Internal Ex-Post Evaluation for Technical Cooperation Project

conducted by Botswana Office: November, 2023

Country Name	**Implementation of the digital migration project**
Republic of Botswana	

I. Project Outline

Background	In February 2012, the government of Botswana announced adoption of the Japanese system of the Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) and adopted it in February 2013. It was the first case in Africa. They highly appreciated the advantage of ISDB-T for broadcasting to on-vehicle devices and the commercialization of mobile devices. In addition, since the required deadlines of the end of analog broadcasting were the year of 2014 by the Southern African Development Community (SADC) and the year of 2015 by the International Telecommunication Union (ITU), digitalization of terrestrial broadcasting was an urgent issue in the country. On the other hand, the country had only one transmitter for the terrestrial digital broadcasting on a test basis and lack of various broadcasting equipment and capacity for program production by using characteristics of digital broadcasting.		
Objectives of the Project	Through development of necessary systems for digital broadcasting and capacity development for the production of data broadcasting programs, the project aims at the preparation of environment for the terrestrial digital broadcasting, thereby contributing to effective utilization of the terrestrial digital broadcasting by using ISDB-T. 1. Overall Goal: Terrestrial digital broadcasting that takes advantage of the features of Integrated Services Digital Terrestrial (ISDB-T) is effectively available. 2. Project Purpose: Environment for the terrestrial digital broadcasting that takes advantage of the features of ISDB-T is ready.		
Activities of the Project	1. Project Site: The entire country of Botswana 2. Main Activities: 1) Establishing a test center for compliance with set specifications and receivers' penetration assurance and developing viewers support through a call center operation, 2) Developing a training system of production data broadcasting program and programming plan of digital broadcasting, and so on 3. Inputs (to carry out above activities) Japanese Side 1) Experts: 17 persons 2) Trainees received: 10 persons 3) Equipment: Equipment for the test center (Spectrum analyser, ISDB-T modulator, Transmitting and receiving antenna, receiver, etc), P2 Card, Projector, Printer, Copy machine and Laptop computer 4) Local cost: Cost for local staff, travel and transport expenses, cost for promotion, etc. Botswanan Side 1. Staff allocated: 49 persons 2. Land and Facilities: Project office in DBS, office space in Botswana Communication Regulatory Authority (BOCRA) 3. Equipment: Vehicle 4. Operation Cost: Procurement cost for digital transmission network, data broadcasting equipment, call center, cost of agent for promotion activities		
Project Period	(ex-ante) September 2014- August 2016 (48 months) (actual) September 2014- August 2016 (48 months)	Project Cost	(ex-ante) 211 million yen, (actual) 250 nmillion yen
Implementing Agency	Department of Broadcasting Services (DBS) of the Ministry of State President (MSP)		
Cooperation Agency in Japan	Yachiyo Engineering Co., Ltd.		

II. Result of the Evaluation

<Constraints on Evaluation>

Due to COVID-19 quarantine restrictions, it was difficult to contact key informants who were involved in the project and able to provide necessary information for this ex-post evaluation survey. It took more time to conduct interviews with them for information collection and the coverage of information collection was limited.

1 Relevance

<Consistency with the Development Policy of Botswana at the Time of Ex-Ante Evaluation >

The project was consistent with the development policy of Botswana such as "National Development Plan 10" (2010/11-2015/16) based on "the Vision 2016" aiming at the migration from analogue to digital broadcasting by 2015 as recommended by ITU at the conference, leading to the broadcasting coverage of 65% of the national land and 96% of the population.

<Consistency with the Development Needs of Botswana at the Time of Ex-Ante Evaluation >

The project was consistent with the development needs of Botswana to digitize terrestrial broadcasting throughout Botswana because of the end of analog broadcasting.

<Consistency with Japan's ODA Policy at the Time of Ex-Ante Evaluation>

The project was consistent with the "Country Assistance Program for Botswana" (2014), prioritizing infrastructure development and human resource development for industrial diversification.

<Evaluation Result>

In light of the above, the relevance of the project is high.

2 Effectiveness/Impact

<Status of Achievement of the Project Purpose at the time of Project Completion>

The Project Purpose was not achieved by the time of project completion. There was no digital receiver available in the Botswana

market, and according to the customer sample survey, only 14.2% of respondents recognized the data broadcasting service (Indicator 1). However, in fact, the recognition of the customers did not affect the Analogue Switch Off (ASO) project to promote digital receivers. High Definition (HD) studio system was not established in Botswana Television (BTV) and program production was not able to perform in HD quality (Indicator 2). The plan and schedule for establishing the system were based on those of Japan but the background and conditions were very different between Japan and Botswana. Therefore, the plan based on the Japanese approach did not work well in Botswana. Also, the procurement of HD studio system was delayed.

<Continuation Status of Project Effects at the time of Ex-post Evaluation>

The project effects have been continued at the time of ex-post evaluation. After the project completion, the progress of the ASO plan has made people in Botswana recognize the analogue-switch off and necessity of digital migration for TV broadcasting. Specifically, the ASO plan started in December 2019 in Chobe District, one of the rural areas. DBS searched for the recognition of ASO among each household in the area. This survey showed that people understood what terrestrial data broadcasting is and why they need to buy a gadget to watch TV. In collaboration with three Set Top Box (STB)[1] distributers in Gaborone, promotion was conducted in areas where ASO was implemented. In addition, the Embassy of Japan granted 16,000 STBs under the Grant Aid of Economic and Social Development Program, and the government of Botswana made an announcement on Facebook (FB) and other related news platforms. Thus, people understood the new system has been installed and they need STBs to watch TV. So far, no ASO problems have been reported.

The HD Studio system was finally procured and started operation. 10 staff from different television skills (Engineering Division, Data Casting, Newsroom (Reporter and Cameramen), Graphics Design, Programs (Producers and Programs Acquisition) were trained on HD production. The BTV staff were further trained by suppliers for the equipment provided by the project. The staff trained in the project and ex-participants related with the technical training course under the JICA's Knowledge Co-Creation Program (KCCP) also shared their knowledge with other staff. In-house training was conducted for BTV staff and personnel from the private sector. Approximately 60% of BTV's production staff, including engineers, editors, channel controllers, producers, and so on, have been trained on HD production. Therefore, the HD studio system have been well functioning at the time of ex-post evaluation.

<Status of Achievement for Overall Goal at the time of Ex-post Evaluation>

The Overall Goal has been achieved at the time of Ex-post Evaluation. According to the DTTB coverage verification report , ISDB-T system was installed into 44 out of 45 stations and the signal can adequately cover most of the areas covered by the analogue network.. Therefore, the target value of more than 65% coverage has been mostly achieved (Indicator 1). Since the first ASO plan was conducted in the Chobe district in December 2019, Botswana has two systems providing TV programs equally. Another ASO plan was implemented smoothly during 2020 and all ASO plans were scheduled to be completed by 2021. The coverage practically appears to be better than the report results and it is expected to achieve over 70% coverage after activation of Maope station. Gap filling will be implemented during NDP12.

With the establishment of the Data Broadcasting Unit in BTV, all programs have been now compatible with data broadcasting and HD. BTV has increased the number of programs available for both analogue and digital broadcasting. Besides, the programs have been watched on TV connected with STB even before the ASO implementation (Indicator 2). All the BTV programs have been applicable to data broadcasting and HD (Indicator 3).

<Other Impacts at the time of Ex-post Evaluation>

There have been some positive impacts observed at the time of ex-post evaluation. Digital Terrestrial Television Broadcasting (DTTB) training has been provided to all DBS's staffs on a gender-neutral basis, leading to the improvement of women's empowerment. Also, there has been a transfer of knowledge and skills to local staffs including interns who were related to the project. Some of them are now working for a datacasting company by using the experience gained from the project. Furthermore, the knowledge and skills have been passed to other staffs through actual work and training within DBS.

No negative impact on the natural environment was observed.

<Evaluation Result>

Therefore, the effectiveness/impact of the project is fair.

Achievement of Project Purpose and Overall Goal

Aim	Indicators	Results	Source
(Project Purpose) Environment for the terrestrial digital broadcasting that takes advantage of the features of ISDB-T is ready.	Indicator 1 34% or more customers recognize the terrestrial data broadcasting of Botswana Television (BTV)	Status of the Achievement: Not achieved (Partially achieved) (Project Completion) ● There was no digital receiver available in the Botswana market. ● According to the customer sample survey, only 14.2% of respondents recognized the data broadcasting service. (Ex-post Evaluation) ● Although there was no available data to verify the indicator at the time of ex-post evaluation, the survey by DBS during the implementation of the ASO plan showed that people understood what terrestrial data broadcasting is and why they need to buy a gadget to watch TV	The embassy of Japan in Botswana Information posted on FB by the government of Botswana
	Indicator 2 Facilities and human resources planned as necessary for producing and broadcasting HD programs based on ISDB-T data broadcasting are developed.	Status of the Achievement: Not achieved (Achieved) (Project Completion) ● HD studio system was not established in BTV. (Ex-post Evaluation) ● The HD studio system was procured and the trainings of the staff on production and broadcasting of HD programs been delivered. ● Approximately 60% of BTV's production staff, including engineers, editors, channel controllers, producers, and so on, have been trained on	Information provided by directors and staff in DBS

[1] A device to receive broadcasting signal and to turn to output signal which can be displayed on TV screen.

<table>
<tr><td></td><td></td><td>HD production.
● Finally, the HD studio system has been functioning well to produce and broadcast the HD programs.</td><td></td></tr>
<tr><td rowspan="3">(Overall Goal)
Terrestrial digital broadcasting that takes advantage of the features of Integrated Services Digital Terrestrial (ISDB-T) is effectively available.</td><td>Indicator 1
Terrestrial digital broadcasting service area covers 65% or more of Botswana (the target in National Development Plan (NDP) 10).</td><td>(Ex-post Evaluation) Mostly achieved
● At the time of project completion, ISDB-T system was installed into 44 out of 45 stations and has adequately covered 63% of people with analogue TV based on the DTTB coverage verification report.
● The coverage practically appears to be better than the report results and it is expected to achieve over 70% coverage after activation of Maope station..
● Gap filling will be implemented during NDP12.</td><td>Joint Coordinating Project Completion Report Committee (JCC) presentation (10th Sep 2015) by the project team</td></tr>
<tr><td>Indicator 2
3 or more number of programs that linked with the data broadcasting contents are produced per year.</td><td>(Ex-post Evaluation) Achieved
● BTV has increased the number of programs available for both analog and digital broadcasting.
[Number of programs linked with the data broadcasting contents a year]<table><tr><td>Year</td><td>2017</td><td>2018</td><td>2019</td><td>2020</td></tr><tr><td>●Program</td><td>2</td><td>5</td><td>5</td><td>7</td></tr></table></td><td>Information provided by DBS</td></tr>
<tr><td>Indicator 3
20 or more number of High Definition (HD) programs are produced per year.</td><td>(Ex-post Evaluation) Achieved
● All BTV programs have been applicable to data broadcasting and HD.</td><td>Information provided by DBS</td></tr>
</table>

3 Efficiency

Although the project cost exceeded (the ratio against the planned: 118%), the project period was as planned (the ratios against the plan: 100%). Due to the combined factors, the project cost exceeded the plan. The outputs were produced as planned. Therefore, the efficiency of the project is high.

4 Sustainability

<Policy Aspect>

NDP 11 (2016/17-2020/2021) was adopted in December 2016 and supports the use of systems that enable access to information, and data broadcasting is one of such systems. Policies and laws regarding digital terrestrial broadcasting, such as ISDB-T Standards of Botswana (BOCRA), Technical Specifications for Set top box (STB), Integrated Digital Television (IDTV) and Mobile and Portable device, and Broadcasting License Application and assessment procedure, have been enacted. NDP 12 which will include promotion of ISDB-T was supposed to start in April 2023 but it will be deferred by two years.

< Institutional/Organizational Aspect>

DBS has dedicated personnel in charge of handling the implementation of DTTB (ISDB-T), indicating that the structure of the department has been functional and capable of promoting ISDB-T and ASO. All staff assigned by DBS have been dedicated to the terrestrial digital broadcasting based on ISDB-T for the migration and ASO after the project completion. Furthermore, DBS has participated in all DTTB conferences, workshops, meetings and seminars organized by BOCRA, the South African Development Community (SADC), African Telecommunication Union (ATU), and so on, in order to enhance coordination with them. BTV coordinated Frequency Planning with BOCRA and made bilateral agreements with SADC and ATU.

<Technical Aspect>

For sustaining the technical capacity, DBS has conducted in-house training and training to private production companies. In addition, the DBS staff has participated in the technical training programs such as JICA's Knowledge Co-Creation Program and Country Focused Training (Japan) in order to ensure smooth operation of the equipment provided by the project. Besides, ITU materials have been utilized to learn ITU materials for Specifications Development and the difference between Japan and Brazil's Digital Migration Project. Also, Public Relations Plans, ASO for Guide/Procedure, and Public Relations Manuals have been used to sustain the effects achieved by the project.

<Financial Aspect>

The government of Botswana has budgeted 23 million Botswana Pula (BWP) for the projects of ASO, of which about 1million BWP was spent in the 2020 fiscal year. The budget for promotion/dissemination of the terrestrial digital broadcasting based on ISDB-T and production of HD programs has been mostly stable.

<Evaluation Result>

In light of the above, no problem has been observed in terms of any aspects. Therefore, the sustainability of the effects through the project is high.

5 Summary of the Evaluation

The project did not achieve the Project Purpose aiming at the development of an environment for the terrestrial digital broadcasting that takes advantage of the features of ISDB-T by the project completion but it is confirmed at the time of ex-post evaluation that the Project Purpose has been achieved after the project completion through the implementation of ASO plan. Also, the Overall Goal to utilize effectively digital broadcasting with the features of ISDB-T has been achieved. As for efficiency, the project cost exceeded the plan.

Considering all of the above points, this project is evaluated to be satisfactory.

III. Recommendations & Lessons Learned

Lessons Learned for JICA:

● In order to precisely identify the viewers' needs and to smoothly promote the migration to digital broadcasting, the baseline survey including the TV viewing pattern of the people should be conducted not at the timing of ASO but the beginning of this technical cooperation project. In addition, in order to effectively increase awareness and understanding of the people on ASO and the migration

to digital broadcasting, it is preferable to explain to the people about ASO process and necessity to install STB. Furthermore, it is essential to consider the local conditions and socioeconomic situation when the schedule and the process of migration to digital broadcasting is prepared.

JICA Expert and counterparts exchanging knowledge and skills for Digital TV Broadcasting

Digital TV program production training in progress.
Camera operators were part of the staff that was trained