

Bosnia and Herzegovina

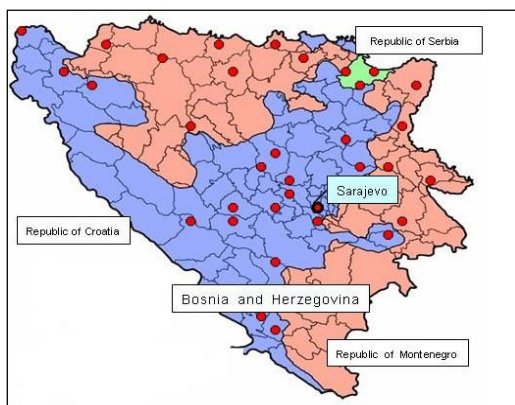
Ex-Post Evaluation of Japanese Grant Aid Project  
**Project for Improvement of Medical Equipment in  
Primary Health Care Institutions (Phase III)**

External Evaluator: Kenichi Inazawa, Octavia Japan Co., Ltd.

**0. Summary**

At the time of the ex-post evaluation, the improvement and enhancement of the health and medical sectors have been continuously regarded as important in the Federation of Bosnia and Herzegovina, Republic of Srpska, and Brčko District. Therefore, its relevance is high. In addition, output (procurement of medical equipment and renovation of X-ray facilities) was realized as planned. The project cost did not exceed the planned budget, and the project period did not go off the schedule. As a result of procuring medical equipment and renovating X-ray facilities, the number of radiation diagnoses and biochemical examinations is now more than predicted at the time of the ex-ante evaluation. Furthermore, through this ex-post evaluation survey, it was confirmed that the equipment has been used very frequently. Moreover, the beneficiary survey results show that the medical staff's level of satisfaction and the residents' degree of confidence in the health care institutions (DZ) are generally high. As for the sustainability, no major problems have been observed in the operation and maintenance system. In light of the above, this project is evaluated to be highly satisfactory.

**1. Project Profile**



Project Locations



Procured Medical Equipment  
(RTG Apparatus)

## 1.1 Background

In Bosnia and Herzegovina (hereinafter referred to as “BiH”)<sup>1</sup> in the 1990s, many primary healthcare institutions known as Dom Zdravlja (hereinafter referred to as “DZ”)<sup>2</sup> were affected by the interethnic conflicts and thus became non-functional. Aided by the World Health Organization (WHO), BiH formulated the “Health Sector Rehabilitation and Improvement Plan” in 1997, which focused on the primary healthcare (hereinafter referred to as “PHC”) program and established reform objectives comprised of (1) medical service and system reform, (2) functional improvement of medical institutions and optimum allocation of healthcare staffs, and (3) financial reform for healthcare. Including this plan, BiH was planning to improve function of primary healthcare institutions and increase its health budget. However, because the domestic health agencies faced chronic financial difficulties, the procurement of medical equipment as well as renovations of facilities did not progress. Therefore, procuring medical equipment and improving the functions of primary healthcare institutions and medical services were deemed as pressing issues.

## 1.2 Project Outline

The purpose of the project is to strengthen the preventive and diagnostic function at PHC (e.g., increase the diagnosis and examinations), targeting for the PHC institutions sustained damages from the interethnic conflicts, by procuring the medical equipment and renovating X-ray facilities; thereby contributing to improve the medical services and resident’s health condition.

Grant Limit Amount / Actual Grant Amount	1,273 million yen / 764 million yen
Exchange Date of Signature	November 2004 (first phase) December 2005 (second phase <sup>3</sup> )

<sup>1</sup> BiH is composed of the two entities (FBiH and RS) and Brcko District which belongs to the aforementioned two entities. The main industries are forestry and mining.

<sup>2</sup> Healthcare/PHC service facilities are primarily accessible, in general, to residents. There is one such facility in every administrative district (towns and villages). Generally, no beds are available, and diagnoses and medical care are mainly provided. The main departments are internal medicine, obstetrics and gynecology, psychiatry, etc., with emergency healthcare also available.

<sup>3</sup> The project was implemented, dividing into two phase, in accordance with the respective equipment items. It was planned and conducted that X-ray equipment for diagnostic imaging as well as image development equipment would be procured in the first half (2004), and clinical examination equipment, physiological function testing equipment, and emergency-related equipment were procured in the latter half (2005). Details are described in “3.2.1 Output” at Efficiency section.

Executing Agencies		Federal Ministry of Health (Federation of Bosnia and Herzegovina)
		Ministry of Health and Social Affairs (Republic of Srpska)
		Division of Primary Health Care, Department of Health (Brčko District)
Project Completion Date		November 2005 (first phase) December 2006 (second phase)
Project's Participants	Main Contractors	Shimazu International, Ogawa Seiki (first phase) Iwatani (second phase)
	Main Consultants	Matsuda Consultants/Inter Techno Center (JV)
Basic Design Study		February to March, 2004 (first phase) April to September, 2004 (second phase)
Detailed Design Study		N/A
Related Projects		Project for Improvement of Medical Equipment in Primary Health Care Institutions (Phase I: 1997)  Project for Improvement of Medical Equipment in Primary Health Care Institutions (Phase II: 1998) (Both projects are Japan's Grant Aid Project. <sup>4</sup> )

## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Kenichi Inazawa, Evaluation Consultant, Octavia Japan Co., Ltd.

### 2.2 Duration of Evaluation Study

Duration of the Study: December 2010–November 2011

Duration of the Field Study: March 21–April 10, 2011 (first study)

July 1–9, 2011 (second study)

### 2.3 Constraints during the Evaluation Study

Through the field survey of this ex-post evaluation, detail data regarding local project costs,

<sup>4</sup> As a project prior to this project, medical equipment were procured through the "Project for Improvement of Medical Equipment in Primary Health Care Institutions (Phase I)" in 1997 for 27 DZ and "Project for Improvement of Medical Equipment in Primary Health Care Institutions (Phase II)" in 1998 for 25 DZ.

which the BiH side had to owe, were not obtained. Therefore, the actual precise costs were not judged, at Efficiency section.

### 3. Results of the Evaluation (Overall Rating: A<sup>5</sup>)

#### 3.1 Relevance (Rating: ③<sup>6</sup>)

##### 3.1.1 Relevance with the Development Plan of Bosnia and Herzegovina

In BiH, strengthening PHC and streamlining the health sector by adopting Family Medicine<sup>7</sup> were advocated in the Poverty Reduction Strategy Paper (PRSP) written in 2004 at the time of the ex-ante evaluation. As for the action plans of PRSP, the enhancement of health and medical sectors was regarded as important, and improving the function of DZ facilities and increasing the amount of the health budget were planned.

Even at the time of the ex-post evaluation, improving and enhancing the health and medical care sectors has been regarded as important. The Federal Ministry of Health, Federation of Bosnia and Herzegovina (hereinafter referred to as “FBiH”) formulated “Federation of Bosnia and Herzegovina Healthcare Maintenance Strategy Plan” (2008–2018) in April 2008, aiming to modernize the level of medical care including medical equipment, improve quality, and change views on costs. In the Republic of Srpska (hereinafter referred to as “RS”), the government formulated the “Republic of Srpska Medical Policy and Strategy Program” (2002–2010), before at the time of the ex-ante evaluation, and it is now scheduled to be revised and continued. In addition, upgrading medical facilities and equipment, and educating healthcare staff are regarded important. In Brčko District, although specific medical programs and plans have not been formulated, currently the Brčko City Council is deliberating on a bill that aims to functionally and systematically improve primary and secondary healthcare institutions.<sup>8</sup>

Since the development and enhancement of the medical sector have been continuously recognized as important, the consistency of policies and measures with this project both at the time of the ex-ante evaluation and the ex-post evaluation can be recognized.

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<sup>5</sup> A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

<sup>6</sup> ③: High, ②: Fair, ①: Low

<sup>7</sup> It is a medical system and concept that provide care by treating patients holistically (psychologically and socially), examine families as a whole, maintain a high level of closeness for patients when providing care and enable promotion of health and disease prevention through care that includes medical care, health and welfare. It is more or less compared with major hospital-oriented healthcare.

<sup>8</sup> Secondary healthcare institutions mainly refer to general hospitals. Namely, they are major general healthcare institutions with beds available that are larger in size than primary healthcare institutions. In many cases, they also have special departments which are not available at the primary healthcare institutions. They are recognized as canton (prefectural)/regional level healthcare institutions.

### 3.1.2. Relevance with the Development Needs of Bosnia and Herzegovina

At the time of the ex-ante evaluation, there was a lack of medical equipment because approximately 30% of the primary healthcare institutions sustained damage from the interethnic conflicts. Moreover, respective health and medical agencies (Executing Agencies of the project) such as the Federal Ministry of Health (FBiH), the Ministry of Health and Social Affairs (RS), and the Division of Primary Health Care of the Department of Health (Brčko District) could not afford to procure medical equipment, because they were facing financial difficulties. Therefore, needs from primary healthcare institutions with regard to procuring medical equipment were considered to be high.

Meanwhile, at the time of the ex-post evaluation, the needs have been high on promoting Family Medicine, improving management abilities at medical institutions, and training medical staff, in addition to improving the function of PHC institutions. These not only realize improvement of the tangible aspect (i.e., procuring equipment) but also put effort into the intangible aspect, which aims to improve the comprehensive medical service. Therefore, the needs related to improvements of healthcare service continue to be high.

Therefore, even at the time of the ex-post evaluation, since the improvement of the PHC's function and service in BiH has continuously been regarded as important, it can be said that this project is consistent with developmental needs both at the time of the ex-ante evaluation and the time of the ex-post evaluation.

### 3.1.3. Relevance with Japan's ODA Policy

Japan has sufficient experiences engaging in humanitarian assistance for BiH during and after the interethnic conflicts. At the Conference of Supporting Nations in April 1996, Japan expressed its policy of pledging approximately US\$500 million in aid to BiH over a period of 4 years from 1996 to 1999. So far, Japan also has been proactively offering its support in the medical and health sectors from the standpoint of supporting the recovery of BiH. This project has been requested as one to follow the "Project for Improvement of Medical Equipment in Primary Health Care Institutions (Phase I)" (1997) and the "Project for Improvement of Medical Equipment in Primary Health Care Institutions (Phase II)" (1998), making it Phase III. Therefore, it is said that it is also consistent with Japan's aid policy.

This project has been highly relevant with Bosnia and Herzegovina's development plan and development needs, as well as to Japan's ODA policy, therefore, its relevance is considered high.

## 3.2 Efficiency (Rating: ③)

### 3.2.1 Project Outputs

Through this project, X-ray, ultrasound, physiological examination, clinical examination equipment, ambulance vehicles, etc. were procured. Renovations of X-ray examination rooms were also implemented. 33 DZ received medical equipment (18 DZ in FBiH, 12 DZ in RS, and 3 DZ in Brčko District),<sup>9</sup> while door/window openings were renovated in 23 of the 33 DZ.

The planned and actual outputs of the project are shown in Table 1. Outputs from Japan's side were implemented as planned, and the procurement process was implemented in two phases. In the first half (2004), X-ray photography equipment and film processing machines were procured, and X-ray facilities were renovated, while equipment for ultrasound diagnoses, physiological/laboratory examinations, and emergency measures were mainly procured in the latter half (2005).<sup>10</sup> Outputs from BiH's side, which were renovation of the door/window openings in X-ray examination rooms, were also implemented as planned. There is no additional output.

Table 1: Planned and Actual of the Outputs of the Project

Plan at the Time of the Ex-ante Evaluation	Actual at the Time of the Ex-post Evaluation
<b>【Japan's Outputs】</b>	
<u>All 21 Items (number of items scheduled to be procured):</u> RTG apparatus (30), Film X-ray development machine (26), Ultrasound (29) Spirometer (23) <sup>11</sup> , Electrocardiographs (ECG) (29), Biochemistry analyzer (10) <sup>12</sup> , Spectrophotometer (18) <sup>13</sup> , Blood cell counter (22), Microscope (24), Centrifuge (32), Sterilizer (27), Balance (25), Destilator (29), Washing machine for lab glassware (10), Ambulance vehicle (29), Defibrillator (25), Reanimation set (33), Laryngoscope (28), Aspirator (28), X-Ray sealed door	<u>First Half: All 4 Items (actual procurement):</u> RTG apparatus (30), Film X-ray development machine (26), X-Ray sealed door (900W:17, 600w : 15), Monitor Window (600w : 8, 900w : 18) <u>Latter Half: All 17 Items (in parentheses: actual procurement):</u> Ultrasound (29), Spirometer (23), Electrocardiographs (ECG) (29), Biochemistry analyzer (10), Spectrophotometer (18), Blood cell counter (22), Microscope (24), Centrifuge (32), Sterilizer (27), Balance (25), Destilator (29),

<sup>9</sup> Only ballpark figures can be used in terms of the total population covered by DZ at the time of the ex-post evaluation because exact statistics do not exist. Nevertheless, according to the respective Executing Agencies, the figures are as follows: approximately 1.08 million to 1.26 million people in FBiH, approximately 674,000 people in RS and approximately 85,000 people in Brčko District. Assuming the present total population of approximately 3.7 million in BiH, it can be considered that the population ratio covered by the project is 50 to 55%. However, it should be taken into consideration that the total population is not accurate, because a census has not been conducted in the country since 1991. The total number of DZ in BiH is 131.

<sup>10</sup> Before the project implementation, diagnostic imaging by X-ray photography at the respective DZ was far from satisfactory and so its priority and urgency were relatively high. Therefore, it was determined to procure the X-ray related equipment in the first half and procure clinical examination and emergency equipment in the latter half.

<sup>11</sup> Used for health examinations or to diagnose patients suspected of respiratory diseases.

<sup>12</sup> Examine the functions pertaining to blood and urine in kidneys, liver, etc. through automatic operation.

<sup>13</sup> Examine the functions pertaining to blood and urine in kidneys, liver, etc. through manual operation.



The planned period at the time of the ex-ante evaluation was 26 months, while the actual period was exactly the same as planned (26 months: 100% of the plan) from November 2004 to December 2006<sup>15</sup>. The periods pertaining to bidding, contract and procurement implementation are indicated as follows.

Table 2: Actual Project Period

Bidding/Contract/Detail Design (1/2 phase)	November 2004 to March 2005
Procurement/Installation (1/2 phase)	April 2005 to November 2005
Bidding/Contract/Detail Design (2/2 phase)	December 2005 to June 2006
Procurement/Installation (1/2 phase)	June 2006 to December 2006

### 3.2.2.2 Project Cost

The total planned project cost was 1,299 million yen (with the E/N amount limit of 1,273 million yen and approximately 25 million yen as BiH's portion), while the total actual amount was approximately 794 million yen (with Japan's portion of 764 million yen and BiH's portion of approximately 30 million yen). Thus, the actual cost was lower than planned. The reason why the actual cost became lower is that competitive biddings were conducted when procuring the medical equipment and in fact the contracts were efficient, providing lower prices than expected. The reason why the actual amount of BiH's portion was "approximately 30 million yen," is that because seven DZ<sup>16</sup> have not recorded the cost data, the whole BiH's portion could not be precisely calculated<sup>17</sup>. Nevertheless, as the BiH's portion was only used for renovating X-ray examination rooms, it can be thought that the actual amount is not too large.<sup>18</sup> In fact, as the BiH's portion in the whole project cost is relatively small, it can be speculated that the whole actual cost would have not exceeded the planned value, even if BiH's portion have exceeded the planned value.

Thus, the project cost was lower than planned and the project period was as planned,

<sup>15</sup> Regarding which no delay for the project period occurred, the Executing Agencies commented "Japan and the local counterpart (i.e., BiH's agencies) worked together cooperatively in promoting the project avoiding delays". They also commented that, "Although there were many sites and lots of time had to be spent for adjustments and procedures, it was great that both parties deepened their partnership avoiding any delay. It was fine that everything went smoothly in fact."

<sup>16</sup> The seven DZ are from F BiH and Brčko District.

<sup>17</sup> "Approximately 30 million yen" indicates the total amount confirmed virtually.

<sup>18</sup> According to the interviews with DZ, the actual amount seems a bit higher than the planned 25 million yen of BiH's portion.



therefore efficiency of the project is high.



Figure 2: Renovated Monitor Window and X-ray Sealed Door (X-ray Room) (Banja Luka, RS)



Figure 3: RTG Apparatus (Banja Luka, RS)

### 3.3 Effectiveness (Rating: ③)<sup>19</sup>

#### 3.3.1 Quantitative Effects

##### 3.3.1.1 Results from Operation and Effect Indicators

Throughout the project, it was expected that highly precise examinations and accurate diagnoses would realize at the PHC institutions, by procuring medical equipment and renovating X-ray examination rooms. Specifically, the numbers of radiodiagnoses, ultrasonography tests, biochemical tests, physiological examinations, and number of patients transferred to the DZ as well as number of patients transferred to higher levels' medical institutions were expected to increase. The following data indicate respective diagnoses and examinations.

Table 3: Number of Respective Diagnoses and Examinations at PHC Institutions (total of 33DZ)

Effect Indicators	Predicted Values <sup>20</sup>	2009	2010
Number of Radiodiagnoses	More than 14,000 per month	17,798 per month	20,672 per month

<sup>19</sup> The result of "Impact" in the following section is included in this "Effectiveness" section for the purpose of rating.

<sup>20</sup> The predicted values at the time of the ex-ante evaluation were based on the values actually achieved before the project implementation (2004), according to JICA's document "Basic Design Study Report". The forecast after the project completion considered an "achievement larger than the values actually achieved in 2004 as the project's outcome goal (i.e., attaining quantitative effects)." This was because, at the time of the ex-ante evaluation, it was not clear how many refugees due to the interethnic conflicts would be returning home in the future while population outflow was also estimated. Therefore, future prospects on numbers of diagnoses and examinations were difficult to determine. (In other words, it cannot be avoided that an index of "more than the current value" was set.)

Number of Ultrasonography Tests	More than 9,500 per month	11,551 per month	12,224 per month
Number of Biochemical Tests	More than 82,000 per month	335,816 per month	334,381 per month
Number of Physiological Examinations	More than 16,000 per month	225,369 per month	230,524 per month
Number of Patients Transferred to the DZ as well as Number of Patients Transferred to Higher Levels' Medical Institutions	More than 3,000 per month	N/A	N/A

Source: JICA documents (predicted figures at the time of the ex-ante evaluation), Answers on questionnaire (results from submitted data by 33 DZ in 2009 and 2010)

The analysis of difference and review of the numbers pertaining to the above-mentioned respective diagnoses and examinations are explained below. In addition, as explained later in 3.4.1.1, because the number of patients visiting DZ has increased in recent years, it is necessary to consider that the increase has somewhat affected the increase of diagnoses and examinations shown in Table 3.

#### 1) Number of Radiodiagnoses and Ultrasonography Tests

The number of radiodiagnoses is steadily increasing. Both the procurement of X-ray photography equipment, film processing machines, etc and the renovation of X-ray-sealed doors have become major contributing factors and it seems that the number of examinations has been on the rise. Compared to the time of the ex-ante evaluation, the number of ultrasonography tests has also increased. It can be assumed that the increase in the number of procured and installed ultrasonographs is the major factor.

#### 2) Number of Biochemical Tests

The basis for the predicted values at the time of the ex-ante evaluation was as the “monthly number of tests (82,417 tests) conducted through the use of biochemical analyzers and spectrophotometers.”<sup>21</sup> The actual data at the time of the ex-post evaluation have exceeded greatly the predicted values. According to interviews with DZ, the reasons are explained as follows; 1) Biochemical analyzers examine liver functions through automatic operation. Procuring a large amount of the equipment boosts the efficiency of tests, significantly increasing items and the number of tests, 2) In order to analyze proteins, reagents are necessary when conducting biochemical tests. At the time of the ex-ante evaluation, they were not sufficiently secured, and the number of tests also remained low. However, there are enough reagents at every DZ and the number of tests has increased using the sufficient reagents. In addition, the

<sup>21</sup> Based on the JICA document (Basic Design Study Report). The same goes for the number of physiological examinations.

number of tests is increasing greatly, because the biochemical analyzers have also been newly procured. Therefore, it is evident that medical equipment is being properly used while medical practice needs are appropriately met.

### 3) Number of Physiological Examinations

The basis for the predicted values at the time of the ex-ante evaluation is the “monthly number of examinations (15,626 examinations) conducted through the use of electrocardiographs (ECG) and spirometers.” In this case as well, the actual data at the time of the ex-post evaluation has greatly exceeded the predicted values. According to interviews with DZ, the reasons are explained as follows; 1) At the time of the ex-ante evaluation, the 33 targeted DZ did not have any spirometers, which could have been in use. Many DZ were conducting health diagnoses almost exclusively by ECG. As a result, the number of physiological examinations was low. However, because spirometers have been newly procured through this project, the number has significantly increased at many DZ, 2) Mining is one of main industries in BiH and there are many coal miners. There are many whose lung functions have become worse and many also suffer from respiratory diseases caused by dust, smoke and soot. Therefore, spirometers and ECG used to diagnose the conditions are indispensable and the frequency of their use is relatively high. In other words, needs of medical practice have been met, by procuring spirometers and ECG. It can be said that this project has contributed to the treatment and promotion of patients’ health.

### 4) Number of Patients Transferred to the DZ as well as Number of Patients Transferred to Higher Levels’ Medical Institutions

It was difficult to obtain and analyze the actual data, because many DZ have not been measuring it. Nevertheless, according to interviews with four DZ, the ambulance vehicles procured by the project have been in use sufficiently and the number of patients transferred to the DZ as well as to higher levels’ medical institutions has increased compared to six or seven years ago, the time prior to project commencement. Moreover, as mentioned below, because the procured ambulance vehicles have high mileage, it can be speculated that the numbers of patients transferred to the DZ as well as to higher levels’ medical institutions are higher than the predicted values.

### 5) Mileage of Ambulance Vehicles

In terms of the usage condition of other procured medical equipment, ambulance vehicles (i.e.,

a fairly expensive procurement) are discussed here. Table 4 shows the actual mileage until the beginning of April 2011, regarding the three new ambulance vehicles procured in Brčko District in 2006.

Table 4: Mileage of Ambulance Vehicles in Brčko District

Ambulance No.1	Ambulance No.2	Ambulance No.3
172,965 km	125,679 km	126,825 km

*Source:* 3DZ from Brčko District (Brčko, Maoca, Bijela)

According to interviews with ambulance drivers, “about more than half of the durable travel distance (assumed to be 200,000 to 250,000 km) perhaps have been driven, but conditions are good without any major failure so far. We feel that we can transport patients without any worry.” The ambulance vehicles were procured in 2006. As for the distance traveled, approximately 30,000 km to 40,000 km per vehicle is the annual average, while the daily average is approximately 80 km to 110 km per vehicle. It can also be speculated that they are heavily used as important means to transfer patients to DZ and to higher levels’ medical institutions.

### 3.3.2 Qualitative Effects (Improving X-ray Protective Environments)

Through visiting a few DZ, it was confirmed that X-ray equipment has been highly used in X-ray examination rooms and its protective environments have improved. Although project effects from procuring new X-ray examination equipment are large, renovation works of X-ray protective doors and operating windows have also raised security in medical practice sites as well as protected X-ray leakage. X-ray technicians working at the sites have given positive comments such as, “There were many troubles before the project implementation, because of deterioration and degradation of the old equipment. However, after the new equipment were procured, no troubles and accidents have been occurred any more in actual examinations, and we are also satisfied with the equipment’s performance. Patients’ needs for X-ray examination have been met. Examinations have been performed swiftly. If maintenance conditions are good, the equipment can be used for many years.” Visiting medical practice sites (checking X-ray protective environments) and judging the aforementioned comments, it can be assured that the project has improved respective DZs’ protective environments regarding X-ray examinations and its safety conditions at the sites have become better.

Therefore, this project has largely achieved its objectives, therefore its effectiveness is high.



Figure 4: External View of DZ (Kiseljak, FBiH)



Figure 5: X-ray Apparatus in Room (Zenica, FBiH)

### 3.4 Impact

#### 3.4.1 Intended Impacts

##### 3.4.1.1 Trends in the Number of Patients at Primary Healthcare Institutions

As shown in Table 5, the number of patients visiting the 33 targeted DZ is on the rise. According to interviews with the respective Executing Agencies as well as some DZ executives, the following comments were obtained as the contributing factors of the increase; 1) In recent years, enforcement and improvement of PHC's function have progressed as a series of medical system reform, 2) Cancer, diabetes, lifestyle-related diseases caused by changes in dietary habits, and stress in the workplace and society have been increasing, and 3) As a result of procuring medical equipment and renovating facilities, appropriate diagnoses and improved medical services have been realized. Therefore, multiple contributing factors have been pointed out. Although it may be difficult to find out the direct relation of cause and effect between the increase in the number of patients and this project, at least this project has helped the patients develop stronger trust in DZ. At the same time, the project will be a core position for Family Medicine and will also prepare for modern-day illnesses that are on the rise.

Table 5: Number of Patients Visiting the 33 Targeted DZ

(Unit: thousand people)

	2005	2006	2007	2008	2009	2010
18 DZ from FBiH	1,563	1,745	1,851	2,036	2,129	2,316
12 DZ from RS	1,228	1,886	2,152	2,495	2,714	2,769
3 DZ from Brčko District	300	379	378	382	417	490

Source: Answers on questionnaire (results from submitted data by 33 DZ)

### 3.4.1.2 Implementation of Beneficiary Survey

Throughout this survey, an interview-style beneficiary survey was conducted, targeting for DZ's medical staff (doctors, nurses, medical technicians, etc.) and for patients visiting DZ.<sup>22</sup> Due to the time and budget constraints, only four out of the 33 DZ were selected. The targeted DZ were as follow; 1) Banja Luka (RS), 2) Zenica and 3) Kiseljak (FBiH), and 4) Brčko (Brčko District).<sup>23</sup> Figures 6 to 9 show the beneficiary survey results, and the respective results are reviewed.

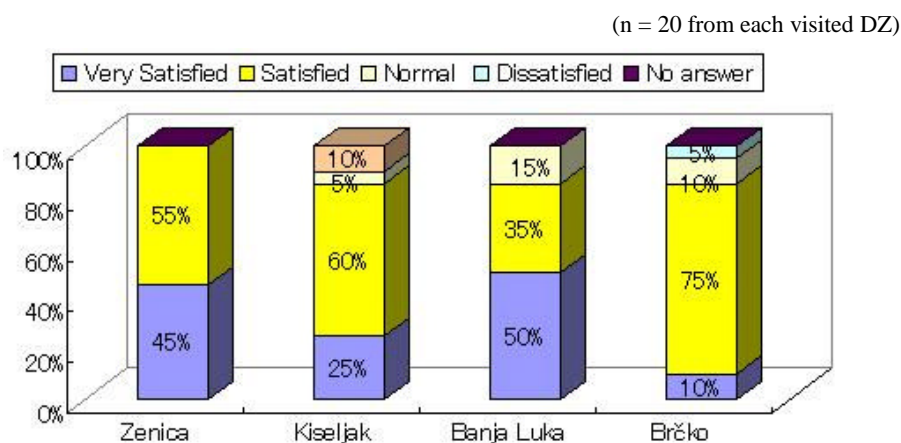


Figure 6: Are you satisfied with the procured medical equipment?

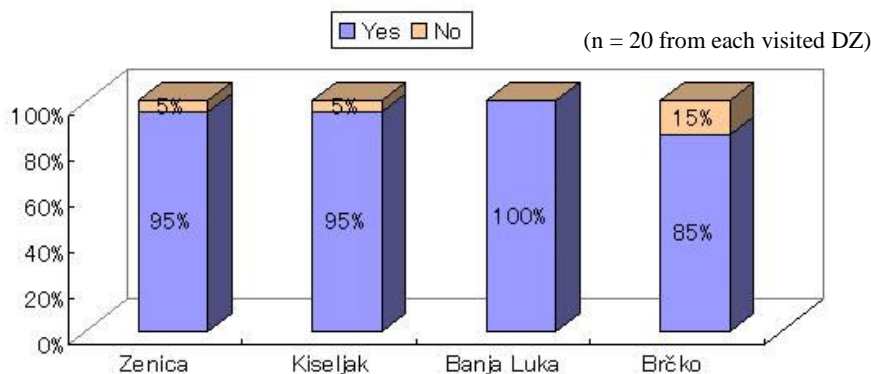


Figure 7: Do you think that DZ has been used by the local residents more than before?

<sup>22</sup> The sample size is 120, consisting of 20 medical staff at respective DZ (x 4 DZ) and 10 patients visiting DZ (x 4 DZ). The number itself was selected by random sampling.

<sup>23</sup> As for the selection criteria, 1) select one DZ from two entities (FBiH and RS) and Brčko District, 2) size of DZ facilities, and 3) ethnic balance were considered. As for 1), one or more DZ was selected without fail. As for 2), size balance was considered based on the following: (i) Banja Luka and (ii) Zenica were fairly large in size while (iii) Kiseljak was of small scale and (iv) Brčko was medium-sized. As for 3), it was considered that there were many Serbians in (i) Banja Luka, many Bosnians in (ii) Zenica, and many Croats in (iii) Kiseljak, while those in (iv) Brčko were of mixed race.

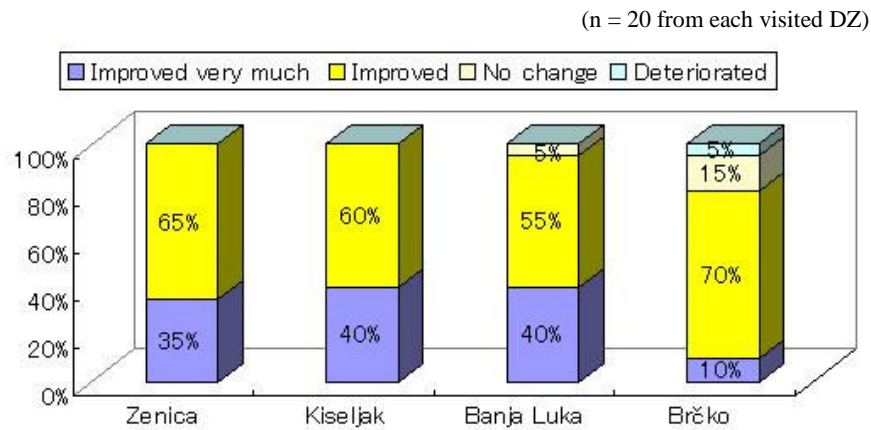


Figure 8: Compared to the time prior to project commencement, do you think that residents' health conditions have improved?

Many respondents answered that they were either “Very Satisfied” or “Satisfied” for the question addressing satisfaction in Figure 6. As for the reasons, a relatively large percentage of the respondents pointed out the safety improvement regarding use of medical equipment and the reduction of time regarding diagnosis and examinations. In Zenica and Banja Luka, a high percentage of the respondents replied “Very Satisfied.” The reason behind this can be speculated that the numbers of medical staff and patients visiting the institutions for both DZ are relatively high while medical equipment usage is also high accordingly and the needs of the medical staff are being met well. As for Figure 7, the results can be answers and evidences to back up those shown in Table 5. It is also evident that even the medical staffs themselves feel that the local residents have developed stronger trust in DZ. In addition, Figure 8 shows that many replied “Improved very much” or “Improved”. It is assumed that DZ’s functional improvements have progressed combined with project effects and thus positive results have been given, indicating that the residents’ health is showing a trend toward improvement.

Furthermore, another interview-style beneficiary survey was also conducted, targeting for patients visiting the DZ. The answers were obtained as shown in Figure 9. A relatively large percentage of the respondents pointed out the “quality and level of diagnoses improved” and “diagnostic time became faster.” Therefore, it can be determined that the residents’ trust in DZ is generally strong.

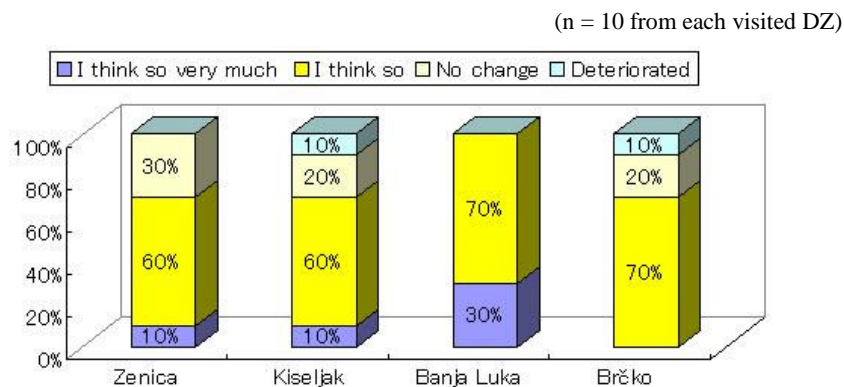


Figure 9: Do you think that DZ's medical services have improved compared to the time prior to project commencement?

### 3.4.2 Other Impacts

#### 3.4.2.1 Impacts on the Natural Environment

There is no negative impact on the environment caused by the project. No negative impact on the natural environment was confirmed even through the interviews with respective Executing Agencies and DZ managers.

At the time of the ex-ante evaluation, no regulation concerning the treatment of medical wastes was established in BiH. Although regulations stipulated from the former Yugoslavia were still valid from a legal standpoint, the former regulations did not include any provision with regards to liquid waste disposal of film processing. Only major institutions among all DZ were sending used developing fluids and fixing solutions to professional companies (silver recycling agents). In some cases, the fluids and solutions were directly dumped in the sewage. Thus, it was deemed necessary as future measures to establish a provision that required waste fluids of film processors to be independently collected and handled by professional companies as industrial wastes.

Meanwhile, it has been confirmed through this survey that regulation regarding medical wastes including the treatment of waste fluids of film processors has been enacted in FBiH since 2008. According to the Executing Agency, professional companies are now treating the wastes based on the new regulation. In Brčko District, although no regulation has particularly been established, the respective DZ are following guidelines of hospitals (secondary healthcare institutions) related to medical wastes, and thus the wastes are handled by professional companies. As for RS, the situation concerning treatment of the above-mentioned waste fluids



of film processors has not changed. Nevertheless, according to the Executing Agency, they are currently trying to establish guidelines regarding medical waste treatment including the waste fluids. In the near future, it can be considered that the waste fluids will be treated properly, however, it is necessary to watch the transition and change for the time being.



Figure 10: Biochemical Analyzer (Brčko, Brčko District)

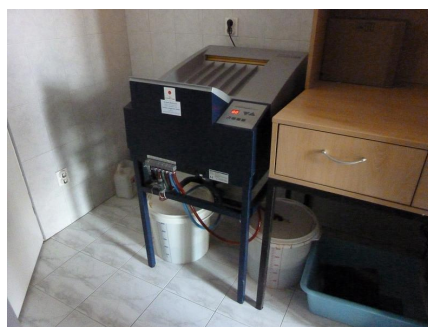


Figure 11: Film X-ray Development Machine with Waste Fluid Container (Zenica, FBiH)

### 3.5 Sustainability (Rating: ③)

#### 3.5.1 Structural Aspects of Operation and Maintenance

The Executing Agencies of this project are the Federal Ministry of Health in FBiH, Ministry of Health and Social Affairs in RS, and Division of Primary Health Care, Department of Health in Brčko District.

As for the budgetary structure of the respective DZ, the maintenance budget in FBiH is allocated from the canton government<sup>24</sup> (prefectural level) to all DZ in the entity. Each DZ uses the budget to consign the maintenance works of medical equipment to private service agents. In RS, local governments in the entity allocate the maintenance budget to the respective DZ and, as is the case with FBiH, the DZ consign the maintenance works to private service agents. In Brčko District, the maintenance budget is allocated from the Division of Primary Health Care to the respective DZ, and the respective DZ consign the maintenance works to private service agents. Through interviews with DZ's managers, it was confirmed that no problem was found with regard to the process to consign the private service agents and administrative structure.

The Ministry of Health and Social Affairs in RS has currently been unifying the needs for DZ's medical equipment and is planning to establish the Medical Equipment Management

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<sup>24</sup> There are 10 cantons in FBiH.

Center (tentative name), which aims to use and operate medical equipment efficiently. Should this center be established, it can be expected that maintenance costs for medical equipment will be reduced in the future.

Therefore, it can be determined that no problem exists regarding the O&M structure of the targeted DZ of this project.

### 3.5.2 Technical Aspects of Operation and Maintenance

In terms of the DZ (Zenica, Kiseljak, Banja Luka, and Brčko), it was confirmed that trainings regarding medical equipment operation<sup>25</sup> (e.g., operational procedures of X-ray equipment and equipment for ultrasound diagnoses) as well as practical training regarding emergency delivery of pregnant females have been conducted. Internal training and OJT training for new staff have also been conducted on an as-needed basis. Furthermore, through interviews, it was confirmed that the medical staff’s technical level regarding use of the medical equipment was sufficient.

Therefore, it can be determined that no problem exists regarding the O&M technical level of the targeted DZ of this project.

### 3.5.3 Financial Aspects of Operation and Maintenance

The healthcare finance in BiH is mainly funded by the Health Insurance Fund.<sup>26</sup> This fund plays a central role in paying diagnosis and treatment costs, facility and equipment maintenance, healthcare staff salaries, and so on. Table 6 shows the current years’ total budget (top) and amount expended from the Health Insurance Fund.

Table 6: Total Budget of the Target DZ of the Project (top)/ Amount Expended from the Health Insurance Fund (bottom)<sup>27</sup>

(Unit: thousand KM)

	2007	2008	2009	2010
DZ from FBiH	N/A	49,209	50,773	50,832
	N/A	38,045	40,159	41,081
DZ from RS	45,139	52,737	62,943	N/A
	33,096	38,701	52,541	N/A
DZ from Brčko District	N/A	7,356	8,232	8,283
	N/A	4,966	4,593	4,763

Source: Health Insurance Fund, Executing Agency’s document, Target 33 DZ

<sup>25</sup> Many DZ staff also commented; “When medical equipment were procured and installed, the consultant and contractor from Japan came to offer explanation and guidance regarding equipment operation. It has been very helpful for us to conduct daily operations.”

<sup>26</sup> Basically, the fund resource comes from imposed tax based on the earnings of both individual and corporate. The insurance ratio is set along with economic fluctuation. Currently, the ratio is 9% in FBiH, 11.5% in RS, and 12% in Brčko District.

<sup>27</sup> Only 14 out of 18 DZ from FBiH actually answered. All DZ from RS and Brčko District answered.

As shown in Table 6, it can be judged that the Health Insurance Fund's proportion in the total budget is high, implying the main financial source for all the DZ. In addition, both the total budget and the amount expended from the insurance fund are generally on the rise. Furthermore, according to the respective Executing Agencies, the budget that the DZ regards as necessary has been allocated in general, and maintenance costs for medical equipment have basically been covered.<sup>28</sup> Moreover, the DZ managers also commented; "There are no overdue maintenance costs. No major concern exists in generating the money".<sup>29</sup> As shown in Section 3.5.4 "Current Status of Operation and Maintenance", because medical equipment procured by this project has been in use without problem even at the time of the ex-post evaluation as well as maintenance works have been conducted sufficiently, it is likely that no major problems will exist, regarding the O&M financial aspects.

Therefore, it can be determined that no particular problem exists regarding the budgetary or financial aspect of the targeted DZ and that no problem also exists concerning the O&M financial level.

#### 3.5.4 Current Status of Operation and Maintenance

No concern exists regarding the O&M status of medical equipment procured through the project. As mentioned earlier, the equipment has been maintained by private service agents. Although the maintenance works should be conducted depending on the item and service life of the medical equipment, regular inspections and maintenance works are performed appropriately based on the information in the medical equipment ledger.<sup>30</sup> Even at the DZ (Zenica, Kiseljak, Banja Luka, and Brčko), it was judged that no particular problems exist regarding the equipment's operation and condition of usage.

Procuring and storing spare parts are not conducted on a regular basis. The medical equipment parts are basically not stocked at all times but private service agents visit the respective DZ for regular inspections and, whenever needed, replace or install the parts. Meanwhile, it was confirmed that the manual necessary for O&M has been kept appropriately.

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<sup>28</sup> It was difficult to obtain the detailed breakdown of the maintenance costs.

<sup>29</sup> It is expected that costs necessary to renew medical equipment will also be secured in the future. Basically, they will be purchased using the budget of cantons or local governments, subsidies from the central government, etc. According to interviews in the survey, comments were also obtained such as; "Considering the present allocated budget amount, budgets to purchase equipment for renewals will not be insufficient, although this is only what is being estimated at this point."

<sup>30</sup> The ledger contains detailed records of the medical equipment's service life and storage conditions. Basically, depreciation is determined from the ledger's records to decide the time when the maintenance works or parts should be conducted or exchanged. In terms of ambulance vehicle, for example, a regular inspection is conducted for every 10,000 km traveled and procedures such as oil change are conducted.



Figure 12: Ambulance Vehicle  
(Brčko, Brčko District)



Figure 13: Ultrasound  
(Kiseljak, FBiH)

In relation to the above, no major problems have been observed in the operation and maintenance system, therefore sustainability of the project is high.

#### 4. Conclusion, Lessons Learned, and Recommendations

##### 4.1 Conclusion

At the time of the ex-post evaluation, the improvement and enhancement of the health and medical sectors have been continuously regarded as important in the Federation of Bosnia and Herzegovina, Republic of Srpska, and Brčko District. Therefore, its relevance is high. In addition, output (procurement of medical equipment and renovation of X-ray facilities) was realized as planned. The project cost did not exceed the planned budget, and the project period did not go off schedule. As a result of procuring medical equipment and renovating X-ray facilities, the number of radiation diagnoses and biochemical examinations is now more than predicted numbers at the time of the ex-ante evaluation. Furthermore, through this ex-post evaluation survey, it was confirmed that the equipment has been used very frequently. Moreover, the beneficiary survey results show that the medical staff's level of satisfaction and the residents' degree of confidence in the health care institutions (DZ) are generally high. As for the sustainability, no major problems have been observed in the operation and maintenance system. In light of the above, this project is evaluated to be highly satisfactory.

##### 4.2 Recommendations

(Recommendation to Executing Agency)

Although RS is currently working on the guideline for medical wastes, it is desirable to speed up the enactment process. This is because ensuring the management and treatment of medical wastes by preparing and complying with the guideline directly contribute to the improvement

of DZ's medical services and the region's environment.

#### 4.3 Lessons Learned

Considering the fact that it was somewhat difficult to obtain BiH's actual project cost, it would be desirable for the Executing Agencies and the respective DZ to keep records appropriately since the project commencement. Moreover, it is also important to discuss and agree with the data collection method between the recipient side and Japan's side to facilitate the evaluation and monitoring..