic Empowerment and Development Strategy of 2004*

⁴ IMF, P29 of *National Economic Empowerment and Development Strategy of 2004*

⁵ Association for the Development of Education in Africa (ADEA), P15 of *Improving the Quality of Nomadic Education in Nigeria: Going Beyond Access and Equity of 2005*

⁶ National Planning Commission (NPC), P35 of *Nigeria Vision 20: 2020 of 2009*

“management of information and knowledge” as “education for nomads.”⁷ Besides, the Federal Ministry of Education considers “broadcasts” as an indispensable tool to achieve social development, particularly in providing access to education,⁸ though this is not articulated in the Vision. Therefore, the project to upgrade the radio transmitters at Kaduna and Enugu Station which now cover areas inhabited by many of “9.9 million nomads and 3.2 million sea nomads with substantially low literacy rates of 9.2 to 32% and who changed the place of living”.⁹ Therefore, the project is judged to be still in line with the development plan of Nigeria.

In light of the above, the project is judged to have been in line with the development plan of Nigeria both at the time of the project planning and the ex-post evaluation.

3.1.2 Relevance to the Development Needs of Nigeria

When the project was planned in 2007, FRCN, the national broadcasting company of Nigeria, provided distance learning as well as daily information to the country, whose average literacy rate was approximately 57%.¹⁰ Due to the severe deterioration of medium wave radio transmitters which had been installed in the 1970s, Kaduna and Enugu Stations were able to cover only approximately 20% of the areas they used to cover when they started their broadcasts. While the internet and mobile phone penetration rates in the country were significantly low, approximately 7% and 27%, respectively,¹¹ the radio penetration rate was significantly high, approximately 76%,¹² and even higher among nomads and sea nomads, approximately 81% and 82%, respectively.¹³ Considering the extremely low literacy rate of nomads and sea nomads, radio was indispensable in their lives. Therefore, the project implemented at Kaduna and Enugu Stations covering areas inhabited by many of the nomads and sea nomads with an extremely low literacy rate was judged to be in line with the development needs of Nigeria.

At the time of the ex-post evaluation in 2015, FRCN continues to provide distance learning as well as daily information to the country, whose average literacy rate is still low, approximately 67%.¹⁴ While the internet and mobile phone penetration rates have skyrocketed to approximately 43% and 78%, respectively,¹⁵ the radio penetration rates

⁷ NPC, P37 of *Nigeria Vision 20: 2020 of 2009*

⁸ Answer on the questionnaire from the Federal Ministry of Education

⁹ Answer on the questionnaire from the Federal Ministry of Education

¹⁰ IMF, P34 of *National Economic Empowerment and Development Strategy of 2004*

¹¹ World Bank (WB), Statistical data from *World Development Indicators of 2007*

¹² Japan International Cooperation Agency (JICA), citation from *the Summary of the Basic Design Study on the Project for Rehabilitation of Medium Wave Broadcasting Network for the Enhancement of Education*

¹³ Interview with the Federal Ministry of Education

¹⁴ United Nations Children's Fund (UNICEF), Statistical data (average of both men and women) from *At a glance: Nigeria of 2013*

¹⁵ WB, Statistical data from *World Development Indicators of 2014*

remain high, particularly among nomads and sea nomads, at approximately 90% and 98%, respectively.¹⁶ Considering the extremely low literacy rates of nomads and sea nomads, radio still continues to be an indispensable part of their lives. Therefore, the project implemented at Kaduna and Enugu Stations covering areas inhabited by many of the nomads and sea nomads is still judged to be in line with the development needs of Nigeria.

In light of the above, the project is judged to have been in line with the development needs of Nigeria both at the time of the project planning and the ex-post evaluation.

3.1.3 Relevance to Japan's ODA Policy

ODA Charter of 2003, the aid policy of the Government of Japan at the time of the project planning in 2007, prioritized cooperation in the area of information and communication technologies in one of its four pillars, sustainable growth. *Mid-term Policy of ODA* of 2005 also prioritized the development of information and communication technologies in one of its four pillars, sustainable growth. Moreover, the *Data book for Nigeria* of 2007 highlighted the importance of cooperation that could directly benefit the basic lives of the Nigerian people, to support Nigeria's self-help efforts in line with NEEDS of 2004.

In light of the above, the project is judged to have been in line with Japan's ODA Policy.

In conclusion, the project has been highly relevant to Nigeria's development plan 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 comprised two phases, Phase I for Kaduna Station and Phase II for Enugu Station. In Phases I and II, the government of Japan provided the government of Nigeria with grant aid assistance for procuring the medium wave radio transmitters. Then, the government of Nigeria implemented the installation work of the procured transmitters. Project outputs were the same for Phases I and II. Although the procurement and the installation work took place almost as planned, the government of Nigeria was unable to complete the construction of the fence at the periphery of Enugu Station in Phase II by the end of the project period.¹⁷

¹⁶ Interview with the Federal Ministry of Education

¹⁷ The construction work was not completed by the end of the project period because budget allocation was prioritized to repair a transmitter in another station. However, it was completed around June 2012.

Table 1: Project Outputs in the Phase I and the Phase II

	Planned outputs	Actual outputs
Japanese Side		
Procurement	Medium wave radio transmitters, Dummy loads, Program input equipment rack, Measuring equipment, Automatic Voltage Regulator (AVR), Power Distribution Board (PDB), Spare parts, Consumables, Connecting cables, Medium wave antenna systems, Air conditioners	As planned.
Nigerian Side		
Installation work	Removal work of the existing equipment, Renovation work of the Stations, Construction work of the fence in the periphery of Stations, Electrical work	As planned, with the exception of the fence in the periphery of Enugu Station

Source: Documents from FRCN

3.2.2 Project Inputs

3.2.2.1 Project Cost

While the planned project cost on the Japanese side was 1,168 million yen, the actual cost was lower than planned due to an appreciation in the cost of the yen, at 1,164 million yen. On the contrary, while the planned project cost on the Nigerian side was 30.16 million naira, equivalent to approximately 27 million yen at the exchange rate of 0.9 yen to the naira calculated in the basic design study, the actual cost was higher than planned due to a price hike of materials such as cements and pumps, 32.93 million naira, equivalent to approximately 29.5 million yen at the same exchange rate. However, while the total planned cost on the Japanese and Nigerian sides was 1,195 million yen, the total actual cost was lower than planned, at 1,193.5 million yen (99% of the total planned cost).¹⁸

Table 2: Project Costs in the Phase I and the Phase II

	Planned costs	Actual costs
Japanese side	1,168 million yen	1,164 million yen
Phase I	642 million yen (Equipment: 591 million yen, Design and supervision: 51 million yen)	641 million yen (Equipment: 591 million yen, Design and supervision: 50 million yen)
Phase II	526 million yen (Equipment: 481 million yen, Design and supervision: 45 million yen)	523 million yen (Equipment: 478 million yen, Design and supervision: 45 million yen)
Nigerian side	30.16 million naira (approximately 27.0 million yen)	32.93 million naira (approximately 29.5 million yen)
Phase I	21.43 million naira (approximately 19.2 million yen)	23.75 million naira (approximately 21.3 million yen)
Phase II	8.73 million naira (approximately 7.8 million yen)	9.18 million naira (approximately 8.2 million yen)

Source: Documents from FRCN

¹⁸ The cost underrun of approx. 4 million yen on the Japanese side absorbed the cost overrun of approx. 2.5 million yen on the Nigerian side, and therefore the total actual cost was lower than planned.

3.2.2.2 Project Period

The planned project period of Phase I was 19 months from August 2007 (E/N date) to February 2009 (completion) and that of Phase II was 18.5 months from June 2008 (E/N date) to December 2009. Therefore, the total planned project period was 37.5 months (excluding the period from E/N date to consulting agreement date). While the actual project period of Phase I was mostly as planned, 18.4 months from August 16, 2007 (consulting agreement date) to February 26, 2009 (completion), that of Phase II was slightly longer than planned, 18.9 months from July 8, 2008 (consulting agreement date) to February 2, 2010 (completion), due to delays in the procurement of foundation materials for the antenna and in the installation work of AVR, PDB, and air conditioners. However, the total actual project period was shorter than planned, at 37.3 months.

In conclusion, while the actual project cost on the Japanese side was lower than planned, the cost on the Nigerian side was higher than planned due to a price hike of the materials needed to be procured. However, the total actual project cost on the Japanese and Nigerian sides was within the plan. Whereas the actual project period of Phase I was mostly as planned, that of Phase II was slightly longer than planned due to the delays in procurement of foundation materials and in the installation work of equipment. However, the total actual project period was within the plan. Meanwhile, from the perspective of appropriateness of project inputs (project cost and project period) to achieve project outputs, it is hard to say whether the project was appropriate enough because the construction of the fence at the periphery of Enugu Station by the Nigerian side, which was important for the safety of the facilities, was not completed by the end of the project without reducing the planned project inputs. Therefore, it is judged that efficiency of the project is fair.

3.3 Effectiveness¹⁹(Rating: ③)

3.3.1 Quantitative Effects (Operation and Effect Indicators)²⁰

Table 3: Operation and Effect Indicators

		Baseline	Target	Actual performance	Actual performance	Actual performance
		2006	2010 (I) 2011 (II)	2009 (I) 2010 (II)	2010 (I) 2011 (II)	2011 - 2015 (I) 2012- 2016 ²¹ (II)
		Planned year	One year after project completion	Year of project completion	One year after project completion	Two to six years after project completion
Operation and Effects Indicators						
Indicator 1: Daily operational hours of the medium wave radio transmitters	Kaduna Station	NA	NA	18.5 hours (5:30- 0:00)	18.5 hours (5:30- 0:00)	18.5 hours (5:30- 0:00)
	Enugu Station	NA	NA	19.0 hours (5:15- 0:15)	19.0 hours (5:15- 0:15)	19.0 hours (5:15- 0:15)
Indicator 2: Areas covered by the radio broadcasts	Kaduna Station	Radius of 120km	Radius of 230km	Radius of 250km	Radius of 250km	Radius of 250km
	Enugu Station	Radius of 42km	Radius of 160km	Radius of 160km	Radius of 160km	Radius of 160km
Indicator 3: Population covered by the radio broadcasts	Kaduna Station	9.3 million people	46 million people	49 million people	49 million people	49 million people
	Enugu Station	2.9 million people	40 million people	42 million people	42 million people	42 million people

Source: Documents from FRCN

Indicator 1: Daily operational hours of the medium wave radio transmitters

The daily hours of power supply from the regional power company to Kaduna and Enugu Stations were examined first since demand and supply of electric power in Nigeria were so tight that it could impede the operational hours of the radio transmitters at the Stations. It was found to be approximately seven intermittent hours at Kaduna Station and ten intermittent hours at Enugu Station. In case of blackouts, the Stations switch power to backup generators for emergency use and operate radio transmitters. While it takes Kaduna Station one minute to switch to power backup, it takes Enugu Station one to two minutes to do the same. Despite blackouts, the Stations are able to operate 18.5 hours and 19 hours. Therefore, there is no problem with regard to the daily operational hours of the medium wave radio transmitters.

Indicator 2: Area covered by the radio broadcasts

The area covered by the radio broadcast at Kaduna Station before the project began was a radius of 120 km of the station. When the project was completed, the radius increased to 250 km, greater than the planned expansion of 230 km. Meanwhile, the area covered by the radio

¹⁹ Sub-rating for Effectiveness is to be put with consideration of Impact.

²⁰ The operation and effect indicator quantitatively set at the time of the project planning was indicator 3 alone. Due to difficulties in correctly evaluating the operational effects of the project in quantitative terms with indicator 3 alone, indicators 1 and 2 were added at the time of ex-post evaluation.

²¹ The data in 2016 represent the data until July 2016 when the second field (third country) study was done.

broadcast at Enugu Station before the project began was a radius of 42 km. When the project was completed, the radius increased to 160 km as planned. Therefore, it is considered that indicator 2 was achieved either as planned or greater than the planned target.

Indicator 3: Population covered by the radio broadcasts

The population covered by the radio broadcast at Kaduna Station before the project began was 9.3 million people. It increased to 49 million, greater than the planned figure of reaching 46 million. Meanwhile, the population covered by the radio broadcast at Enugu Station before the project began was 2.9 million people, which increased to 42 million, again greater than the planned figure of reaching 40 million. Therefore, it is considered that indicator 3 was achieved greater than the planned target.

3.3.2 Qualitative Effects (Other Effects)

Indicator 4: Improvement in sound quality of radio broadcasts

There is little point in expanding the area and population covered by the radio broadcasts as per the project if the sound quality is not clear to the listeners. Therefore, the sound quality of radio broadcasts was examined through interviews²² in the areas near Enugu Station. According to a 41-year-old woman living in Ugwuoba, approximately 2 km from Enugu Station, and a 39-year-old man living in Achi, approximately 30 km away from it, there were problems with the sound quality of the radio broadcasts from Enugu Station, and therefore they used to listen to broadcasts from other stations. After the project, however, they began to listen to the broadcasts from Enugu Station because the sound quality had improved. Since Ugwuoba and Achi were located in areas already covered by the broadcasts from Enugu Station even before the project, it is assumed that the aforementioned effect was brought about by the improvement in the sound quality resulting from the medium wave radio transmitter switching from analog to digital systems, rather than due to the expansion of the areas covered by the broadcast.

In conclusion, the quantitative effects illustrated by the operation and effect indicators are either as planned or even greater than planned, with the qualitative effect also being achieved as planned. Therefore, it is judged that effectiveness of the project is realized.

²² The local consultant had interviews from two ordinary citizens. They were people whom the local consultant happened to meet at a bus stop and a café near Enugu Station and who kindly accepted to be present at the interviews. Also, they were people who not only had listened to the radio broadcasts before the project but listened now after the project at the time of ex-post evaluation. It should be noted however that the hearing results from two people do not represent all the beneficiaries because Enugu Station reaches out to 42 million people.

3.4 Impacts

3.4.1 Intended Impacts (Access to Education)

(1) Contributions to improving the educational standards through improvement of distance learning in collaboration with educational institutes

FRCN invites teachers from the National Teachers' Institute as guest speakers on a regular basis and broadcasts programs on teaching methods directed toward teachers in the country. Thus, it contributes to improving the educational standards in the country.

(2) Contributions to increasing number of educational programs through an increase in income from advertisements corresponding to the expansion of coverage and reduction in broadcast fees²³

The weekly share of educational programs among all programs at Kaduna Station has increased from approximately 6% at 7.75 hours out of 129.5 hours in 2009,²⁴ to approximately 8% at 9.75 hours out of 129.5 hours in 2016, whereas the share at Enugu Station has increased slightly from approximately 3% at 4.5 hours out of 133 hours in 2006 to approximately 4% at 5.5 hours out of 133 hours. As is discussed later, however, the income generated from advertisements has been decreasing of late partly due to the growth in internet penetration,²⁵ which has not eventually led to a decrease in broadcast fee, though the coverage has expanded. Therefore, it is considered that the intended impact, increase in educational programs, was not realized by the intended logic underlined above.

(3) Contributions to filling the information gap due to the expanded coverage

Kaduna Station broadcasts programs on math, language, science, sociology, history, music, art, health, and morals in the standard language of English and Hausa that the nomads speak. As a result of the expansion in coverage area from only a part of the north west region to the majority of the north west and central regions, the children, including those of nomads, living in the expanded coverage areas are assumed to be able to access education through these programs.



Boy listening to radio

²³ Companies and entities that want to broadcast a radio program become sponsors of the program and purchase a slot, which becomes the fee for the broadcasts.

²⁴ Kaduna Station has discarded the information on the radio programs that were broadcast before the project, namely, in 2006. Therefore, the ex-post evaluation used the information on the oldest radio programs of 2009 that were retained.

²⁵ Internet penetration rate has been increasing. According to *World Development Indicators* of the World Bank, the rate is as follows: approx. 7% in 2007 (when the project was planned) → approx. 16% in 2008 → approx. 20% in 2009 → approx. 24% in 2010 → approx. 29% in 2011 → approx. 33% in 2012 → approx. 38% in 2013 → approx. 43% in 2014 → NA in 2015 (when the ex-post evaluation was done).

Enugu Station broadcasts programs on language, sociology, music, art, and morals in the standard language of English and Igbo that the sea nomads speak. As a result of the expansion in the coverage areas from only a part of the south east region to the majority of the south east and the south south regions, the children, including those of sea nomads, are assumed to be able to access education through these programs. According to the interviews,²⁶ which were done during the ex-post evaluation, three children living near Kaduna Station said that they listened to educational programs from Kaduna Station and enjoyed learning from them. Furthermore, according to the Federal Ministry of Education, the project has been bringing about a huge impact on children, particularly those of nomads and sea nomads, who lived in the expanded coverage areas.

3.4.2 Other Impacts

(1) Impacts on the Natural Environment

According to the responses to the questionnaire from FRCN and the site survey by the local consultant, there has been no negative impact on the natural environment because of the upgraded equipment in the existing facilities. Therefore, there is no problem with it.

(2) Land Acquisition and Resettlement

Similarly, according to the responses to the questionnaire from FRCN and the site survey by the local consultant, there has been no land acquisition and resettlement because of the same reason as above. Therefore, there is no problem with it.

As explained above, the area and population covered by the radio broadcasts from Kaduna and Enugu Stations are either the same as planned or greater than planned, with the sound quality also showing improvement because of the project. The stations broadcast for approximately 19 hours from early morning to midnight daily and deliver educational programs for the benefit of teachers and children. The children living in the newly covered areas are able to access education through these education programs. The Federal Ministry of Education also recognizes that the project has been bringing about a huge impact, particularly on the children of nomads and sea nomads. In conclusion, the project has largely achieved its objectives. Therefore, effectiveness and impact of the project are high.

²⁶ The local consultant had interviews from three children between the ages of 13 and 16 to whom he was introduced by ordinary citizens living near Kaduna Station and who kindly accepted to be present at the interviews. It should be noted however that the hearing results from three people do not represent all the beneficiaries because Kaduna Station reaches out to 49 million people.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

Presently, the executive directors in charge of Kaduna and Enugu Stations at FRCN HQ manage the overall operations of the two Stations. At the Stations, there are deputy directors in charge of news, programs, marketing, and engineering services, who report to the executive directors. The operation and maintenance of the medium wave radio transmitters procured by the project are taken care of by 264 staff at the department of engineering services at Kaduna Station and 106 staff at the department of engineering services at Enugu Station. Considering that the planned number was 96 at Kaduna Station and 46 at Enugu Station, this is significantly higher. The reason is that FRCN plans to establish sub-stations under the regional stations, including Kaduna and Enugu Stations, according to the plan to establish radio stations in all 36 states. Meanwhile, the radio programs are produced by 240 staff at the department of programs at Kaduna Station and 213 staff at the department of programs at Enugu Station. Considering that the planned number was 144 at Kaduna Station and 52 at Enugu Station, this is again significantly higher for the same reason. Therefore, it is considered that there is no problem with the supervision of Kaduna Station and Enugu Station by FRCN HQ as well as with the institutional aspects of operation and maintenance at the two Stations.

3.5.2 Technical Aspects of Operation and Maintenance

The department of Engineering Services at FRCH HQ provides quarterly training in the operation and maintenance of digital radio transmitters for the staff at the department of engineering services in each region. At Kaduna and Enugu Stations, the members of staff at the department of engineering services who have received technical training under the counterpart training of the project mainly operate and maintain the procured equipment by referring to manuals provided by the manufacturer.²⁷ As seen above, the two Stations have been able to broadcast for approximately 19 hours from the early hours in the morning to midnight every day, and therefore it is considered that there is no problem with the technical aspects of operation and maintenance.

3.5.3 Financial Aspects of Operation and Maintenance

Government budget has been increased based on the aforementioned plan, and the actual budget in 2015 substantially exceeded the planned budget. Income from advertisements and broadcasting fees increased after 2006, but decreased lately due to the increasing internet penetration. The actual income in 2015 dropped to a degree that had been planned for in the

²⁷ No public certificate is required for the operation and maintenance.

end. However, the substantial increase in the government budget overly compensated for the decrease in income from advertisements and broadcast fees, resulting in an increase in the total revenue. Total expense also shows an increasing trend since 2006 because of the aforementioned reason, and the actual total expense in 2015 substantially exceeded the planned one. However, the net balance of FRCN for the past three years has been positive, though it is not to the degree expected. The planned budget for 2015 for the operation and maintenance of the procured equipment ((2) B. total expense in Table 4) has been fully covered. FRCN is planning to cover the budget fully for the operation and maintenance, and therefore it is considered that there is no problem with the financial aspects of operation and maintenance.

Table 4: Net Balance of FRCN

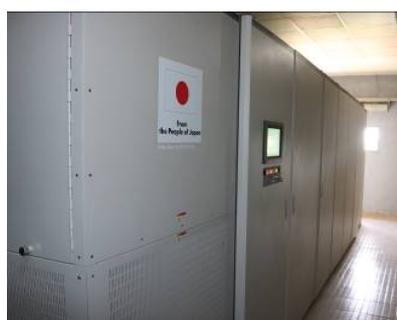
(Unit: Million naira)

Items	(1) 2006 baseline	(2) 2015 Plan	(3) 2013 Actual	(4) 2014 Actual	(5) 2015 Actual
A. Total revenue (1-3)	2,492	2,554	6,592	6,972	8,130
1. Government budget	1,622	1,622	5,237	5,872	7,238
2. Income from ads, broadcast fees	870	885	1,355	1,100	892
3. Others		47	0	0	0
B. Total expense (4-11)	2,166	2,120	6,574	6,957	8,112
4. HR, Program production		1,368	4,798	5,519	7,031
5. Repair parts		1	87	15	12
6. Maintenance		69	164	206	167
7. Telephone		45	73	36	29
8. Training		38	67	16	13
9. Utilities		207	112	78	60
10. Travel		112	218	163	128
11. Others		280	1,055	924	682
Net balance	326	434	18	15	18

Source: Documents from FRCN

3.5.4 Current Status of Operation and Maintenance

According to the responses to the questionnaire from FRCN and the site survey by the local consultant, Kaduna and Enugu Stations face no problems in operating and maintaining the procured equipment. Therefore, it is considered that there is no problem with the current status of operation and maintenance.



Medium wave radio transmitter



Program input equipment rack

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

4. Conclusion, Lessons Learned, and Recommendations

4.1 Conclusion

The objective of the project was to expand and improve the coverage of medium wave radio broadcast by upgrading medium wave radio transmitters at Kaduna and Enugu Stations, and thereby to contribute to improving access to education for residents in the regions, particularly nomads and sea nomads, whose literacy rates were low and who changed their place of living. The project was fully in line with the development policies and needs of Nigeria as well as Japan's ODA policies, and therefore its relevance is high. Both the project cost and the project period were lower than planned. However, its efficiency was fair because the project was completed without completing the construction of the fence at the periphery of Enugu Station. All the actual figures of the operation and effects indicators to measure the quantitative effects of the project (i.e., the daily operational hours of the medium wave radio transmitters, the areas covered by the radio broadcasts, and the population covered by the radio broadcasts) were either same as planned or even greater. The qualitative effect (i.e., improvement in the sound quality of radio broadcasts) seems to have been realized. Besides, an impact was also observed with regard to access to education through medium wave radio broadcasts. Therefore, the effectiveness and impact of the project are high. No major problems are observed in the institutional, technical, and financial aspects pertinent to the operation and maintenance of the procured equipment as well as in the continuity of the project effects. Therefore, the sustainability of the project effects is high.

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

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

The weekly broadcasting hours of educational programs at Enugu Station have increased slightly from 4.5 hours to 5.5 hours. However, the share of educational programs among all programs is relatively small at approximately 4%. FRCN, the national broadcasting company, has the mandate to "uplift the people and unite the nation," and therefore plays an important role in broadcasting educational programs. Since the project attempts to bring impacts on improving access to education for residents in the region, particularly for the nomads and sea nomads, whose literacy rates are low and who change the place of living, it is desired that FRCN will increase the broadcasting hours of educational programs.

4.2.2 Recommendations to JICA

None

4.3 Lessons Learned

Difficulties in increasing income from advertisements

The project initially expected that increase in income from advertisement due to the expansion of coverage would decrease the broadcasting fees, which in turn would help in broadcasting more varieties of educational programs. Lately, however, there has been a decreasing trend in the income from advertisements at FRCN because there are numerous media, such as television, newspapers, magazines, and the internet besides the radio. If future radio projects are expected to bear the impact based on income from advertisements, it is necessary to do a trial calculation of income from advertisements based on competition from the numerous media and set impacts and impact indicators based on this calculation. If such a realistic calculation proves to be difficult, it is expected to cautiously consider the impact and impact indicators that depend on income from advertisements.